

# INDO-GERMAN ENERGY FORUM NEWSLETTER

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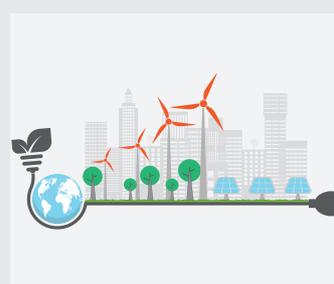
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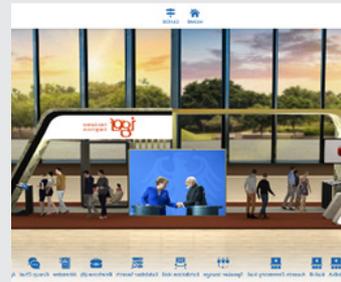
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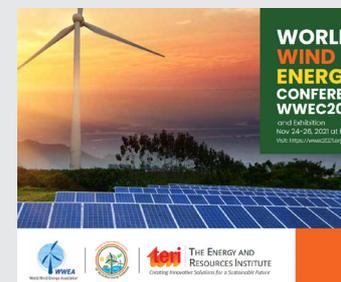
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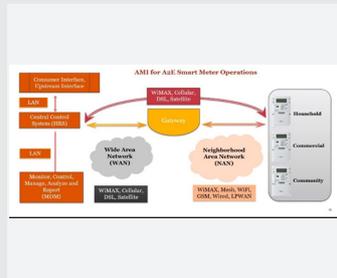
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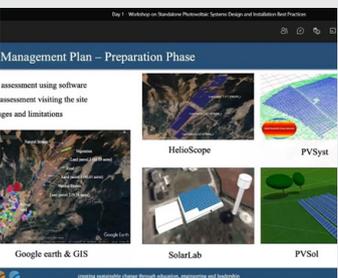
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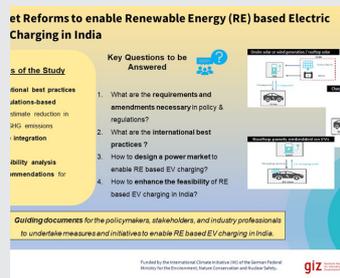
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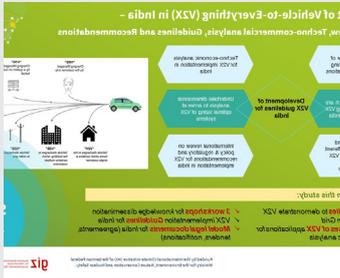
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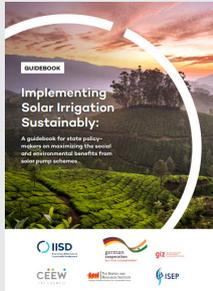
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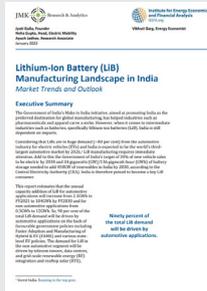
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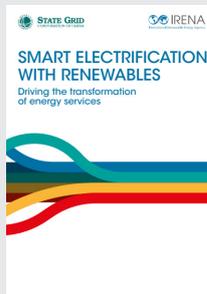
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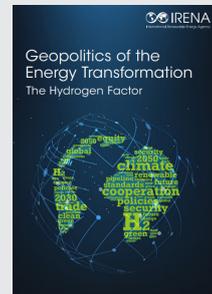
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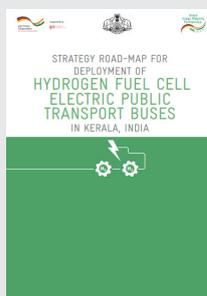
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# 1

## Introduction



**Dr. Patrick Graichen,  
State Secretary, The Federal  
Ministry for Economic Affairs and  
Climate Action**

“ I’m looking forward to working with my counterparts in the Government of India to accelerate the energy transition in both our countries” says Dr. Patrick Graichen, who is currently serving as the State Secretary in the Federal Ministry for Economic Affairs and Climate Action. He is responsible for the implementation of the energy and climate policy by the Government of Germany and in this position also the new Co-Chair of the Indo-German Energy Forum.

Before Dr. Patrick Graichen was the Executive Director of Agora Energiewende, a German think-tank and policy institute. He helped build the Agora Energiewende since 2012 and gave impetus to domestic and international climate and energy policy.

Prior to joining Agora Energiewende, Dr. Graichen worked at the Federal Ministry of Environment, first in the area of international climate policy, then as personal assistant to the Secretary of State in the ministry, and from 2007 as Head of the Unit for Energy and Climate Change Policy. During this time, he was responsible for negotiating the design of the economic instruments of the Kyoto Protocol, the Integrated Energy and Climate Programme of the Federal Government (2007), the EU’s Climate and Energy Package (2008), as well as the legislative procedures in the area of the energy management law.

He pursued his studies in political science and economics in Heidelberg, Germany, and Cambridge, UK; he completed his doctorate on Energy Policies of Municipalities at the Interdisciplinary Institute for Environmental Economics at the University of Heidelberg. In 2018, he was named “Energy Manager of the Year” by the journal *Energie & Management*.

# 2

## Events and Activities

### Climate Talk: GreenHydrogen4Future

15 December 2021 | Hybrid

The German Embassy in collaboration with the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) and the Indo-German Energy Forum (IGEF) Support Office organised a Climate Talk on “Green Hydrogen for the Future” in a hybrid form on 15 December 2021. Both Germany and India have high ambitions in the field of green hydrogen (H<sub>2</sub>), especially regarding its development as means to drive the energy transition in both countries and the mitigation of factors contributing to climate change. The event marks the final climate talk within the diplomatic year of climate change and the environment.

Introductory remarks were made by Dr. Antje Berger and Dr. Stephan Hesselmann, both representing the Embassy of the Federal Republic of Germany in New Delhi, India. Dr. Berger, in charge of environmental affairs, made clear that there are no alternatives to green hydrogen yet, to achieve full decarbonisation of our economies. Dr. Hesselmann, Minister Counsellor for Economic Affairs informed that Germany will remain a net importer of energy and highlighted its high interest in sourcing

green hydrogen from around the world. Dr. Winfried Damm, Cluster Coordinator, Indo-German Energy Programme, GIZ shared his optimism that India is well positioned to achieve a price of below 1 Euro/kg green hydrogen by 2030. Funding by the German Ministry for Economic Affairs and Climate Action of up to a 15 million Euro grant per green H<sub>2</sub>, ammonia, or methanol project is now available for India.

Dr. Vibha Dhawan, Director General, The Energy and Resources Institute (TERI) emphasised the significance of green hydrogen to cope with future energy demands. The Indian Ministry of New and Renewable Energy (MNRE) is envisioning for India to become an international hub for the production and export of green hydrogen. With the support of TERI, MNRE is currently preparing to launch a “National Hydrogen Mission” that covers all aspects of a hydrogen economy including storage, research and development, as well as, policy initiatives. Dr. Dhawan pointed out that the demand for green hydrogen will be five times higher by 2050, while its production costs will reduce significantly compared to the current price of

Dr. Antje Berger during her welcome remarks with Dr. Stephan Hesselmann, Embassy of Germany; Dr. Vibha Dhawan, Director General, TERI and Ms. Anandi Iyer, Director Fraunhofer India.



around 4 US Dollars/kg. In order to develop a green H<sub>2</sub> ecosystem, she highlighted the importance of partnerships among actors along the green hydrogen value chain on a domestic and international scale. Stating that "Climate has no boundaries", she opted for a strong international collaboration and strong partnership between Germany and India.

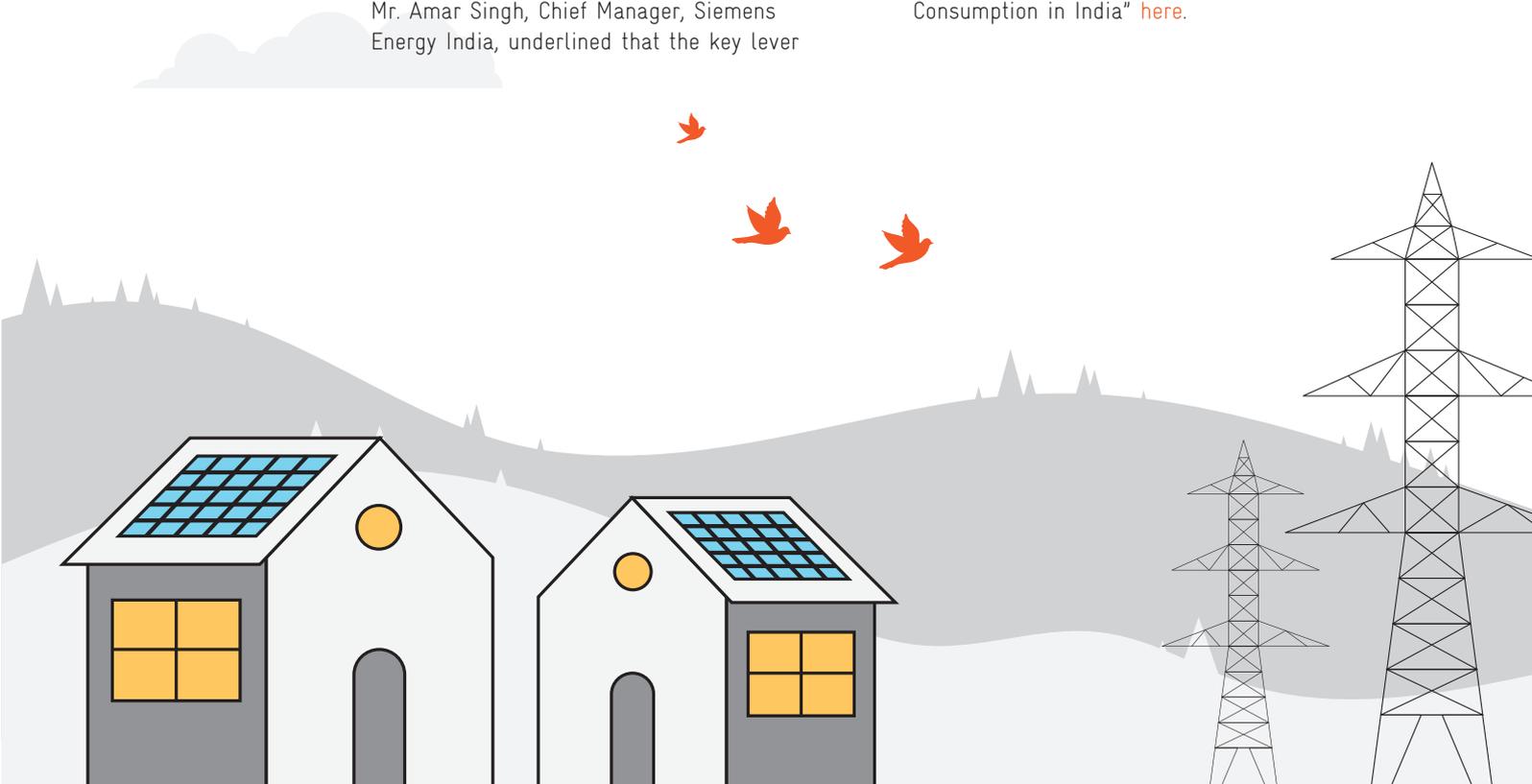
Ms. Anandi Iyer, Director, Fraunhofer Office India, presented the state of the art developments from Fraunhofer researchers. Fraunhofer covers a holistic approach to grasp the entire value-chain in green H<sub>2</sub> production and is involved in dozens of pilot projects in Germany such as the "Hydrogen Injection Plant, a multi-level control system that allows testing of H<sub>2</sub>." Additional research efforts are directed at the combination of solar and green hydrogen production, as a bankable H<sub>2</sub> yield report is being prepared to promote financial reliance on H<sub>2</sub> projects. Ms. Iyer stressed that Fraunhofer is actively looking for Indian partners to collaborate on pilot projects in green hydrogen.

Mr. Amar Singh, Chief Manager, Siemens Energy India, underlined that the key lever

for decarbonization of all end-user sectors is "sector coupling". In consequence, it is important to take green electrons from the power sector and use them as green fuel for the non-power sector. Mr. Singh also gave insights into the "Haru Oni Pilot" - an integrated plant for climate friendly E-fuels. In this pilot, wind energy is used for the production of green H<sub>2</sub> and then synthesised for methanol production, which is in turn sent to Europe.

Mr. Anish Paunwala from Linde India sees great potential for India in the clean hydrogen business. While the country has a strong standing in the international market for conventional hydrogen already, last mile connectivity and economies of scale in production are very important factors to become successful in the future. Germany and India will be required to go hand in hand in terms of technology paired with product development and application.

For more information download the report "Status Quo Mapping of Hydrogen Production and Consumption in India" [here](#).



## India Week Hamburg: Hamburg - India Business Day

### 8 November 2021 | Virtual

The Indo-German Energy Forum Support Office actively contributed to the ninth "India Week Hamburg" and hosted a break-out session on "German funding schemes for Green Hydrogen projects". The session took part within the framework of the Hamburg - India Business Day on 8 November 2021.

The event was a joint initiative of Hamburg Chamber of Commerce, OAV - German Asia-Pacific Business Association, German-Indian

Round Table (Hamburg Chapter), Hamburg Representation Mumbai and HIW Hamburg Invest Wirtschaftsförderungsgesellschaft GmbH and was supported by the Indo-German Chamber of Commerce, the Consulate General of India in Hamburg and the Confederation of Indian Industries.

All presentations of the session can be downloaded [here](#).



## Indo-German Roundtable on Agriphotovoltaics (AgriPV)

25 November 2021 | Virtual

On 25 November 2021, an Indo-German Roundtable on Agriphotovoltaics (AgriPV) provided a dedicated dialogue platform for high-level policy makers, financial institutions, industry and research organisations from both Germany and India to deepen the conversation on the potential of AgriPV development in India. The roundtable was inaugurated by the honourable Minister of State for New and Renewable Energy Shri Bhagwanth Khuba, Government of India who appreciated the initiative to utilise the potential of integrated solar solutions in India via AgriPV technology. Professor Dr. Claudia Warning, Director General, Federal Ministry for Economic Cooperation and Development (BMZ) who chaired the roundtable from the German side, emphasised the importance of Agriphotovoltaics as a potent solution to resolve land-use conflicts related to large solar installations.

Mr. Pranav Mehta, Chairman of the National Solar Energy Federation of India (NSEFI) and Mr. Subrahmanyam Pulipaka, Managing Director of NSEFI, elaborated on the status quo of AgriPV in India and NSEFI's advancements in the promotion of utilising solar in agriculture to meet the Sustainable Development Goals and Climate objectives on National and International

levels. Shri Sanjay Sharma from Solar Energy Corporation of India (SECI) gave an overview on ongoing tenders including special tenders focusing on AgriPV. Dr. Damm and Mr. Gäbler from GIZ India shared promising insights from the first calculations made on the yield of vertical photovoltaic plants in India. Amongst others, the first vertical solar power plant pilot at NISE was shown to the participants. Dr. Santra from CAZRI shared the latest insights from the AgriPV research undertaken at the Central Arid Zone Research Institute in Jodhpur. Ms. Ipsa Sweta Dhal, Fraunhofer ISE, presented key findings of AgriPV projects in India with a focus on the perception of involved farmers. Mr. Vivek Saraf from SunSeed APV gave an impressive presentation on an upcoming AgriPV pilot project and the bankability of AgriPV projects. The roundtable was joined by experts from KfW Development Bank, who found the financials presented viable and promising for the future development of Agriphotovoltaics in India.

The roundtable concluded with a Q&A session during which audience members engaged in a fruitful exchange.

For more information click [here](#).

Shri Bhagwanth  
Khuba, Hon'ble  
Minister of State for  
New and Renewable  
Energy; Professor  
Dr. Claudia Warning,  
Director General,  
Federal Ministry  
for Economic  
Cooperation and  
Development (BMZ).



## Knowledge Session: Certification of Green Hydrogen

24 November 2021 | Virtual

The IGEF-SO and the Indo-German Chamber of Commerce jointly organised a virtual Knowledge Session on the topic of “Certification of Green Hydrogen” on 24 November 2021. The developments along the entire value chain of green hydrogen production in India and Europe are moving at an advanced pace. Especially the import requirements of Europe for green hydrogen were of very high interest to the participating experts from India. In particular, Europe wants to ensure imported green hydrogen is sustainable and not leading to increased CO<sub>2</sub> emissions elsewhere. Dedicated experts from Guidehouse, TÜV SÜD Energietechnik and the European Energy Exchange (EEX) shared their insights into the status quo of certification systems for green hydrogen in the European Union as well as globally. The panel discussed measures for an EU-wide certification system for green hydrogen.

The event was inaugurated by Dr. Nicole Glanemann, Deputy Head, Federal Ministry for Economic Affairs and Climate Action (BMWK), Government of Germany. Dr. Glanemann emphasised Germany’s growing interest in importing green fuel and consequently, the need for a transparent certification system. Mr. Jan Cihlar, Guidehouse presented specific

“Sustainability Criteria for Green Hydrogen” and talked about the European certification framework. He provided participants with an overview of the European Commission’s Renewable Energy Directive II (RED II). Ms. Paula Maria Auer-Saupe, TÜV SÜD Energietechnik, gave a presentation on “Certification systems for green hydrogen and its importance for a sustainable future”. She explained the importance of the production of green hydrogen in the context of climate protection and emphasised the leading role of the European Union in the regulation of hydrogen from renewable sources. Concerning the trading of green hydrogen in Europe, Ms. Miriam Brandes, European Energy Exchange (EEX), offered participants a thorough understanding of the opportunities and requirements associated with the international trading of green hydrogen. In addition, she explained the relevance of a level playing field for producers and consumers, as well as, the relevance of certification systems as trustworthy proof of the origin of green hydrogen. The webinar was concluded with an interactive Q&A round. The webinar was very well attended by around 150 participants.

All presentations of the session can be downloaded [here](#).



## RenewX: Business Opportunities for Agrivoltaics in India

19 November 2021 | Hybrid

From 19 - 20 November 2021, the hybrid RenewX Expo in Hyderabad provided a dedicated platform for companies looking to enter the lucrative South Indian renewable energy market. The show brought together the renewable energy industry professionals in the region aiming to set a growth agenda for the future.

The National Solar Energy Federation of India (NSEFI) in collaboration with IGEF-SO organised an on-site event titled “Business Opportunities for Agrivoltaics in India” on 20 November. International and national experts gave insights on the latest developments in AgriPV in India and Europe. In her opening remarks, Dr. Nicole Glanemann, Deputy Head, Federal Ministry for Economic Affairs and Climate Action (BMWK) spoke about the large potential of large scale Agrivoltaics and how the Government of Germany is supporting this technology through special innovation tenders with higher tariffs being guaranteed by her ministry.

Dr. Lakshmi Santhanam, Co-Founder, Renkuba addressed the key issues encountered in the installation of large scale PV plants and gave possible solutions. Mr. G.S.V. Prasad

from the Telangana State Renewable Energy Development Corporation Ltd. (TSREDCO) shared his experience from a DISCOM perspective. Mr. Prasad talked about the expected challenges concerning tariffs and incentives and outlined upcoming plans for increased renewable energy deployment in his state. Mr. Maximilian Vorast from Fraunhofer ISE presented the experiences, developments and innovations in the field of AgriPV in Germany and Europe. In particular, the expert laid focus on how to improve Agrivoltaics and build a strong, international AgriPV community. From a rather technical stance, Mr. Vivek Saraf from SunSeed APV covered specific technical details and modern technological advances in AgriPV. Most importantly, Mr. Saraf also examined how to make these technologies bankable in India.

The session received a widely positive response from both audience and speakers. After the expert’s presentations, the audience members engaged in bilateral talks with the panellists.

All presentations of the session can be downloaded [here](#).

L to R: G.S.V. Prasad (TSREDCO), Dr. Lakshmi Santhanam (Renkuba), Mr. Amit Sharma (informamarkets), Ms. Theresa Jocham (IGEF-SO), Mr. Vivek Saraf (SunSeed APV), Mr. Maximilian Vorast (Fraunhofer ISE).



## “Women Energize Women”: Virtual Campaign Empowers Women in the Energy Sector

### Until August 2022 | Virtual

Informing, mobilising, inspiring, and connecting women around the world who work for the energy transition – that is the goal of the communication initiative “Women Energize Women”. The recently launched campaign (hashtag: #womenenergize) is an initiative of the Federal Ministry for Economic Affairs and Climate Action (BMWK), implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) and the German Renewable Energy Federation (BEE) within the scope of BMWK’s global project » [Bilateral Energy Partnerships](#).

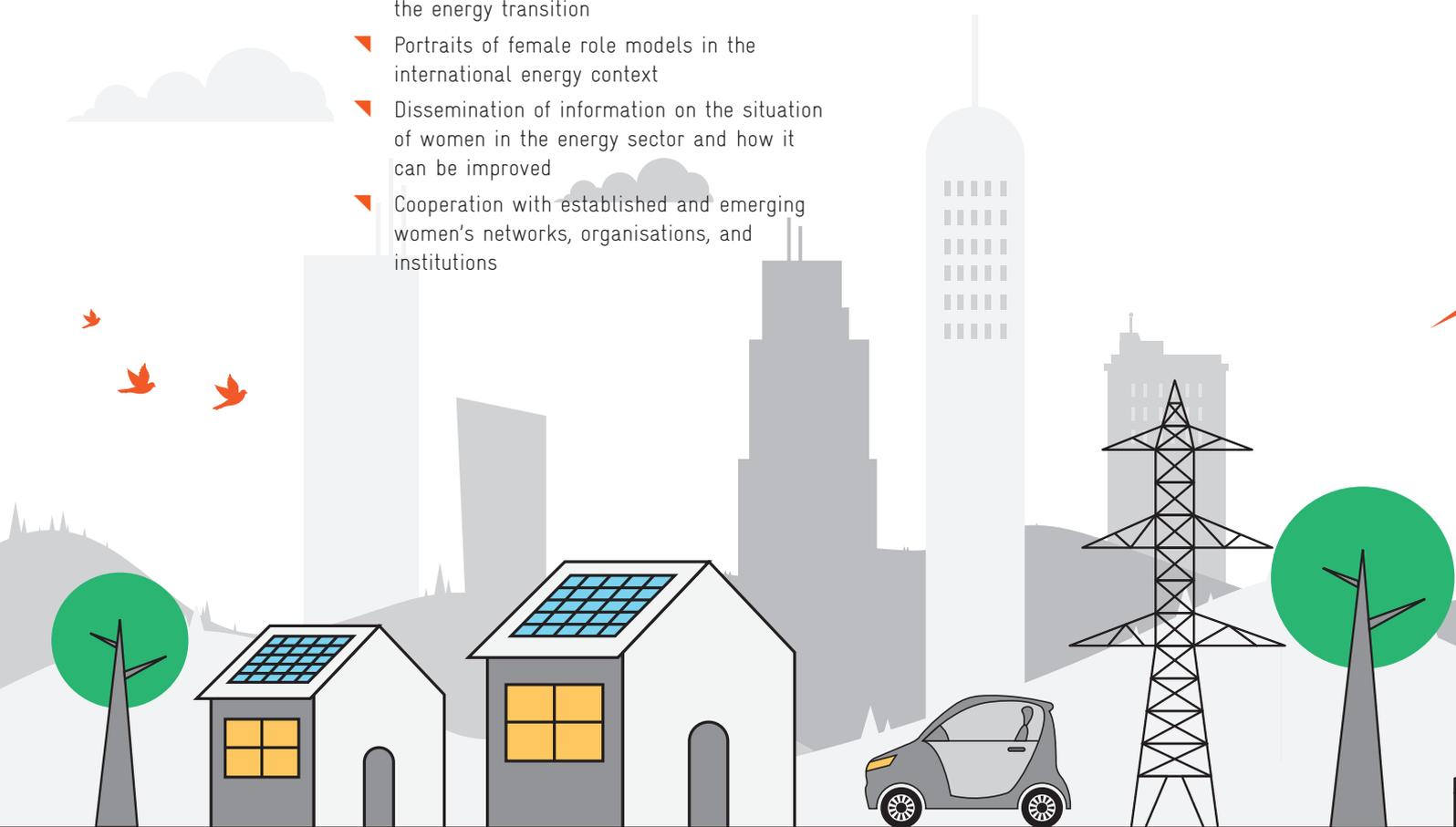
Until mid-August 2022, the Women Energize Women initiative build on various measures:

- ▼ Monthly events (discussion panels, interviews, networking events) with fascinating and inspiring women working on the energy transition
- ▼ Portraits of female role models in the international energy context
- ▼ Dissemination of information on the situation of women in the energy sector and how it can be improved
- ▼ Cooperation with established and emerging women’s networks, organisations, and institutions

The communication initiative is carried out on its own social media channels. Visit the Women Energize Women’s social media channels on » [Twitter](#), » [Instagram](#), » [LinkedIn](#), and » [YouTube](#) to support the empowerment of women in the energy sector and get updates on future events.

Implemented by GIZ on behalf of the BMWK, the Bilateral Energy Partnerships (EPs) bring together high-level intergovernmental dialogue with practical, goal-oriented project work. The EPs aim to enhance bilateral cooperation on the energy transition, improve energy security, promote climate protection, and mitigate global competition for energy resources.

For further information on the campaign, please contact Serafina Funk (BEE) at [serafina.funk\(at\)bee-ev.de](mailto:serafina.funk(at)bee-ev.de) or Katarzyna Rezza Vega (GIZ) at [katarzyna.rezza-vega\(at\)giz.de](mailto:katarzyna.rezza-vega(at)giz.de).



## Agri-Renewables: A Double Engine to India's Growth Story

2 December 2021 | Gandhinagar, Gujarat

The Indo-German Energy Forum (IGEF) and the National Solar Energy Federation of India (NSEFI) jointly hosted a session on 2 December on "Agri-Renewables: A Double Engine to India's Growth Story". The topic of this session is attributed to the rising demand for food-energy-water security in India, caused by rapid urbanisation, rising global population, and economic growth. The way we generate energy, produce food, and use water, substantially form major challenges of this century, considering the Agricultural sector consumed 17.67% of electricity in the year 2019-2020. Hence, in the ongoing energy transition, renewable energy plays an important role. The deployment of advanced renewable energy solutions must be targeting food-energy-

water security, which makes it imperative to use the same piece of land for electricity generation, food production and saving water losses. The panel of the session discussed the way forward for Agri-Renewables in India's journey to sustainable farming and energy. Speakers in the session included Ms. Ipsa Sweta Dhal, Fraunhofer ISE, Dr. Priyabrata Santra, CAZRI and Dr. P. M. Chauhan, Director of Research, Junagadh Agricultural University. Special focus was laid on topics such as the co-location of agriculture and renewables, the design and economics of agrivoltaic systems, government policies to promote Agriphotovoltaics, as well as, ongoing projects and challenges.

L to R: Mr. Ayush Shukla (NSEFI), Ms. Theresa Jocham (IGEF-SO), Dr. Priyabrata Santra (CAZRI), Mr. Subrahmanyam Pulipaka (NSEFI), Dr. P. M. Chauhan (Junagadh Agricultural University), Mr. Pranav Mehta (NSEFI), Ms. Ipsa Sweta Dhal (Fraunhofer ISE), Ms. Shivani Chaturvedi (IGCC), Mr. Maximilian Vorast (Fraunhofer ISE), Mr. Tobias Winter (IGEF), and Mr. Rahul Yedlapally (Consultant).



## World Hydrogen Energy Summit

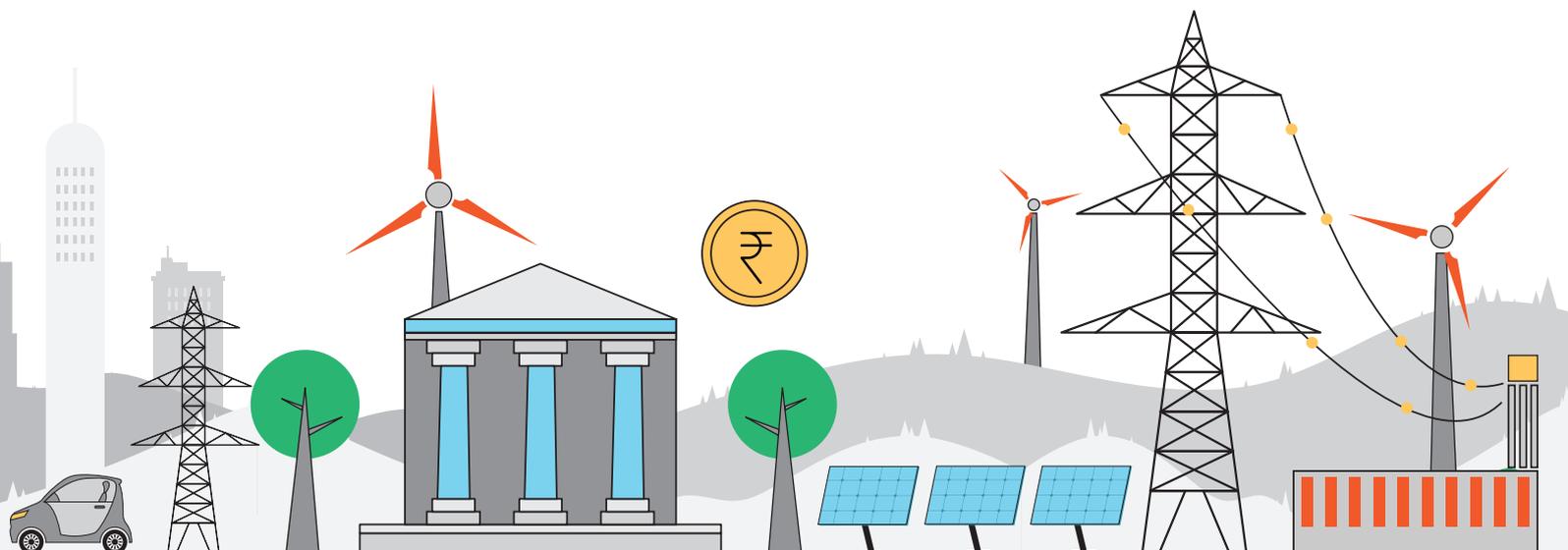
16 - 17 November 2021 | Virtual

The virtually held World Hydrogen Energy Summit 2021 focused on the topic of “Green Hydrogen: Cleaner and Zero Emission Fuel for a Sustainable Green Economy”. The Indo-German Energy Forum was an official partner of the event and organised a virtual booth. Among others, the inauguration ceremony was honoured by the presence of Dr. Stephan Hesselmann, Minister Counsellor for Economic Affairs at the Embassy of the Federal Republic of Germany in

India. In his inaugural speech, Dr. Hesselmann pointed out that Germany will remain a net importer of energy also in a renewable energy and hydrogen based economy. He highlighted the high interest of Germany in sourcing green hydrogen from around the world.

More information about the event can be found [here](#).

The German Pavilion  
in the virtual  
exhibition hall.



## The Smarter E India - Intersolar India

2 - 4 December 2021 | Gandhinagar, Gujarat

The Smarter E India Expo is India's innovation hub for the new energy world and brings together three shows under one roof; the renowned Intersolar India, ees India and Power2Drive India. The three-day exhibition and conference was held from 2 - 4 December 2021 at the Helipad Exhibition Grounds, Gandhinagar, Gujarat, organised by Messe Muenchen India Pvt. Ltd. The expo had around 100 exhibitors and 16,000 visitors over the three days. The exhibition was inaugurated by Shri Mukeshbhai Zinabhai Patel, Honourable State Minister for Agriculture, Energy & Petrochemicals, Government of Gujarat, India. The Indo-German Chamber of Commerce (IGCC) in collaboration with the Indo-German Energy Forum Support

Office (IGEF-SO) organised the German pavilion with the German companies AXITEC, TÜV SÜD and Semikron at the Intersolar India exhibition. The German companies who participated had the opportunity to showcase their company's products and services and had market access to one of the world's largest renewable energy markets.

The show presented cross-sector energy solutions and technologies and reflected the interaction of the solar, energy storage and electric mobility industry. The Smarter E India - Intersolar India addressed all the key areas along the value chain and brought together local experts and international stakeholders in the energy future.

Minister Shri  
Mukeshbhai Zinabhai  
Patel (centre)  
inaugurated the  
exhibition.

German Pavilion at  
Intersolar India.



## Business Opportunities in PV plus Battery Storage Systems

3 December 2021 | Gandhinagar, Gujarat

On 3 December, The National Solar Energy Federation of India (NSEFI), Indian Energy Storage Alliance (IESA) and IGEF-SO organised a well visited physical event session on “Business Opportunities in PV plus Battery Storage Systems” in India. Renowned speakers shared their insights on business opportunities in photovoltaics (PV) and battery storage systems. The session was opened by Mr. Pranav Mehta, Chairman of NSEFI. Mr. Debi Prasad Dash, Executive Director, India Energy Storage Alliance (IESA) gave an impressive overview of the latest market developments in India. Especially a map with upcoming manufacturing sites of batteries made in India caught the attention of the audience.

Ms. Maria Roos from Bundesverband Solarwirtschaft, presented framework conditions enabling a Gigawatt scale battery market with

thousands of decentralised but interconnected batteries delivering grid stabilising services in the form of so called Virtual Power Plants (VPPs). Mr. Christophe Lits from SolarPower Europe (SPE) shared insights on the different market segments for battery storage in Europe. The residential market segment especially showed high growth in the past. More than 50% of all newly installed solar rooftop systems in Germany already come with a battery to increase self-consumption. Besides this Dr. Rashi Gupta, Vision Mechatronics gave insights on PV Rooftop plus storage projects implemented in India. Mr. Vinay Rustagi, Bridge to India presented the potential for PV Rooftop combined with battery storage in India.

For more information and access to presentations of the event click [here](#).

Mr. Pranav Mehta (NSEFI), Dr. Rashi Gupta (Vision Mechatronics), Ms. Theresa Jochem (IGEF-SO), Mr. Debi Prasad Dash (IESA), Mr. Tobias Winter (IGEF-SO).





## German-Indian Roundtable: Dialogue Event of GIRT Central Germany (German-Indian Roundtable) and AHK India

25 January 2022 | Virtual

The German-Indian Roundtable (GIRT) has set itself the task to facilitate business relations between India and Germany. On 25 January 2022, GIRT offered a dialogue platform on “Opportunities & Potentials for German Companies in Indo-German Development Cooperation”. The event was supported by OAV (German-Asia-Pacific Business Association), GINSEP (German Indian Startup Exchange Program), LEG Thüringen, as well as BMZ and

EFRE (European Regional Development Fund). The dialogue was opened by welcome remarks from Mr. Jochen Flasbarth, State Secretary at the German Federal Ministry for Economic Cooperation and Development (BMZ).

Prominent participants included Prof. Dr. Claudia Warning, Director General at BMZ, and Mr. Philipp Knill, Head of the India and South Asia Division at BMZ.

Mr. Jochen Flasbarth, State Secretary at the German Federal Ministry for Economic Cooperation and Development gave his welcome remarks.



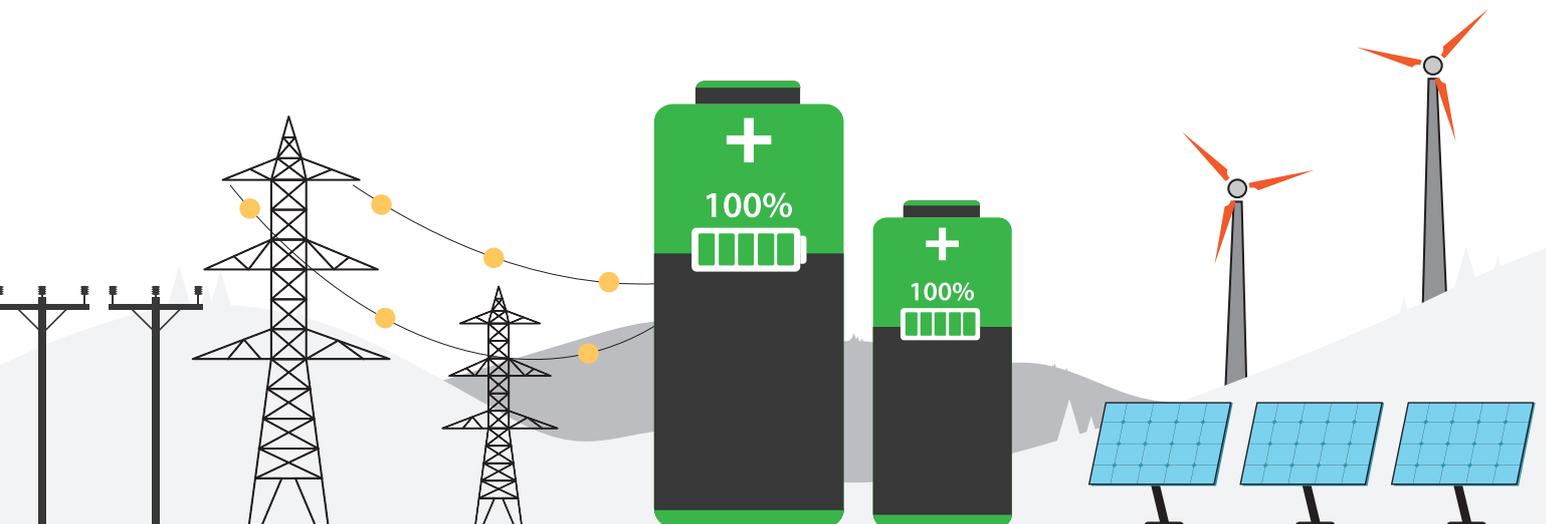
In a special breakout session on Renewable Energy, Dr. P.K.C. Bose, Vice Chairman and Managing Director of ENERCON Wind Energy India presented the highlights and milestones of ENERCON's return to India. Mr. Tobias Winter, IGEF-SO emphasised that the Indian power market currently has an investment volume of about Euro 40 billion annually with volumes still increasing year over year. In cooperation with the Indian partners, Indo-German Development

Cooperation is committed to support India's energy sector to become greener every year. India offers innumerable business opportunities for those who have had the staying power and built up good relationships. The general advice on how to do business in India, once made by the previous president of the Indo-German Chamber of Commerce, was still found to be useful: "Patience and Relations".

IGEF Support Office presenting on the potential for solar power in India.

### Potentieller Trend: Neue Flächen für PV – Beispiel AgriPV

Verbinden von Stromproduktion und Landwirtschaft und dabei ländliche Bevölkerung in Energiewende einbeziehen





## World Wind Energy Conference 2021

24 - 26 November 2021 | Virtual

The Energy and Resources Institute (TERI) and World Wind Energy Association (WWEA) with the support of the Indo-German Energy Forum (IGEF), the International Solar Alliance (ISA) and International Solar Energy Society (ISES) jointly hosted World Wind Energy Conference 2021 (WWEC2021) on 24 - 26 November 2021 in a virtual format. The conference was attended by around 400 participants from over 30 countries.

The conference covered all aspects of mainstreaming and growing wind and solar utilisation and the related policies, science and technology, manufacturing, research & development, operation, offshore and small wind, integrated solutions, capacity development, community involvement as well as other economic and social issues. Mr. Tobias Winter, Director, IGEF-SO participated as a speaker in a special session on Repowering and Recycling of old wind turbines.

**WORLD  
WIND  
ENERGY  
CONFERENCE  
WWEC2021**  
and Exhibition  
Nov 24-26, 2021 at New Delhi  
Visit: <https://wwec2021.org>

**WWEA**  
World Wind Energy Association

**teri** | THE ENERGY AND  
RESOURCES INSTITUTE  
*Creating Innovative Solutions for a Sustainable Future*



## Renewable Energies and Storage Technologies for the Charging Infrastructure in India

6 - 10 December 2021 | Virtual

A delegation from Germany on the topic of Renewable Energy and Energy Storage Technologies for Charging Infrastructure was organised by the Indo-German Chamber of Commerce (IGCC) from 6 - 10 December 2021 in association with eclareon GmbH. This project was funded by the German Federal Ministry of Economic Affairs and Climate Action (BMWK) as a part of the German Energy Solutions Initiative.

The objective of the business trip was to present German technologies enabling e-vehicle charging infrastructure which also included renewable energy generation and its storage to enable a true green transition to mobility and to establish business partnerships between German and Indian companies.

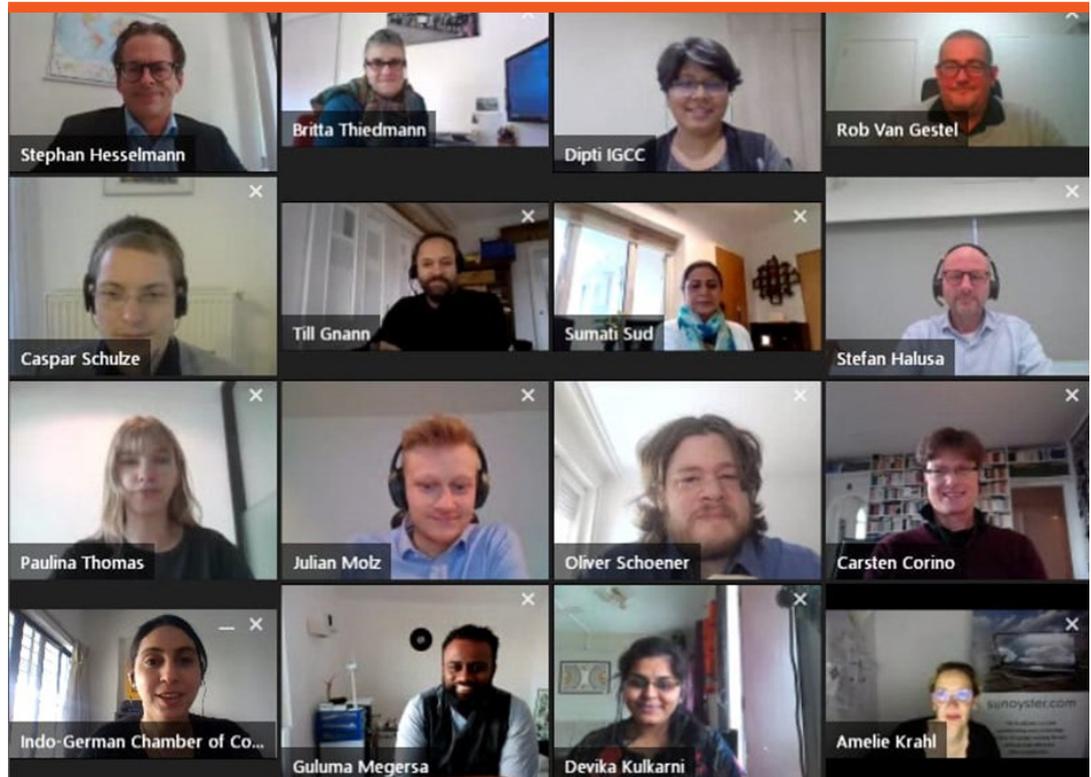
On 6 December, the online event kicked off with a briefing session for the German participants. The briefing session aimed to prepare the German companies for their journey to India by providing overviews of the macroeconomic scenario in India as well as about the renewable energy, e-mobility, charging infrastructure and energy storage sectors. This was complemented by a session on "Intercultural aspects while doing Business in India".

Experts participating in the briefing were Mr. Tobias Winter, Director, Indo-German Energy Forum-SO, Dr. Debi Prasad Dash, Executive Director at the India Energy Storage Alliance (IESA), as well as, Mr. Sumit Sharma, Director, IGCC Bengaluru and Franziska Roettger, IGCC.

Participating in the programme were 5 German companies - SunOyster GmbH (Solar PV and Thermal technology to maximise energy yields from the sun), Solar-Log GmbH (Monitoring Solutions for Solar PV Plants for Smart Energy Management), VENSYS Elektrotechnik GmbH (Innovative Power Conversion and Energy Management System Solution for the energy and mobility transition), TEAM BLAU GmbH (Sustainable energy storage), Enapter GmbH (AEM Electrolysers for Hydrogen Generation).



Participants starting from top left: Dr. Stephan Hesselmann (German Embassy), Britta Thiedmann (Team Blau GmbH), Dipti Kanitkar (IGCC), Rob Van Gestel (Solar-Log GmbH), Caspar Schulze (eclareon GmbH), Till Gnann (Fraunhofer ISI), Sumati Sud (IGCC), Stefan Halusa (IGCC), Paulina Thomas (Enapter GmbH), Julian Molz (Enapter GmbH), Oliver Schoener (Team Blau GmbH), Dr. Carsten Corino (SunOyster Systems GmbH), Monaz Desai (IGCC), Guluma Megersa (Vensys Elektrotechnik GmbH), Devika Kulkarni (IGCC), Amelie Krahl (SunOyster Systems GmbH).



A second day was marked by the Technology Symposium where the 5 German Companies presented their companies and products to the Indian audience. The session started with a welcome address by Dr. Stephan Hesselmann, Economic Minister Counsellor, Embassy of the Federal Republic of Germany and by Stefan Halusa, Director General, IGCC. The technical segment opened with a presentation on the Market Diffusion and Impact on the Energy System in Electric Mobility in Germany by Dr. Till Gnann, Fraunhofer Institute for Systems and Innovation Research ISI. Thereafter the 5 participating German companies presented their solutions and company activities. The event was

attended by 122 participants from India from the energy, e-mobility, infrastructure sectors and manufacturing sectors.

B2B meetings organised on the following 3 days with numerous Indian companies gave the German companies the opportunity to explore the potential in the Indian market. We trust that this will lead to more Indo-German collaborations in the near future and support the goals of both countries towards reducing carbon emissions.

For more information kindly get in touch with Ms. Dipti Kanitkar,  
[dipti.kanitkar\(at\)indo-german.com](mailto:dipti.kanitkar@indo-german.com).

# 3

## Developments in Indo-German Energy Cooperation

### Successful Indo-German Government Negotiations between BMZ and MoF

24 November 2021 | Virtual

On 24 November 2021 the Indo-German Government Negotiations 2021 were concluded with the result of 1.3 billion EUR being committed to climate and sustainable development investments. The development cooperation between both countries thus will continue to contribute substantially to a green energy transition, agro-ecological farming, forest conservation, resilient urban development as well as green urban mobility. Additionally, the successful negotiations set a strong foundation for the envisaged enhanced Climate and SDG collaboration between India and Germany. Both sides agreed to further intensify their engagement in relevant sectors under the framework

of the strategic partnership to be formally finalized during the 6th Indo-German cabinet consultations in 2022. Concrete deliverables of this partnership in the energy sector could be further collaboration on solar power generation and renewable energy production in general as well as in providing support to India in achieving its latest targets for a green energy transition as announced by Hon'ble Prime Minister Modi in Glasgow at the COP26.

For more information please contact the Embassy of Germany in New-Delhi, [wz-1\(at\)newd.auswaertiges-amt.de](mailto:wz-1(at)newd.auswaertiges-amt.de).

Shri. Rajat kumar Mishra, Additional Secretary, Department of Economic Affairs, Ministry of Finance, Gol (Centre) and Smt. Aparna Bhatia, Advisor Bilateral Cooperation, Department of Economic Affairs, Ministry of Finance, Gol participating at the Indo-German Government Negotiations.



Prof. Dr. Claudia Warning, Director General, BMZ and Mr. Philipp Knill, Head of the India and South Asia Division, BMZ.



## NSEFI and BSW-Solar Partnership

The National Solar Energy Federation of India (NSEFI) and the German Solar Association (BSW-Solar) signed an Agreement of Cooperation under the Sequa KVP programme. The “Business Membership Organisation Partnership Programme” (KVP) is implemented by sequa and funded by the German Federal Ministry for Economic Cooperation and Development (BMZ). The program promotes partnerships between German chambers of industry and commerce, sector and business associations in its developing partner countries, to promote its

sustainable economic development. Through this project, NSEFI and BSW-Solar will work for the next three years starting in December 2021, to increase solar rooftop awareness and streamline NSEFI’s policy advocacy efforts. At the same time, facilitate Indo-German collaborations in various Renewable Energy technologies and promote Indo-German solar trade.

For more information please contact Mr. Subrahmanyam Pulipaka, [pulipaka\(at\)nsefi.in](mailto:pulipaka(at)nsefi.in).



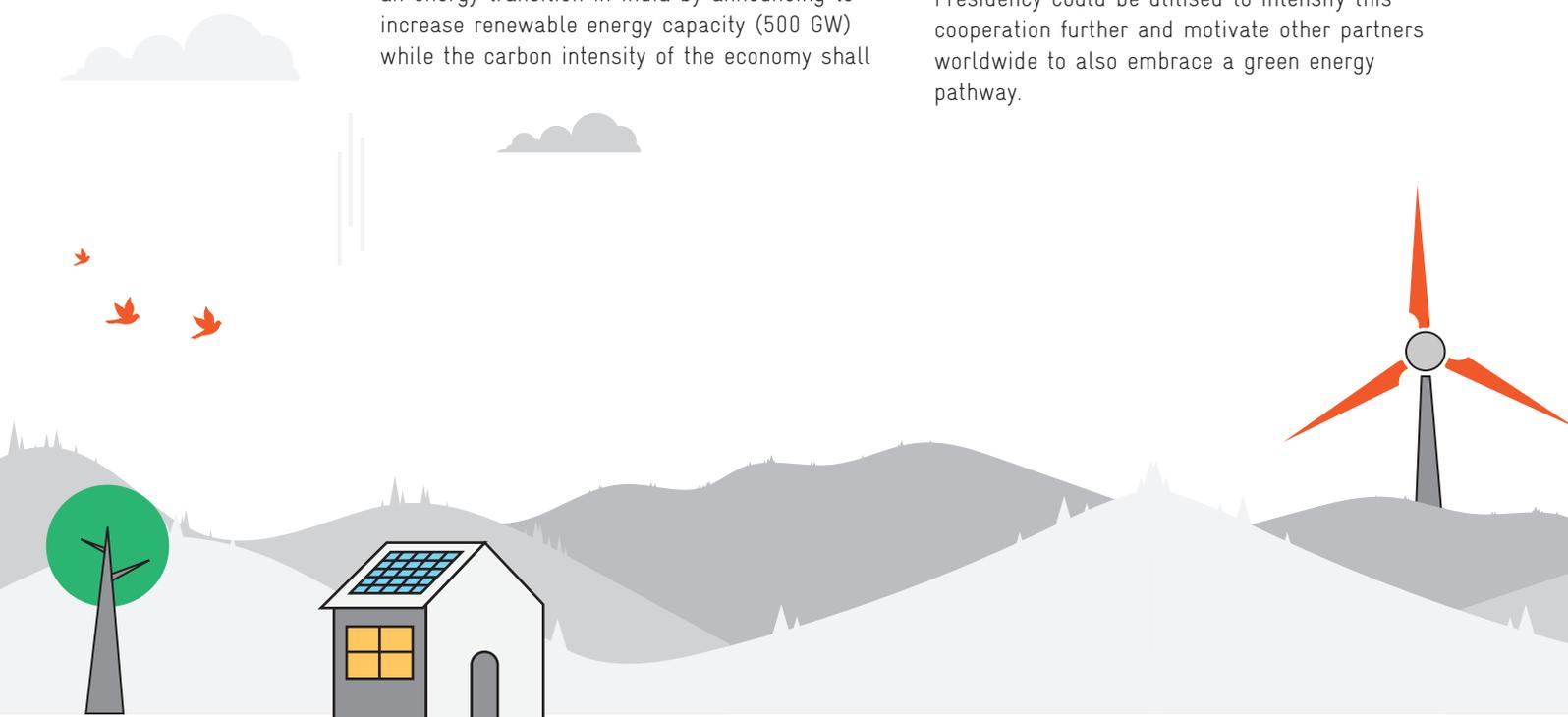
## Outgoing German Federal Minister for Development Cooperation (BMZ) Dr. Gerd Müller Calls for Greater Cooperation Between India & Germany to Address Climate Change and Energy Transition

3 December 2021 | Germany

“Without India, we cannot address climate change at a global scale” (paraphrased Handelsblatt article 3 December 2021; Hindustan Times article 8 December 2021)

The Newspapers Handelsblatt and Hindustan Times published an article in the name of outgoing German Development Cooperation Minister Dr. Gerd Müller, in which he calls for greater cooperation between India and Germany in transforming the energy sector to address global climate change challenges. Dr. Müller highlights the significance of India as a pivotal partner in addressing climate change and achieving sustainable development. Without sufficient energy, this is not possible. However, the current expansion of India’s fossil energy sector, specifically coal, to feed this demand puts climate change targets of the Paris agreement at risk. While Germany and India are together responsible for almost 9% of global CO<sub>2</sub> emissions, both countries have not yet realised the full potential of renewable energy to achieve substantial reductions in emissions. At COP26, PM Modi raised the ambition for an energy transition in India by announcing to increase renewable energy capacity (500 GW) while the carbon intensity of the economy shall

be reduced by 45% until 2030. This shift away from coal must be implemented swiftly if 50% of India’s power is to come from renewable energy by 2030 while guaranteeing universal access to energy. Germany aims to phase out coal latest until 2038. Developed countries such as Germany have a special responsibility to lead the way towards a just energy transition and provide support to partner countries doing the same. At recently held government negotiations, Germany intensified the cooperation with India to fight climate change and foster sustainable development by committing over 1.3 billion EUR. The investments will go into the further roll-out of renewable energy, the development of green corridors and the financing of green mobility solutions. The Indo-German cooperation also opens up new markets and increases private sector engagement in climate and development-related sectors as the recent activities of India’s Reliance New Energy Solar and German Enercon and Bosch Ltd. illustrate. In conclusion, Dr. Müller says that India and Germany are strong partners at a global scale. The German 2022 G7-Presidency as well India’s 2022 G20-Presidency could be utilised to intensify this cooperation further and motivate other partners worldwide to also embrace a green energy pathway.





## Cabinet approves Intra-State Transmission System – Green Energy Corridor Phase-II

6 January 2022 | India

The Cabinet Committee on Economic Affairs, chaired by the Prime Minister, Shri Narendra Modi, today approved the scheme on Green Energy Corridor (GEC) Phase-II for Intra-State Transmission System (InSTS) for addition of approximately 10,750 circuit kilometres (ckm) of transmission lines and approx. 27,500 Mega Volt-Amperes (MVA) transformation capacity of substations. The scheme will facilitate grid integration and power evacuation of approximately 20 GW of Renewable Energy (RE) power projects in seven States namely, Gujarat, Himachal Pradesh, Karnataka, Kerala, Rajasthan, Tamil Nadu and Uttar Pradesh.

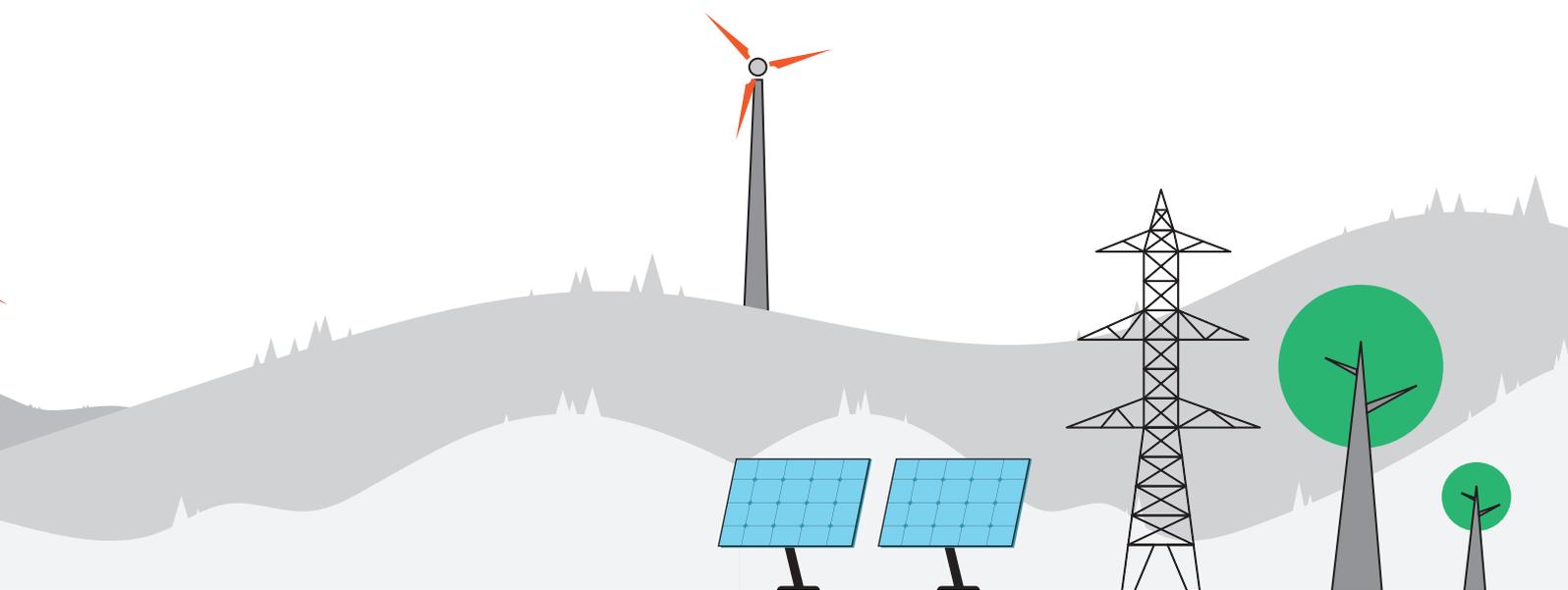
The scheme is targeted to be set up with total estimated cost of Rs. 12,031.33 crore and Central Financial Assistance (CFA) @ 33% of the project cost i.e. Rs. 3970.34 crore. The transmission systems will be created over a period of five year from Financial Year 2021-22 to 2025-26. The Central Financial Assistance (CFA) will help in offsetting the Intra-State transmission charges and thus keep the power costs down. Thus, the Government support will ultimately benefit the end users – the citizens of India.

The scheme will help in achieving the target of 450 GW installed RE capacity by 2030.

The scheme will also contribute to long term energy security of the country and promote ecologically sustainable growth by reducing carbon footprint. It will generate large direct & indirect employment opportunities for both skilled and unskilled personnel in power and other related sectors.

This scheme is in addition to GEC-Phase-I which is already under implementation in the States of Andhra Pradesh, Gujarat, Himachal Pradesh, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan and Tamil Nadu for grid integration and power evacuation of approx. 24 GW of RE power and is expected to be completed by 2022. The scheme is for addition of 9700 ckm of transmission lines and 22600 MVA capacity of substations having an estimated cost of transmission projects of Rs. 10,141.68 crore with Central Financial Assistance (CFA) of Rs. 4056.67 crore.

The source of the information is Press Information Bureau, Gol and it can also be accessed [here](#).



## Stakeholder Workshop on Solar Energy Generation for Dairy Processing

30 November 2021 | Gujarat, India

KfW Development Bank (KfW) in collaboration with National Dairy Development Board (NDDDB) is in preparation for a project "Solar Energy Generation for Dairy Processing in India". The purpose of the project is to increase the use of solar energy in the milk processing chain through investments in Photovoltaic systems and solar thermal applications. As part of project preparation, a one-day stakeholder workshop was conducted on 30th November 2021 in Anand, Gujarat to assess the interest of milk unions to participate in this project. Around 17 milk unions from 11 states participated actively in the workshop.

The Chairman of NDDDB Mr. Meenesh Shah addressed the gathering mentioning the immense potential for solar energy applications in the dairy processing chain, the need for energy security and the focus on climate-friendly

measures which will have a long-term impact. Dr. Martin Lux, Head of Energy team KfW Office New Delhi, gave the introduction speech briefing about KfW development bank and its activities in India.

The workshop majorly focused on the findings of the BMZ-financed feasibility study, along with assessing the views of the participants on the study outcome and its potential. The commissioned consultant (Fichtner) presented the feasibility study followed by NDDDB sharing their experience in implementing solar projects (solar thermal, PV and storage) with the milk unions in terms of suitable technology, business models, challenges and the way forward. Participants' expectations in terms of technology and financials were brainstormed and the next steps were proposed accordingly.

Site visit to Mujkuva  
District Co-operative  
Society near Anand,  
Gujarat.

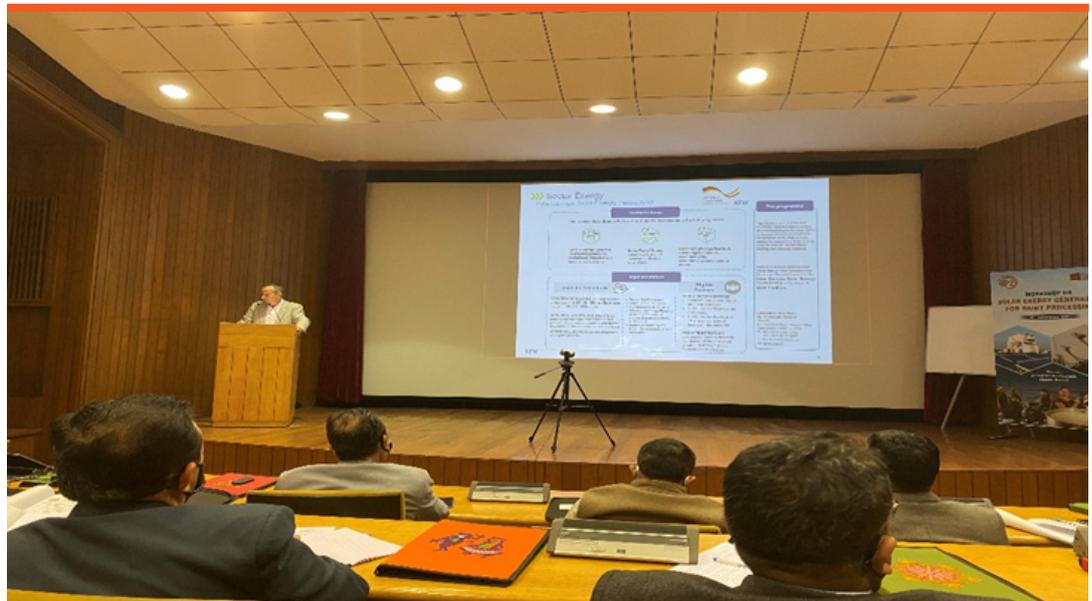


The overall discussion showed that most of the milk unions are interested in solar interventions. As most of the co-operatives work at low-profit margins, price sensitivity is the key for them. Many milk unions showed interest in solar thermal solutions to meet their hot water demand which is otherwise met by conventional sources like diesel or natural gas which is expensive. With the support of NDDB, many milk unions have already installed solar thermal applications like parabolic dish, trough and compound parabolic concentrators (CPC). Based on their experiences, CPC's perform best due

to their simplicity in design and low-irradiation performance, also showing a payback between 4 to 5 years. Solar PV is seen as a reliable source of income to milk unions and high interest in solar-based refrigeration has also been observed.

As a way forward, NDDB is working with both milk unions and the Ministry of Fisheries, Animal husbandry and dairying to bring out innovative approaches in terms of customized solutions and funds to implement this project with the support of BMZ/ KfW.

Introduction speech  
by Dr. Martin Lux,  
Head of Energy team,  
KfW Delhi Office.



## Adoption of Smart Meters in Off-Grid Renewable Energy Sector

2 November 2021 | Virtual

KfW, in collaboration with Indian Renewable Energy Development Agency (IREDA) and PwC India, organised a one-day workshop on “Adoption of Smart Meters in off-grid renewable energy sector” on 2 November 2021. The workshop was organised as part of KfW-IREDA ‘Access to Energy’ (A2E) line of credit which focuses on improving the supply and use of sustainable clean energy services in rural areas through improved access to financing for project developers. Being first of its kind, with incentives, the line has attracted attention from different categories of players such as honed private sector companies, start-ups in the sector, NBFCs, MFIs, etc. for veteran and new technology solutions and services to be implemented in the rural areas.

The workshop was organised for off-grid renewable energy (RE) sector organisations active in India and was attended by over 30 participants. The workshop provided hands-on training to IREDA’s potential and existing sub-borrowers on various opportunities and challenges of smart metering rollout in India including insights on investments, cybersecurity and innovations whilst highlighting the way forward for companies to become smarter in

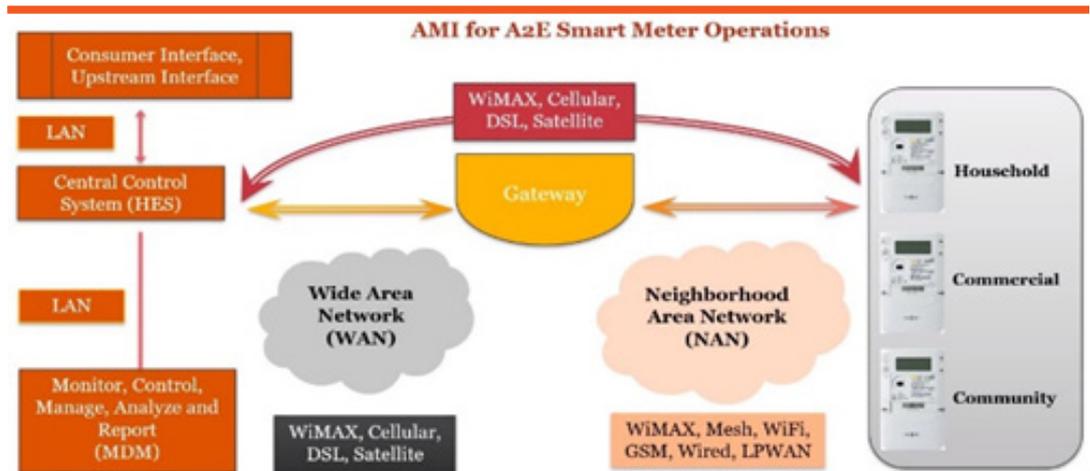
the sector. The workshop was delivered by Dr. Ashok Das, Founder CEO of SunMoksha and Mr. Sreedhar Rao, Head-Business Development at SunMoksha

### Topics covered during the workshop

- ▶ Smart meter compatibility in A2E sector
- ▶ Techniques to integrate smart meters in A2E operations
- ▶ Primary requirements for smart meter deployment
- ▶ Potential benefits of using smart meters
- ▶ Challenges in the rollout of smart meters
- ▶ Managing cybersecurity challenges arising from smart meter adoption
- ▶ Case study analysis

The first session focused on presenting an overview of smart meters and providing an understanding to the audience members around how they are different from conventional meters. The session also focused on developing an understanding of where smart meters fit in the A2E context and what are primary requirements for installing such meters and the associated costs.

Techniques to integrate smart meters in A2E operations



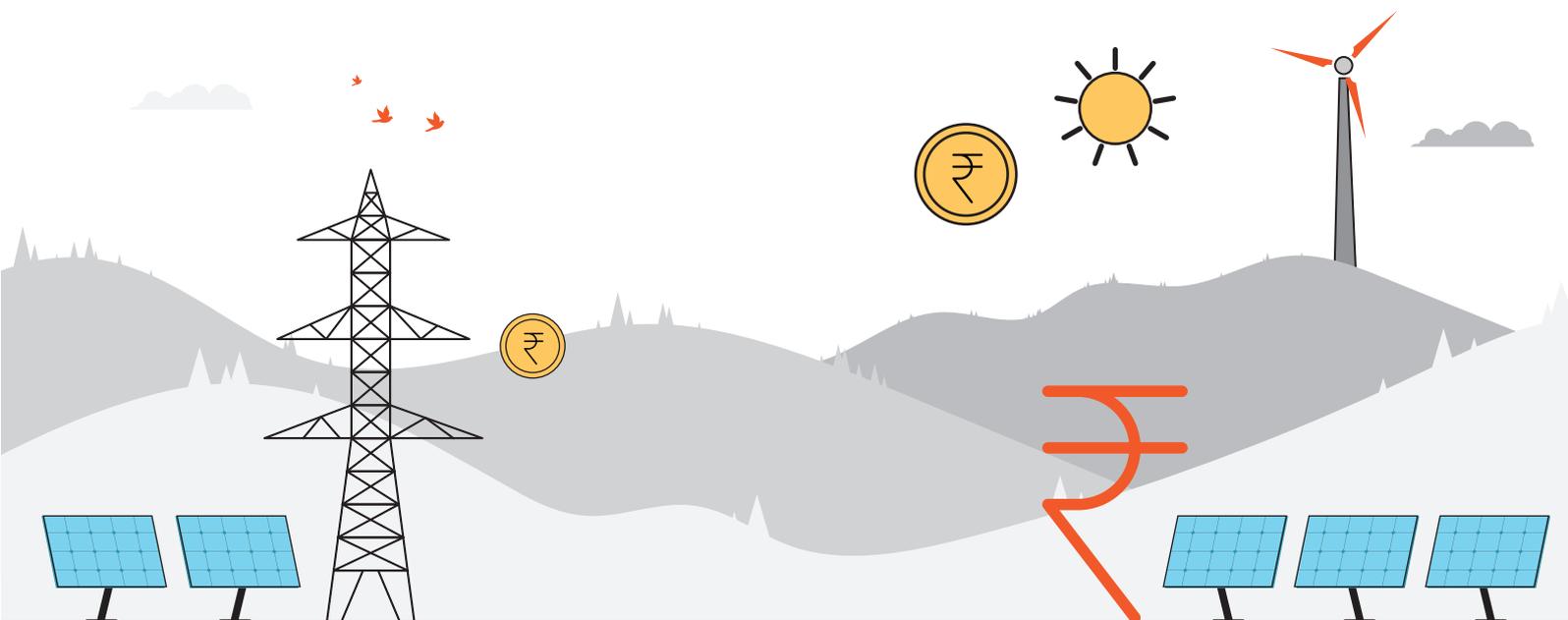
The second session of the workshop focused on the best practices in the successful implementation of smart meters with an analysis of how companies in the A2E sector have done it and what has been the impact. This session also presented the critical challenges associated with the deployment of smart meters and how they can be mitigated. Additionally, the session focused on the key security and data protection challenges that the use of smart meters presents and the related mitigation measures.

A third session was also delivered which focused on presenting a case study analysis of the use of smart meters by Husk Power in India. In the end, a Q&A session was organised to take up the audience's questions.

The key discussion points included:

- ▶ Key institutional mechanisms required to facilitate smart metering in the A2E sector in terms of policy support
- ▶ How smart meters help in reducing operating expenses for a company
- ▶ Checks and balances to be followed to safely implement the installation of smart meters
- ▶ Insights on the acceptance level of consumers around smart meters

For more information please contact Ms. Snekalatha Krishnaraju, [Snekalatha.Krishnaraju\(at\)kfw.de](mailto:Snekalatha.Krishnaraju(at)kfw.de).



## Standalone Photovoltaic Systems Design and Installation Best Practices

8 - 10 November 2021 | Virtual

KfW, in collaboration with Indian Renewable Energy Development Agency (IREDA) and PwC India, organised a 3-day workshop on capacity building workshop on ‘Standalone Photovoltaic Systems Design and Installation Best Practices’ between 8 - 10 November 2021. The workshop was organised as part of KfW-IREDA ‘Access to Energy’ (A2E) line of credit which focuses on improving the supply and use of sustainable clean energy services in rural areas through improved access to financing for project developers. Being first of its kind, with incentives, the line has attracted attention from different categories of players such as honed private sector companies, start-ups in the sector, NBFCs, MFIs, etc. for veteran and new technology solutions and services to be implemented in the rural areas.

The workshop was organised for IREDA’s technical staff and was attended by over 45 participants each day. The workshop provided hands-on training to IREDA’s technical staff on the development phases of off-grid systems, the need for quality management across the value chain of such systems and the guidelines for ensuring the correct design and installation practices and processes for different off-grid technologies. The workshop was delivered by

Mr. Dwipen Boruah, Co-founder and Managing Director, GSES India Sustainable Energy Pvt. Ltd.

### Topics covered during the workshop

- ▶ Solar PV project development phases and quality management
- ▶ Overview of standalone PV systems and design principles
- ▶ Designing PV-DG hybrid mini-grid systems
- ▶ Solar water pumping system design and installation
- ▶ Installation best practices for standalone PV systems
- ▶ Designing of standalone solar-based cold storages
- ▶ Q&A sessions

The workshop was divided into seven sessions. Session 1 of the workshop covered Solar PV project development phases and quality management including reasons for PV system failure and low performance, case study examples, risks associated with solar PV projects and focus areas to mitigate risks and quality management plan.

**Quality Management Plan – Preparation Phase**

- Off-site assessment using software
- On-site assessment visiting the site
- Advantages and limitations

Google earth & GIS

HelioScope

PVsyst

SolarLab

PVSol

Session 2 of the workshop was aimed at presenting an overview of standalone PV systems including components of solar PV off-grid and micro-grid systems, off-grid and hybrid system configurations, PV module technologies, battery storage technology, inverter technology and balance of systems components, etc.

Session 3 focused on providing a general overview of standalone PV systems design including design steps, load characteristics and energy demand assessment, energy efficiency and demand side management, DC bus vs. AC bus system, system sizing approach, sizing and selection of battery bank and inverter and PV array sizing approach.

Session 4 focused on designing PV-DG hybrid mini-grid systems covering design steps, determining system configuration for hybrid systems, system component sizing, sizing and specifying genset for PV-DG hybrid system, system optimization, use of software for system design and optimization, etc.

Session 5 discussed the solar water pumping system design and installation best practices. This session focused on solar water pumping applications, selection of pump based on application and source of water, methods of calculating total dynamic head, designing a solar water pumping system considering specific site conditions, O&M of solar water pumping systems, monitoring of solar water pumping systems, the economy of the water pumping system and levelized cost of water delivery.

Session 6 of the workshop focused on installation best practices for standalone PV systems. This broadly covered tools and equipment required for installation, installation

preparation, installation of PV array mounting structure, installation of PV modules, installation of batteries, installation of solar controller / MPPT, installation of PV and battery inverter, system wiring, installation of service connections and Genset, conducting pre-commissioning tests, commissioning and system documentation.

The last session of the training focused on the design and installation best practices of solar based cold storage with a case study analysis of how companies in the A2E sector have done it and what has been the impact. This session also covered the energy demand assessment for cold storage facilities, PV system sizing and Operation & Maintenance of such cold storage.

Each day, a Q&A session was organised to discuss the audience's questions. The key discussion points included:

- ▶ Software that can be used for PV system designing purposes
- ▶ Standards to be referred in case of module procurement from local manufacturers
- ▶ Best practice around location and placement of system components such as battery, inverter, etc.
- ▶ Sizing of mini-grids in case of heavy load customers
- ▶ Best practice for cleaning the modules to be followed for optimal generation
- ▶ How to address the trade-off between the proper use of insulation versus maintaining the cost economics of the cold storage system

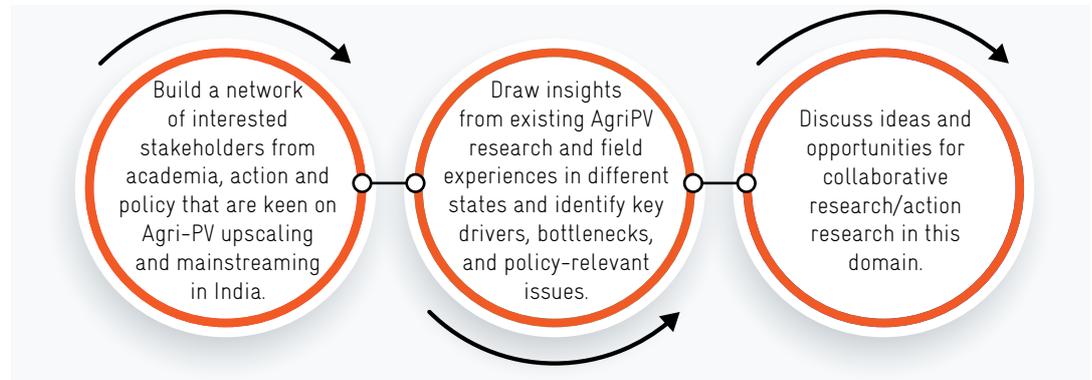
For more information please contact Ms. Snekalatha Krishnaraju, [Snekalatha.Krishnaraju\(at\)kfw.de](mailto:Snekalatha.Krishnaraju(at)kfw.de).

## Mainstreaming AgriPV in India

18 November 2021 | Hybrid

The International Water Management Institute (IWMI) and the Promotion of Solar Water Pumps project from the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH have been collaborating on the solarization of Indian agriculture since 2018-19. The primary focus of this collaborative work has so far been on equitable, effective, and sustainable

expansion of solar irrigation pumps through effective programs and policies. Going forward, IWMI and GIZ are also keen to explore pathways for mainstreaming of smallholder-friendly AgriPV systems in India. In this context, both organisations conducted a brainstorming session and stakeholder consultation that focused on the following objectives:



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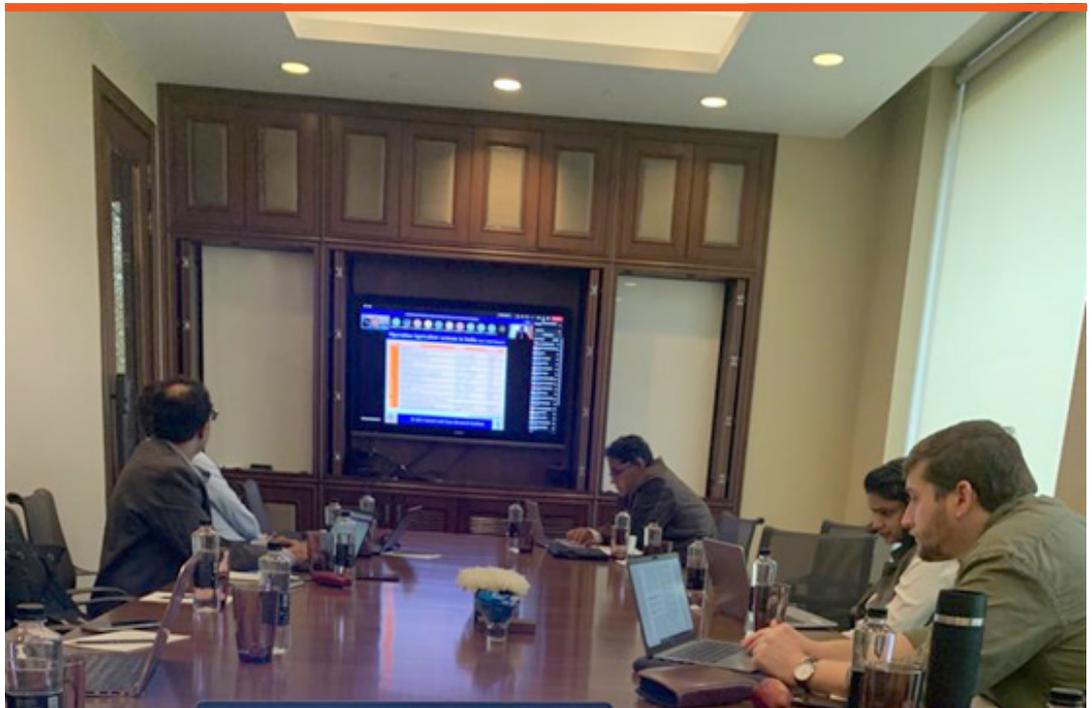
## Developments in Indo-German Energy Cooperation

The event included inputs from different stakeholders and a lively discussion on the challenges as well as the potential of AgriPV systems. Part of the discussion was also the opportunity to promote AgriPV under the current PM-KUSUM scheme which focuses on the solarisation of the Indian agricultural sector.

The event was conducted in 'hybrid mode' with around 30 participants from organisations like ICAR-CAZRI, GERMI, Fraunhofer ISE and SunSeed APV.

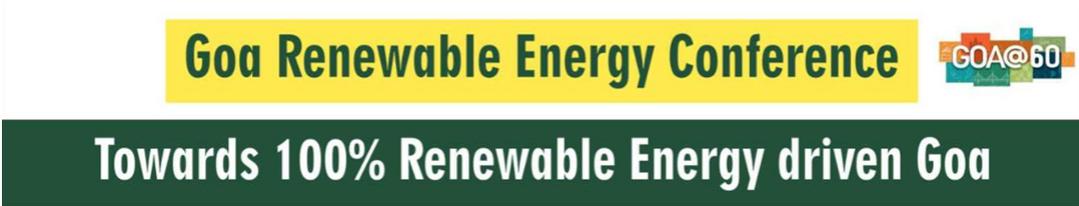
For more information please contact Mr. Florian Postel, [florian.postel\(at\)giz.de](mailto:florian.postel(at)giz.de).

Experts from GIZ India, Fraunhofer IEE, Energynautics GmbH, and dignitaries from Delhi DISCOMs discussing the results and outcomes of the project.



## The Goa Renewable Energy Conference and Exhibition

7 - 8 December 2021 | Goa



### Goa Renewable Energy Conference

## Towards 100% Renewable Energy driven Goa

7th, 8th December 2021  
GCA Ground, Porvorim

**Initiative of**



**In association with**



**Supported by**



Between 7 - 8 December 2021, GEDA with the support of GIZ, organised "The Goa Renewable Energy Conference and Exhibition" in GCA ground, Porvorim, with an objective to help the key stakeholders to

- ▶ Understand the urgency and reason for shifting towards renewable energy sources in Goa.
- ▶ Recognize the need and space to take corrective measures to irradicate the use of non-renewable resources.
- ▶ Deliberate the solutions and recommend the course of individual, policy level and industry level actions for eradicating the use of non-renewable energy sources.

Concluding Address by Shri Nilesh Cabral, Hon'ble Minister of Power, Govt. of Goa, others on dais Smt. Swetika Sachan, Director at Department of Industry, Trade & Commerce; Mr. Sanjeev Joglekar, Member Secretary GEDA; Mr. Alex Costa, Director of Renewable Energy; Dr. Winfried Damm, Head Energy, GIZ India.



Inaugural presentation by Dr. Winfried Damm, Head Energy, GIZ India, others on dais Mr. Sanjeev Joglekar, Member Secretary GEDA; Mr. Raghuvir Keni, Chief Engineer of Electricity Department and Mr. Alex Costa, Director of Renewable Energy.



This conference cum exhibition was part of the joint initiative to make Goa 100% RE state by 2050. The workshop was addressed by Shri Nilesh Cabral, Hon'ble Minister of Power, Govt. of Goa; Dr. Winfried Damm, Head of Indo-German Energy Programme by GIZ India; Mr. Sanjeev Joglekar, Member Secretary, GEDA; Mr. Alex Costa, Director of Renewable Energy and several other Govt. officers, sectoral experts; civil societies and practitioners.

The conference focused its discussion around key sectors namely Power, Transport, Building, Cooking, Fisheries, Agriculture, Tourism and Industry. Around 30 exhibitors displayed their products and services and shared their experiences.

For more information please contact Mr. Manoj Mahata, [manoj.mahata\(at\)giz.de](mailto:manoj.mahata(at)giz.de).

## Kick-off Workshop for Green Urban Mobility Innovation Living Lab

15 November 2021 | Bengaluru, India

In a kick-off event, Bosch India Limited and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH launched a flagship project on Green Urban Mobility Innovation aimed at improving the framework conditions in selected Indian cities for sustainable, inclusive and smart mobility solutions. The initiative is under the aegis of the Green Urban Mobility Partnership (GUMP) between the Ministry of Housing and Urban Affairs (MoHUA) of the Government of India and the German Federal Ministry for Economic Cooperation and Development (BMZ). It is supported by BMZ's funding programme called develoPPP, a facility aimed at supporting companies' sustainability initiatives in developing and emerging countries. The challenges Indian cities are facing because of rapid urbanisation and the changing mobility patterns that contribute to congestion and consequently increased carbon emissions and climate change form the background of the initiative.

The collaboration between Bosch and GIZ seeks to enhance the green urban mobility and transportation system in India by creating an industry-led, pre-competitive multi-stakeholder platform for innovation, collaboration and prototyping, bringing public and private stakeholders together under the roof of a 'Living Lab' (LL). It would serve as a real-life testing environment for green urban mobility innovations set-up in Bengaluru. By providing an open innovation ecosystem around green urban mobility for public and private stakeholders, it is envisioned to contribute to an improved innovation enabling environment and framework conditions for Green Urban Mobility Innovation that has benefits for all citizens, including the vulnerable and poor groups of society. One special characteristic of the Living Lab is that it would enable the co-creation of innovations with all the stakeholders including citizens.

Consul General  
Achim Burkart  
provides the  
presidential  
address in the  
Kick-off workshop  
of the Green Urban  
Mobility Innovation  
Living Lab project.



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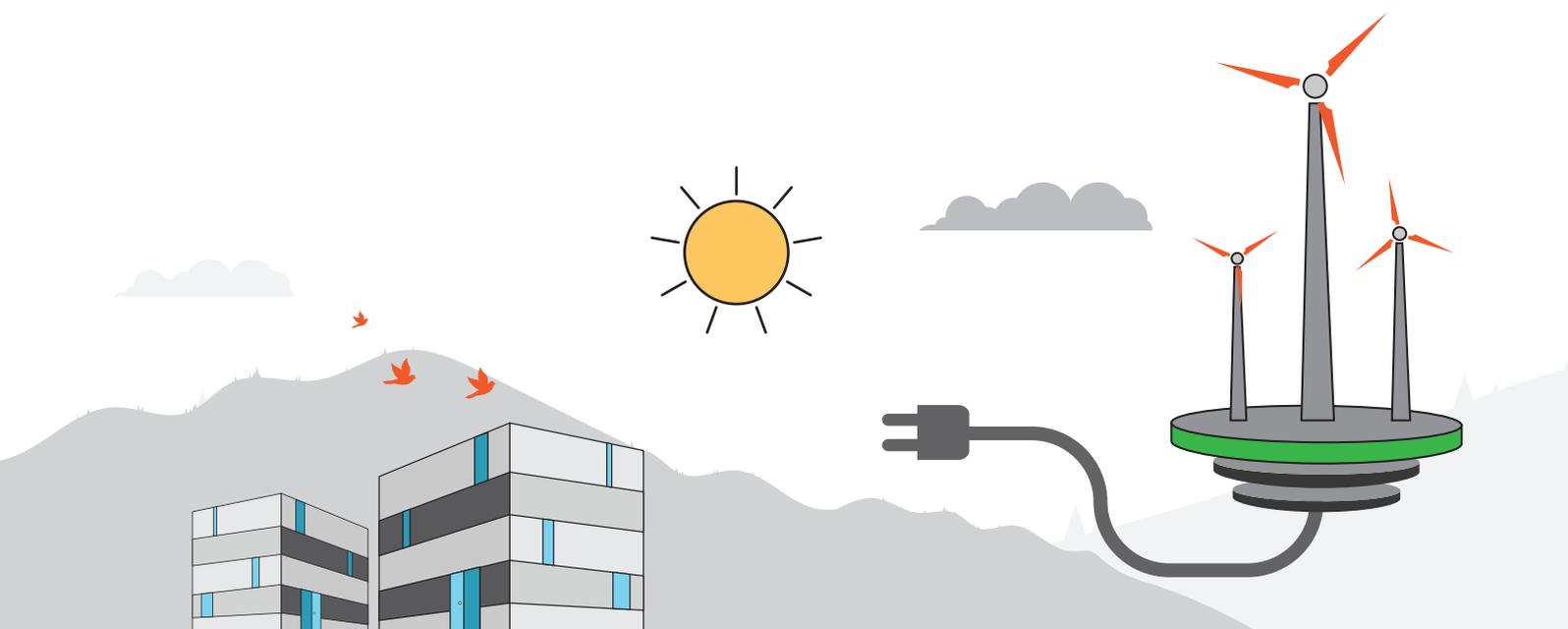
## Developments in Indo- German Energy Cooperation

Mr. Achim Burkart, Consul General, Consulate of Germany, Bengaluru, encouraged the Living Lab to work on measures that would lead to lesser congestion, pollution and mobility solutions that would be environmentally friendly.

Mr. Dirk Steffens-enn, Deputy Head of Economic Cooperation and Development Division, German Embassy, New Delhi highlighted the project's potential to cater to the fulfilment of sustainable development goals enshrined in the charter of the UN.

Ms. Manjula V, Commissioner, Directorate of Urban and Land Transport, Government of Karnataka encouraged the collaboration of the LL project with the Center for Research and Innovation at DULT. She urged the project to focus on regulatory framework, guidelines, capacity building across various relevant stakeholders.

For more information please contact Mr. Jürgen Baumann, [juergen.baumann\(at\)giz.de](mailto:juergen.baumann@giz.de).



## Sustainable Energy and Energy Efficient Interventions for Strengthening Health Centres in North Karnataka

8 December 2021 | Karnataka, India

As part of the develoPPP.de initiative, IGEN ACCESS-II Program in partnership with SELCO Solar (field implementation organisation) is implementing a project with a focus on addressing the COVID-19 crisis in the North Karnataka region. The project focuses on better health care services by improving the institutional infrastructure facilities mainly through access to reliable power and medical equipment.

The focus has been placed on 36 rural community health centres across 13 districts of north Karnataka. These centres are equipped with clean energy systems and improved health care appliances. The basic criteria in selecting the health facility are whether the facility mainly caters to challenging terrains, helps serve largely migrant communities. In addition, available data of daily footfalls, electricity availability was considered in the selection of facilities. The energy health audit was conducted to understand the energy gap scenario of individual health care services. Solar systems have been installed in the selected primary health care centres as part of the project with a capacity of 3.6 KWp – 4 numbers; 5.4KWp – 29 numbers and 7.5 KWp in 3 numbers. In addition, different medical equipments identified as part

of the audit have also been installed in these centers.

On average, each health centre serves at least 150-200 patients per day who usually are visiting from across seven villages present in and around the health centre. With the completion of installation and training of health centre staff, the solar-powered health centre with new medical equipment was handed over to the community by the GIZ team in presence of government representatives, health officials and the SELCO team.

The district collector and district health authorities have expressed interest to scale up the project mainly by leveraging government health funds in the coming years.

In addition, the project has also increased the individual capacities of 2500 women Self Help Group (SHG) members on COVID-19 safeguard measures, treatment protocols, steps to protect themselves, and prevent community transmission across 13 districts of North Karnataka.

For more information please contact  
Mr. Yeswanth Duraiswamy,  
[yeswanth.duraiswamy\(at\)giz.de](mailto:yeswanth.duraiswamy(at)giz.de).

Handing Over of  
Solarised Health  
Centre Certificate  
to Medical Staff by  
Dr. Winfried Damm,  
Head Energy, GIZ  
India.





## Sustainable Implementation of PM-KUSUM and Solar Irrigation in India

16 December 2021 | Virtual

This webinar, corresponding with the launch of the “Guidebook for State Policy-Makers on Maximizing the Social and Environmental Benefits from Solar Pump Schemes”, provided participants with a first look at the guidebook’s findings, presenting key takeaways and recommendations. This guidebook has been developed in cooperation with the Ministry for New and Renewable Energy (MNRE) and is dedicated to supporting state policy-makers and agencies in India in the sustainable implementation of solar irrigation, considering both social and environmental sustainability. First, on social outcomes, how can schemes maximize benefits for low-income farmers? Second, on the environment front, how can schemes minimise risks of over-withdrawal of groundwater?

Through a panel discussion with a diverse range of experts on the topic of a water-energy-food

nexus approach for maximizing the potential of the PM-KUSUM scheme in India, participants were encouraged to engage with the research and provide inputs for further strengthening the implementation of solar irrigation schemes at the state and regional levels.

The webinar and related guidebook were developed by the International Institute for Sustainable Development (IISD) and research partners, The Energy and Resources Institute (TERI), the Council on Energy, Environment and Water (CEEW), and the Initiative for Sustainable Energy Policy (ISEP) as part of the Promotion of Solar Water Pumps project supported by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. More than 50 persons participated in the virtual launch event.

Please find the guidebook [here](#). For more information please contact Mr. Florian Postel, [florian.postel\(at\)giz.de](mailto:florian.postel(at)giz.de).

Thursday, December 16  
3:30 p.m. New Delhi / 11 a.m. Geneva

**WEBINAR**

**Sustainable Implementation  
of PM-KUSUM and Solar  
Irrigation in India**



## A Critical Review - Smart Charging Strategies and Technologies for Electric Vehicles

30 November 2021 | Virtual

GIZ India, in cooperation with NITI Aayog, the Government of India and Tata Power has released the first report titled, A Critical Review: Smart Charging Strategies and Technologies for Electric Vehicles (EVs), under an ongoing study – “Simulation-based study to evaluate the effects of E-mobility smart charging strategies”. The report focuses on concepts of smart charging, a review of various smart charging strategies and approaches for EVs, smart charging technologies, and related commercially available smart charging products. The report also focuses on the gaps in Indian regulation policies for the smart charging perspective.

The report is a part of “The Nationally Determined Contribution-Transport Initiative for Asia (NDC-TIA)” programme, funded under the International Climate Initiative (ICI) by the German Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (BMUV), and comprising of seven organisations with project partner countries including India, China, and VietNam. The study is carried out by a consortium led by Fraunhofer Institute for Energy Economics and Energy System Technology IEE, Kassel, Germany, and supported by the Indian Institute of

Technology Bombay in India (IITB), Universidad Pontificia Comillas (IIT Comillas) in Madrid, Spain, and Technical University Denmark (DTU) in Copenhagen, Denmark.

The virtual event had participation from Dr. Steffen Koch, Minister – Head of the Department for Economic & Global Affairs Embassy of the Federal Republic of Germany, where he highlighted the cooperation between Germany and India through various green initiatives. Mr. Sudhendhu Jyoti Sinha, Advisor, Infrastructure Connectivity & Electric Mobility vertical, NITI Aayog, released the report along with a keynote address. Dr. Praveer Sinha, CEO & MD, Tata Power, mentioned Tata Power’s plans to continue to focus on innovation and a collaborative approach to E-mobility in the country. The technical session of the event had presentations from expert organisations including Fraunhofer IEE, IITB, IIT Comillas, and DTU.

The report and the contents of the webinar are available [here](#).

For more information please contact Ms. Shweta Kalia, [shweta.kalia\(at\)giz.de](mailto:shweta.kalia(at)giz.de) and Ms. Sahana L, [sahana.l\(at\)giz.de](mailto:sahana.l(at)giz.de).

E Launch of Report on Smart Charging Strategies and Technologies for Electric Vehicles

**Release of the Report: A critical review – Smart Charging Strategies and Technologies for Electric Vehicles**  
November 30, 2021

*This report sets the main context for the core objective of the overall study, which is to identify relevant smart charging and coordination strategies, appropriate policy and regulatory interventions, and way forward for seamless adoption of smart charging in Indian EV ecosystem.*

**NDC TRANSPORT INITIATIVE FOR ASIA**

#wechangetransport

**A CRITICAL REVIEW  
SMART CHARGING STRATEGIES  
AND TECHNOLOGIES FOR  
ELECTRIC VEHICLES**

Simulation-based study to evaluate the effects of E-mobility smart charging strategies

led by Fraunhofer Institute for Energy Economics and Energy System Technology IEE, Kassel

Fraunhofer IEE, COMILLAS, DTU, giz, IITB, IIT Comillas, icct, International Transport Forum, IEE, NITI Aayog, REN21



## Innovative Renewable Energy Solutions for The Apple Value Chain in Himachal Pradesh – Inaugural Event

15 - 16 November 2021 | Himachal Pradesh, India

On 15 November 2021, the Global programme “Green Innovation Centres for the Agriculture and Food Sector – India” (GIC) officially launched two renewable energy solutions for the apple value chain in Himachal Pradesh – the solar power cold storage facility and a hydropower water pump. Following one day of the official inauguration, a field visit to the sites where technologies have been installed was organised.

The event was particularly important for private sector partners, the project is collaborating with aQysta, CoolCrop and Chuwara Valley Association, a Farmer organisation promoted by the GIC, public partners such as the Department of Horticulture of Himachal Pradesh, Dr. Y. S. Parmar University Horticulture & Forestry, Nauni, and Himurja. The Barsha pump, a waterwheel-based hydro-powered water pump uses the flow of a river to pump up water and thus does not need any other external sources of energy. It is extremely versatile and requires only minimal maintenance due to the lack of moving parts or electrical components. A floating version of this pump has been installed in the Pabbar river yet,

other sites are in Gumma, Devi Dhar, and Seema. Also, the innovative solar powered cold storage technology by CoolCrop was a focus point during the event. This renewable energy solution is highly beneficial for storing produce. Therefore, it increases the longevity and shelf life of fruits. As such, it allows farmers to sustain their crops during the post-harvest period and obtain the best possible price. Generally, farmers as the main beneficiaries of GIC’s renewable energy solutions are expected to be able to further extend their services through the introduced technologies. Concluding the event, the importance of renewable energy solutions for a cleaner national footprint was acknowledged by all stakeholders.

The programme’s interventions in the apple value chain also include innovations such as solar power dryers, solar powered animal deterrents, solar sprayers and solar fermenters.

For more information please contact Mr. Sashi Kumar, [sashi.kumar\(at\)giz.de](mailto:sashi.kumar(at)giz.de).

The Barsha pump  
- a sustainable  
irrigation system  
for apple orchards.  
©GIZ/Sashi Kumar



## Announcement of Study on “Power Market Reforms to Enable Renewable Energy (RE) Based Electric Vehicle (EV) Charging in India”

17 November 2021 | Virtual

There is a growing need to source green power for EVs given that currently, the majority of power generated in India is from thermal power plants. EV charging has the potential to mitigate curtailment and facilitate grid integration of RE power. Therefore, it is pertinent to understand the challenges and opportunities in the existing policy, regulatory, and technological landscape in India for EV charging to complement RE power generation and thereby enable efficient grid management.

In this light, GIZ India has initiated a study ‘Power market Reforms to enable Renewable Energy (RE) based Electric Vehicle (EV) Charging in India’ which aims to provide recommendations to facilitate policy and regulatory support in the Indian power system, power market and trading to access the use of renewable energy for fueling EVs in India. It also aims to quantify the benefit of energy security, electrical grid, and climate with the use of electric vehicles by modelling the emissions and carbon footprint and thereby measuring the contribution of EVs to achieve India’s NDCs. The study would also

review the international best practices for integrating RE for EV charging and document recommendations for policy makers and implementation agencies to enable RE based EV charging in India.

The study on Power market Reforms to enable Renewable Energy (RE) based Electric Vehicle (EV) Charging in India was started on 17 November 2021 and would be carried out under the India component of the Nationally Determined Contribution-Transport Initiative for Asia (NDC-TIA) project, over 18 months. On behalf of the German Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (BMUV), the NDC-TIA is a joint project of seven organisations with the engagement of China, India, and Vietnam. This study is carried out by a consortium comprising Deloitte Touche Tohmatsu India LLP, Indian Institute of Technology Bombay (IITB) and The Celestial Earth.

For more information please contact  
Ms. Sahana L, [sahana.l\(at\)giz.de](mailto:sahana.l(at)giz.de).

Key objectives  
of the study on  
RE-based EV  
charging in India.

### Power market Reforms to enable Renewable Energy (RE) based Electric Vehicle (EV) Charging in India

**Objectives of the Study**

- Review **international best practices**
- Undertake **simulations-based modelling** to estimate reduction in vehicular and GHG emissions
- Understand the **integration challenges**
- Undertake **feasibility analysis**
- Document **recommendations** for policy makers

**Key Questions to be Answered**

- What are the **requirements and amendments necessary** in policy & regulations?
- What are the **international best practices** ?
- How to **design a power market** to enable RE based EV charging?
- How to **enhance the feasibility** of RE based EV charging in India?

Enable solar or wind generation / rooftop solar

Charging from utility power

Rooftop panels embedded on EVs

Key Outcome from this study

Guiding documents for the policymakers, stakeholders, and industry professionals to undertake measures and initiatives to enable RE based EV charging in India.

Started on  
17 Nov 2021

NDC TRANSPORT INITIATIVE FOR ASIA

Funded by the International Climate Initiative (IKI) of the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety.

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

On behalf of:  
Federal Ministry for the Environment, Nature Conservation and Nuclear Safety  
of the Federal Republic of Germany

## Announcement of Vehicle-to-everything (V2X) Study

19 November 2021 | Virtual

Presently in India, the focus is on unidirectional charging and the next step would be towards smart charging, followed by bidirectional charging. Vehicle-to-everything (V2X) is the technology that enables an onboard EV battery to discharge energy back to the grid, home, building or any other type of load. The V2X technology is in the nascent stages in international countries as pilots and demonstration projects. Some academic institutions are undertaking projects on V2X concepts and researching this topic. Before the implementation of V2X, it is important to understand the technology and its economic feasibility.

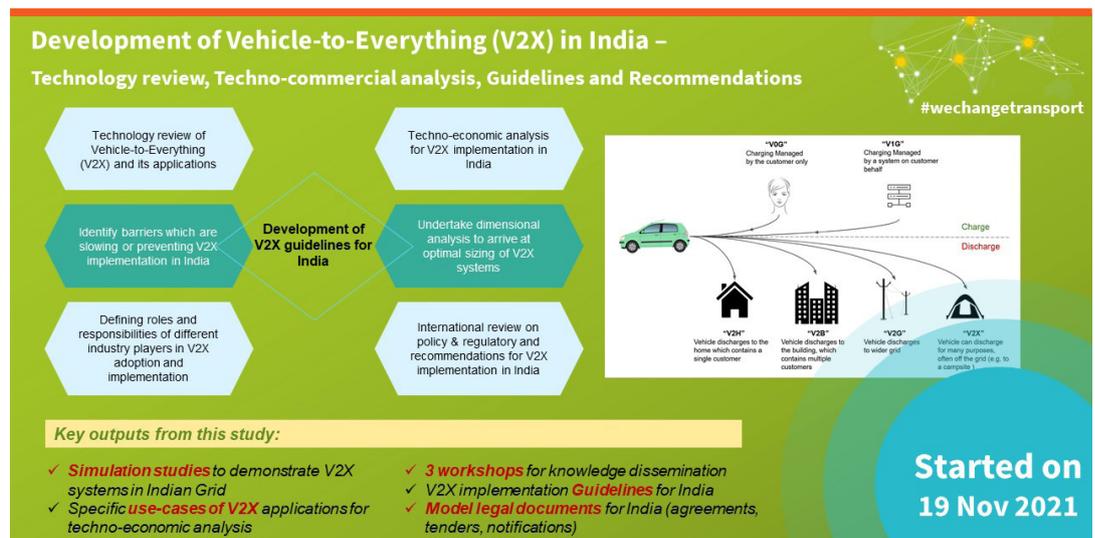
In this light, GIZ India has initiated a study 'Development of Vehicle-to-Everything (V2X) in India – Technology review, Techno-commercial analysis, Guidelines and Recommendations' which aims to understand the prospect of V2X in India. This study would focus on a detailed review of the V2X technology and its applications, techno-economic analysis, and recommendations to facilitate V2X implementation in India. Identification and

assessment of gaps and requirements in India in technical, policy and regulatory areas would be included. The key outcome of this study is to develop 'V2X Implementation Guidelines for India'.

The V2X study was started on 19 November 2021 and it would be carried out under the India component of the Nationally Determined Contribution-Transport Initiative for Asia (NDC-TIA) project, for over 8 months. On behalf of the German Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (BMUV), the NDC-TIA is a joint project of seven organisations with the engagement of China, India, and Vietnam. This V2X study is carried out by a consortium comprising Deloitte Touche Tohmatsu India LLP and Indian Institute of Technology Bombay in India (IITB), with the support of international experts from Next Dimension, Cardiff University and Technical University of Denmark (DTU), Denmark.

For more information please contact  
Ms. Sahana L, [sahana.l\(at\)giz.de](mailto:sahana.l(at)giz.de).

Key  
objectives of  
V2X study in  
India.



## National Workshop on Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyan

8 - 10 December 2021 | Vadodara

Ministry of New and Renewable Energy (MNRE), Govt of India conducted a three-day national workshop on Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyan (PM-KUSUM) at Gujarat Energy Training and Research Institute (GETRI), Vadodara, Gujarat from 8th to 10th December 2021. The objective of the workshop was to provide hands-on training to State Implementing Agency (SIA) officials on various aspects of the development and operation of the State level portal SEDM portal for monitoring the implementation of KUSUM scheme which are being developed by Harikrupa Automation Private Limited (HKAPL) with support from GIZ and to create a platform for knowledge sharing among all the participants, including from the states which are planning to participate in the KUSUM scheme. Representatives from Uttar Pradesh, Jammu & Kashmir, Gujarat, Maharashtra, Rajasthan, Meghalaya, Assam, Madhya Pradesh, Kerala, Telangana & Tripura have participated in the workshop and shared their experiences.

The workshop was opened with keynote addresses by Mr. Narendra Nath Veluri (IFS), CEO-ANERT, Kerala. Mr. Shobhit Srivastava, Scientist-D, MNRE delivered the inaugural address and explained the benefits of IoT based IT & OT Technologies in solving many challenges by implementing innovative solutions.

### Key Discussion Points

1. Virtual Feeder Segregation
2. Remote Monitoring System for KUSUM Components

3. SEDM SCADA Software Platform for KUSUM Components
4. SEDM Business Processes for KUSUM Components
5. Implementation Strategy of SEDM Platform
6. Solarization of Agriculture Pump sets

HKAPL demonstrated the common mobile app being developed under PM-KUSUM scheme for SIAs, Vendors & Farmers. The complete demonstration of SEDM Platform was also arranged along with hands-on session for a better understanding of the platform. A presentation was made by Mr. R J. Vala about various initiatives undertaken by GUVNL in Gujarat for the Solar Rooftop scheme, as well as, under the PM KUSUM scheme.

The decision support tool for solar pump site selection and solar irrigation pump sizing tool which are developed with support from GIZ were also presented to the participants by representatives of CEEW and IWMI respectively.

The workshop was concluded with a site visit to MGVC DISCOM's Laljipura feeder which was solarized under SKY Scheme. MGVC officials explained the implementation process along with the Metering console system for Solar consumers and WDD systems for Non-Solar consumers of Laljipura feeder.

For more information please contact Mr. Prasun Kumar Das, [prasun.das\(at\)giz.de](mailto:prasun.das(at)giz.de).

Inaugural  
session of  
national  
workshop on  
PM-KUSUM.



## Stakeholder Consultations on Energy Efficiency

### December 2021| Jaipur, Kashipur, Raipur, Muzaffarnagar & Ludhiana

The programme “Energy Efficiency in Industry & Data” launched a baseline energy audit and benchmarking study for non-PAT (Perform, Achieve & Trade) secondary steel and pulp & paper sector in India, which will develop baseline energy/resource consumption figures, establish process benchmarks and project various scenarios of the non-PAT secondary steel and pulp & paper sector for decision/ policy makers.

Under this study, several initiatives are being carried out for the non-PAT secondary steel and pulp & paper sector which directly and indirectly benefit industry stakeholders:

- Awareness creation workshops/webinars in the cluster
- Detailed Energy Studies completed in 300 secondary steel plants and around 90 pulp and paper plants
- Analyse core process benchmarks and identify Energy Efficiency technologies relevant to the cluster
- Development of projections for energy and water saving potentials

#### Mr. Anand Mohan Ghosh, Senior Professional, TERI.



To initiate dialogues on Energy Efficiency with Industry associations/ units, Stakeholder Consultations were organised in Jaipur, Kashipur, Raipur, Muzaffarnagar & Ludhiana in December 2021.

The main objective of these consultations was to disseminate information about energy efficiency & project details to industry associations & units. This also helped the project to understand cluster level needs and challenges in adopting energy efficiency (EE) measures.

More than 150 members from different sector stakeholders, including entrepreneurs and senior professionals, participated in these consultations.

Roundtable discussions were carried out with the stakeholders on barriers to Energy Efficiency adoption and potential solutions. Discussions focussed on the technical, financial, regulatory, and capacity building needs of the units.

For more information please contact Mr. Nitin Jain, [nitin.jain\(at\)giz.de](mailto:nitin.jain@giz.de) and Ms. Priyanka Chandra, [priyanka.chandra\(at\)giz.de](mailto:priyanka.chandra@giz.de).

#### Discussions with industry members.



#### Members from Industry Associations/Units



## GIZ Installs PV Port Systems in Swaminarayan Akshardham Mandir, Gandhinagar

17 January 2022 | Gandhinagar, Gujarat

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH under the project “Integration of Renewable Energies in the Indian Electricity System (I-RE)” commissioned by the German Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (BMUV) has recently installed 10 PV Port systems in Swaminarayan Akshardham Temple, Gandhinagar.

A PV Port system is a standard plug-n-play photovoltaic system designed by GIZ having a system size of a minimum of 2 kWp with or without battery storage. These lighthouse systems have been installed under the initiative by the Ministry of New and Renewable Energy (MNRE, Govt of India), for developing RE cities across India. GIZ under the first phase aims to transform the city of Gandhinagar into a 100% RE City and under one of the planned activities will deploy 40 such PV port systems across prominent public places in Gandhinagar.

Through such systems, GIZ aims to demonstrate the features of the plug-and-play system and

raise awareness amongst the public which would eventually assist in the upscaling and commercialization of such systems. By utilizing the AC sockets provided, the public can charge mobile phones, laptops, small EVs, and other small equipment. Any additional power generated will be fed to the local loads. These 10 PV Port systems installed in the spiritual and cultural campus will complement the existing 200 kWp solar system installed and the efforts of the Bochasanwasi Shri Akshar Purushottam Swaminarayan Sanstha (BAPS) to effectively replace the conventional polluting fuels.

The Bochasanwasi Shri Akshar Purushottam Swaminarayan Sanstha (BAPS) also commonly known as BAPS Swaminarayan Sanstha is a registered and reputed Charitable Trust in India, and an NGO in Consultative Status with the EcoSoC of the United Nations.

For more information on the project, please contact Mr. Joerg Gaebler, Principal Advisor, [joerg.gaebler\(at\)giz.de](mailto:joerg.gaebler(at)giz.de).

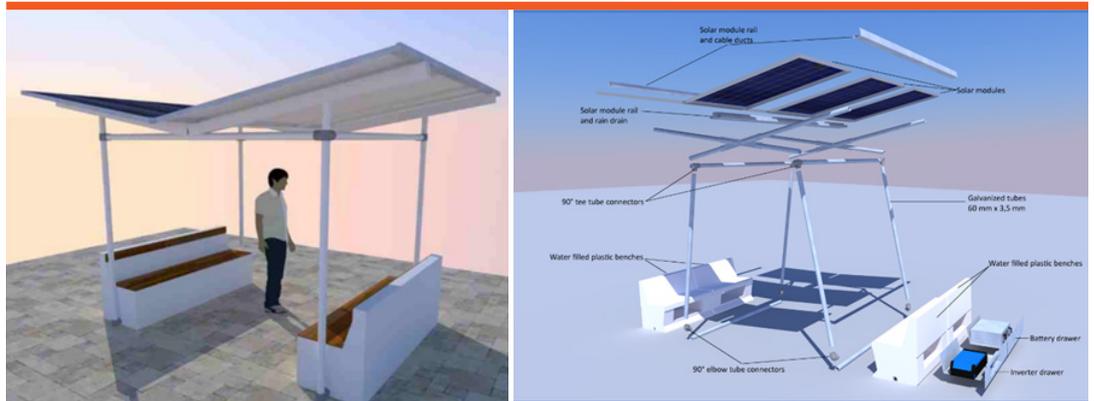
Swaminarayan  
Akshardham  
Mandir,  
Gandhinagar.  
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Sanstha



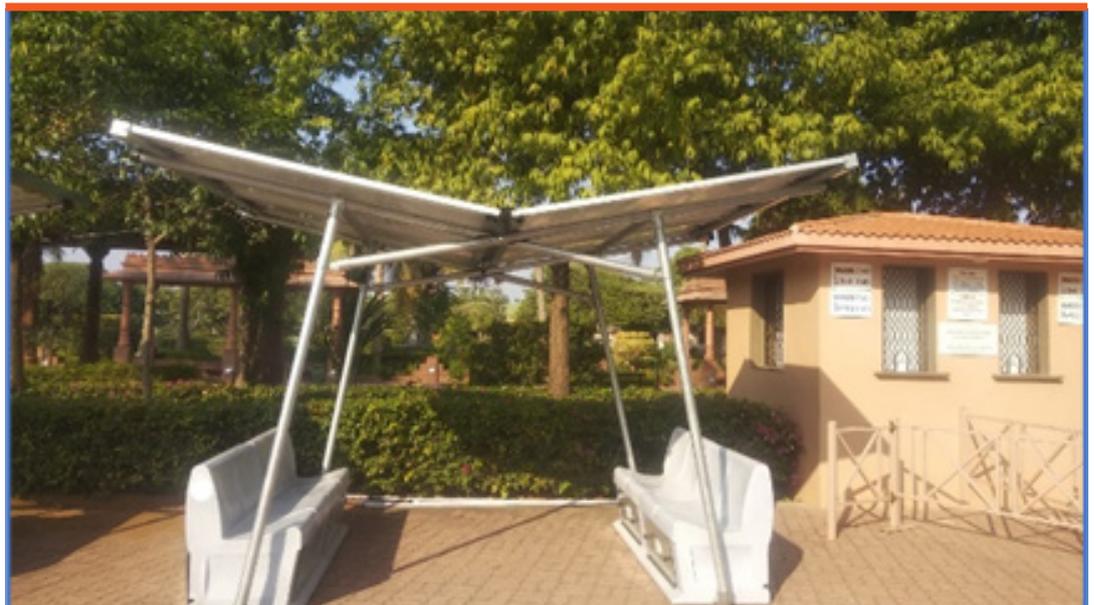
# 3

## Developments in Indo- German Energy Cooperation

PV Port  
System  
designed by  
GIZ.



PV Port Systems  
installed in  
Swaminarayan  
Akshardham  
Mandir,  
Gandhinagar,  
Gujarat.



# 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



The risks of climate change are the strongest negative externalities that affect India and other countries”, the Union Minister said while addressing the Parliament during the presentation of the Union Budget 2022-23.

*Source: PIB*

### Quote of the Month from Germany



**Dr. Robert Habeck,**  
Federal Minister for Economic  
Affairs and Climate Action, Govt. of  
Germany



We expect up to 200 Gigawatts of additional photovoltaic capacity to be installed on agricultural land (in Germany)”

*Source: BMWK*

# Energy Transition News

## What is H2 Global?

Green hydrogen has a key role to play in the energy transition. Read on to find out what can be done to add momentum to global innovations and investments in this forward-looking technology:

© BMWK



### This is what it's all about: the green game changer for the energy transition

Germany's future energy supply is to be organised on the basis of renewables. **Green hydrogen** will play a key role in this. It can be produced from renewables and is extremely versatile. This makes it possible to reduce CO<sub>2</sub> emissions, especially in areas where energy efficiency and direct use of renewables cannot have a sufficient effect or are not possible at

all – e.g. in the transport and industrial sectors. Carbon-free hydrogen can also be used to produce synthetic fuels designed to replace diesel for heavy-duty vehicles and shipping, and eKerosene for aviation. In other words, hydrogen can act as a link between the power, heat, and transport sectors (sector coupling).

### Making further progress on international market ramp-up for green hydrogen

To facilitate the start of the green hydrogen industry and its international market ramp-up, the H2Global Foundation was established in

June 2021. The Federal Government is providing a total of €900 million for this project.

### Double-auctions model for reliable planning and viable prices

H2Global is underpinned by the notion of the 'double-auctions model'. The idea behind this is to bridge the difference between the (high) prices at which hydrogen is currently being traded on the global market and the (lower) prices at which it can be sold and be used in economically viable ways at the regional level.

This is how it works: An international auction for the purchase of green hydrogen or its derivatives is held on behalf of a subsidiary of the H2Global Foundation. The best offer wins and gets a long-term contract. This means that suppliers have the certainty they need to plan on, which encourages them to invest more in their hydrogen production. At the same time, they are subject to the condition that they must

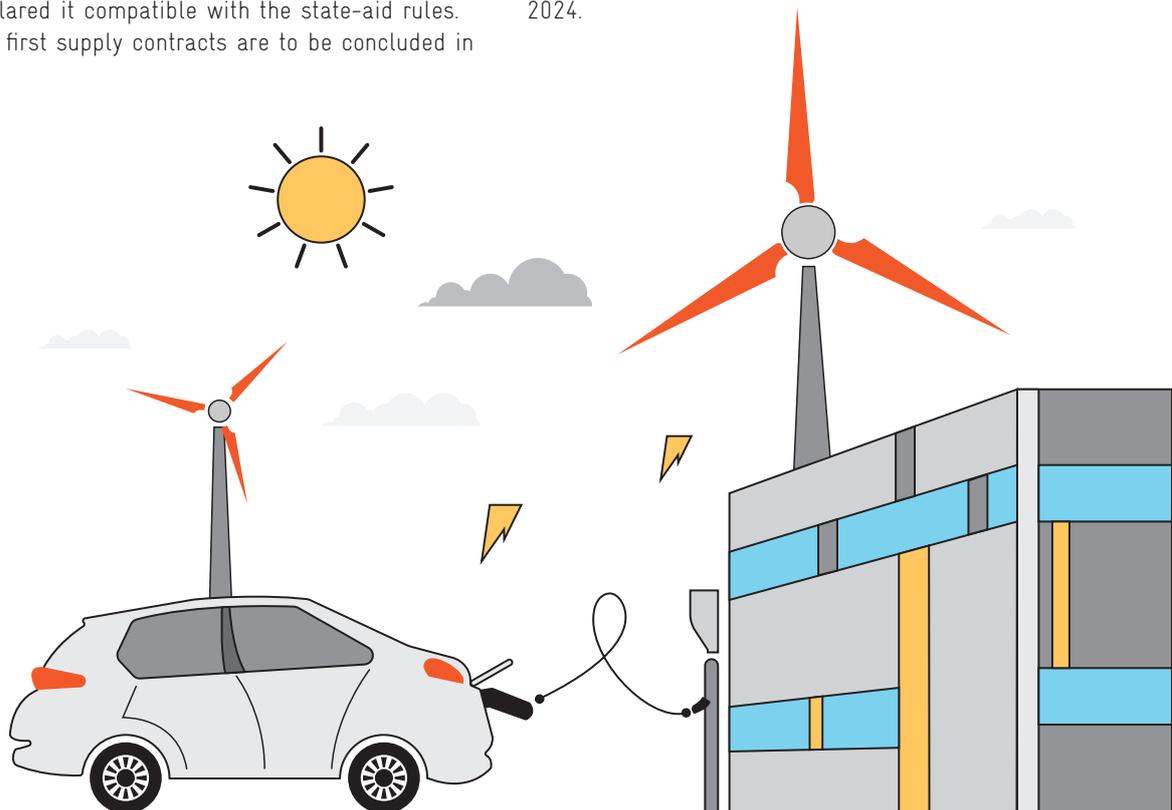
sell the products they produce in their partner countries to Europe. The Federal Government is hoping that this model will result in large-scale hydrogen imports from regions that have a lot of sunshine and wind.

In a second auction, the hydrogen that has been delivered to EU countries in this way is to be auctioned on to the highest bidder. Having green hydrogen available at a competitive price will create stronger incentives for the industrial sector and others to invest in installations that can use this hydrogen. The H2Global funding mechanism is to bridge the gap between the prices asked and given on the supply and demand sides respectively.

### Green light from the European Commission

The European Commission gave its approval for the funding project in December 2021 and declared it compatible with the state-aid rules. The first supply contracts are to be concluded in

2022 and the first deliveries of hydrogen-based fuels to Germany and Europe to take place in 2024.



# 6

## Publications



### Implementing Solar Irrigation Sustainably: A guidebook for state policy-makers on maximizing the social and environmental benefits from solar pump schemes

This guidebook provides state policy-makers and agencies with recommendations for how solar irrigation can be implemented sustainably, focusing on standalone (or off-grid) and grid-connected pumps. It does not cover PM-KUSUM components A and C (feeder-level solarization), which will be addressed in a subsequent publication. It is designed to help achieve PM-KUSUM's main objectives in ways that maximize economic and social benefits while avoiding unsustainable water use.

The full report is available for download [here](#).



### Lithium-Ion Battery (LiB) Manufacturing Landscape in India

This report estimates that the annual capacity addition of LiB for automotive applications will increase from 2.3GWh in FY2021 to 104GWh by FY2030 and for non-automotive applications from 0.3GWh to 12GWh. So, 90 per cent of the total LiB demand will be driven by automotive applications on the back of favourable government policies including Faster Adoption and Manufacturing of Hybrid & EV (FAME) and various state-level EV policies.

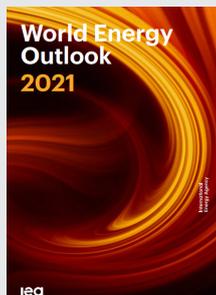
The full report is available for download [here](#).



### Capturing Green Recovery Opportunities from Wind Power in Developing Economies

This report reflects a study of wind energy potential in developing economies around the world over the next five years, from 2022–2026, with the aim to highlight the vast and largely unexploited socioeconomic and environmental opportunities attached to wind energy. India is among the world's top contributors to GHG emissions and has begun taking proactive steps towards climate action. India has the fifth-largest installed capacity of renewable energy in the world and the fourth-largest installed wind energy capacity. It has set a target of 140 GW installed wind energy capacity by 2030; as of 2021, it has reached 28% of this wind target.

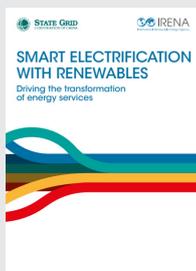
The full report is available for download [here](#).



### World Energy Outlook 2021

The World Energy Outlook is the energy world's most authoritative source of analysis and projections. This flagship publication of the IEA has appeared every year since 1998. Its objective data and dispassionate analysis provide critical insights into global energy supply and demand in different scenarios and the implications for energy security, climate targets and economic development.

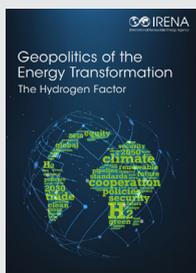
The full report is available for download [here](#).



### Smart Electrification with Renewables: Driving the Transformation of Energy Services

This publication provides policy makers with a conceptual overview of the global transition to electrification with renewables.

The full report is available for download [here](#).



### Geopolitics of the Energy Transformation: The Hydrogen Factor

The report provides a comprehensive analysis of the geopolitical drivers and potential consequences of the development of clean hydrogen value chains.

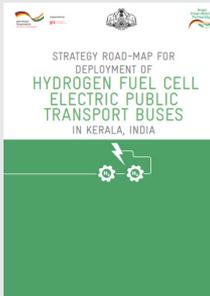
The full report is available for download [here](#).



### Electric Vehicle IQ (EV IQ)

EV IQ provides monthly updates on Electric Vehicles and Manufacturing sectors. This report cover Policy & Regulatory announcements by Central and State Governments, Tender updates, upcoming meeting dates, EV sales summary, new product launches, prevailing news update.

If you would like to receive an EV IQ Report Sample, please contact [bmadhavi@ces-ltd.com](mailto:bmadhavi@ces-ltd.com).



### Strategy Road-Map for Deployment of Hydrogen Fuel Cell Electric Public Transport Buses in Kerala, India

The objective of this report is to provide an understanding of the opportunities and risks in implementing a Hydrogen Fuel Cell (HFC) powered public transportation bus mobility initiative for the state of Kerala.

The full report is available for download [here](#).



### Stationary Energy Storage IQ (ESS IQ)

StorageIQ provides monthly updates on Energy Storage and Manufacturing sectors. This report covers Policy & Regulatory announcements by Central and State Governments, tender updates, upcoming meeting dates, new product launches.

If you would like to receive a StorageIQ Report Sample, please contact [bmadhavi@ces-ltd.com](mailto:bmadhavi@ces-ltd.com).



### Global Offshore Wind Report 2021

Globally, a record 15,666 MW of offshore wind capacity went into operation during 2021 compared to 5,206 MW in 2020. 53 new offshore wind farms went into operation in 2021 worldwide of which 45 were installed in China, 3 in the UK, 2 in the Netherlands, 1 in Denmark, 1 in Taiwan, and 1 in Norway.

The full report is available for download [here](#).

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## Upcoming Events

### India Smart Utility Week 2022

2 - 4 March 2022 | Virtual

India Smart Utility Week 2022 is an International Conference and Exhibition on Smart Energy and Mobility for Smarter Cities. The Exhibition Booths at ISUW 2022 will offer never before experience to exhibitors and visitors. ISUW 2022 will bring together India's leading Electricity, Gas and Water Utilities, Policy Makers, Regulators, Investors and 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 2022 will include plenaries, interactive workshops, keynotes, technical sessions and technical paper presentations. Bi-lateral Smart Grid workshop with EU, USA, Switzerland, Sweden, France, Canada are also expected to be a part of the upcoming edition. On 2 March the 1st Germany - India Smart Energy Workshop in partnership with GIZ will take place. 6th Edition of ISGF Innovation Awards 2022 will also be organised as part of ISUW 2022. Together with the Indo-German Chamber of Commerce IGEF-SO will organise a virtual German Pavilion in the EU Zone.



For further information please click [here](#) to register click [here](#).

### Smart Energy India Expo 2022

23 - 25 March 2022 | New Delhi, India

Smart Energy India Expo is a premier B2B platform to drive your business into the future. India's demand for energy has been growing rapidly and is expected to grow further in the years to come. With the theme of "Building a Digital and Smart India" the Smart Energy 2022 expo aims to deliver better citizen service by showcasing the latest technologies in the smart energy domain, including Solar Energy, Natural Gas, Wind Energy, Fuel Cell, Solar & PV, Batteries & Storage, Smart Grid, Biomass, Thermal Power, Decarbonisation, and many more.



For further information please click [here](#).

## Berlin Energy Transition Dialogue 2022

29 - 30 March 2022 | Berlin, Germany

Since 2015 the Berlin Energy Transition Dialogue has become the leading international forum for high-level policy makers, industry, science and civil society to exchange ideas for a safe, affordable and environmentally responsible global energy transition. With over 100 countries represented and more than 55 ministers and key actors from the public and private sectors present, the conference complements the climate discourse by mobilising important players and emphasising the energy component. Additionally, the Berlin Energy Transition Dialogue will be accompanied by the Berlin Energy Week with a wide range of energy transition side events.



For further information and registration please click [here](#).

## India Energy Storage Week

1 - 6 May 2022 | New Delhi

India Energy Storage Alliance (IESA) is organising the 8th edition of the annual flagship conference, India Energy Storage Week (IESW) – Conference & Expo from 1 - 6 May, 2022 at New Delhi. IESW was incorporated in 2019, which was earlier Energy Storage India (ESI) since 2013 to promote and adopt energy storage, e-mobility & green hydrogen technologies for a sustainable future. It is India's premier B2B networking & business event focused on renewable energy, advanced batteries, alternate energy storage solutions, electric vehicles, charging infrastructure, green hydrogen and microgrids ecosystem. The forthcoming edition of IESW is expected to attract global participation with an intent to facilitate bi-lateral trade, which will invite 20+ countries, 50+ regulators & policy makers, 50+ partners & exhibitors, 1000+ delegates and 10,000+ visitors.



For further information please click [here](#).

## The smarter E Europe / Intersolar Europe

10 - 13 May 2022 | Munich, Germany

Intersolar Europe is the world's leading exhibition for the solar industry. Under the motto "Connecting solar business," manufacturers, suppliers, distributors, service providers and project planners and developers from around the world meet in Munich to discuss the latest developments and trends, explore innovations firsthand and meet potential new customers. The event's exhibition and conference takes place as part of The smarter E Europe parallel to the three energy exhibitions ees Europe, Power2Drive Europe and EM-Power Europe at Messe München, Germany from 10 to 13 May 2022.



For further information please click [here](#).

## RenewX

10 - 11 June 2022 | 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 Hitec Exhibition Centre in Hyderabad from 10 to 11 June 2022.



For further information please click [here](#).

## WindEnergy Hamburg

27 - 30 September 2022 | Hamburg, Germany

WindEnergy Hamburg is tailored toward addressing the major issues facing the international wind energy sector. It brings together a high-caliber, professional audience and 1,400 exhibitors demonstrating their innovations and solutions from across the entire value chain of the industry. Whether designers, manufacturers, suppliers, financiers, operators or service providers - both onshore and offshore - this is where industry leaders, young innovative companies and industry-related variables into an international marketplace of the wind industry meet.



For further information, please click [here](#).

## Renewable Energy India Expo

28 - 30 September 2022 | Greater Noida, India

The 15th edition of REI Expo will take place at India Expo Center in Greater Noida from 28 to 30 September 2022. 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. In case you are interested to participate in the German pavilion at REI Expo 2022, kindly get in touch with [privatesector\(at\)energyforum.in](mailto:privatesector(at)energyforum.in).



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.



**Alexander von Humboldt**  
Stiftung/Foundation

If you are interested in a fellowship with the German Solar Association BSW you should get in touch with Ms. Luz Alicia Aguilar via [aguilar\(at\)bsw-solar.de](mailto:aguilar(at)bsw-solar.de).

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

You are a freshly 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 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 organisation for voluntary assignments carried out by retired specialists and executives.

For further information please click [here](#) or contact Mrs. Sharon Mogose via [sharon.mogose\(at\)indo-german.com](mailto:sharon.mogose(at)indo-german.com).

## Information about DeveloPPP

DeveloPPP.de is a mechanism by the German Federal Ministry for Economic Cooperation and Development (BMZ) to promote the involvement of the private sector in its development work.

The BMZ provides financial and technical support to companies that want to become active in developing and emerging countries or already are, and whose investment has long-term benefits for the local population. The company bears at least half of the total project 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. The companies receive individual advice, benefit from regional market knowledge of the locations worldwide and gain access to local networks and political decision-makers.

Projects cover a wide range of sectors, such as training local skilled workers, piloting innovative technologies and demonstration plants, 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. The project should be developmentally effective and go beyond investments in the company's 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 2022**

2 - 4 March 2022 | Virtual

<http://www.isuw.in>

**Smart Energy India Expo 2022**

23 - 25 March 2022 | New Delhi, India

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

**Berlin Energy Transition Dialogue 2022**

29 - 30 March 2022 | Berlin, Germany

<https://www.energydialogue.berlin/>

**India Energy Storage Week**

1 - 6 May 2022 | New Delhi, India

<https://indiaesa.info/events/ongoing-upcoming-events/order/default/9537>

**The smarter E Europe / Intersolar Europe**

10 - 13 May 2022 | Munich, Germany

<https://www.intersolar.de/home>

**RenewX**

10 - 11 June 2022 | Hyderabad, India

<https://www.renewx.in/>

**World Energy Storage Day**

22 September 2022 | Virtual

[www.energystorageday.org](http://www.energystorageday.org)

**WindEnergy Hamburg**

27 - 30 September 2022 | Hamburg, Germany

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

**15<sup>th</sup> Renewable Energy India Expo 2020**

28 - 30 September 2022 | New Delhi, India

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

**The smarterE India / Intersolar India**

7 - 9 December 2022 | Gandhinagar, Gujarat, India

<https://www.thesmartere.in/en/intersolar-india>

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## DISCLAIMER

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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.

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