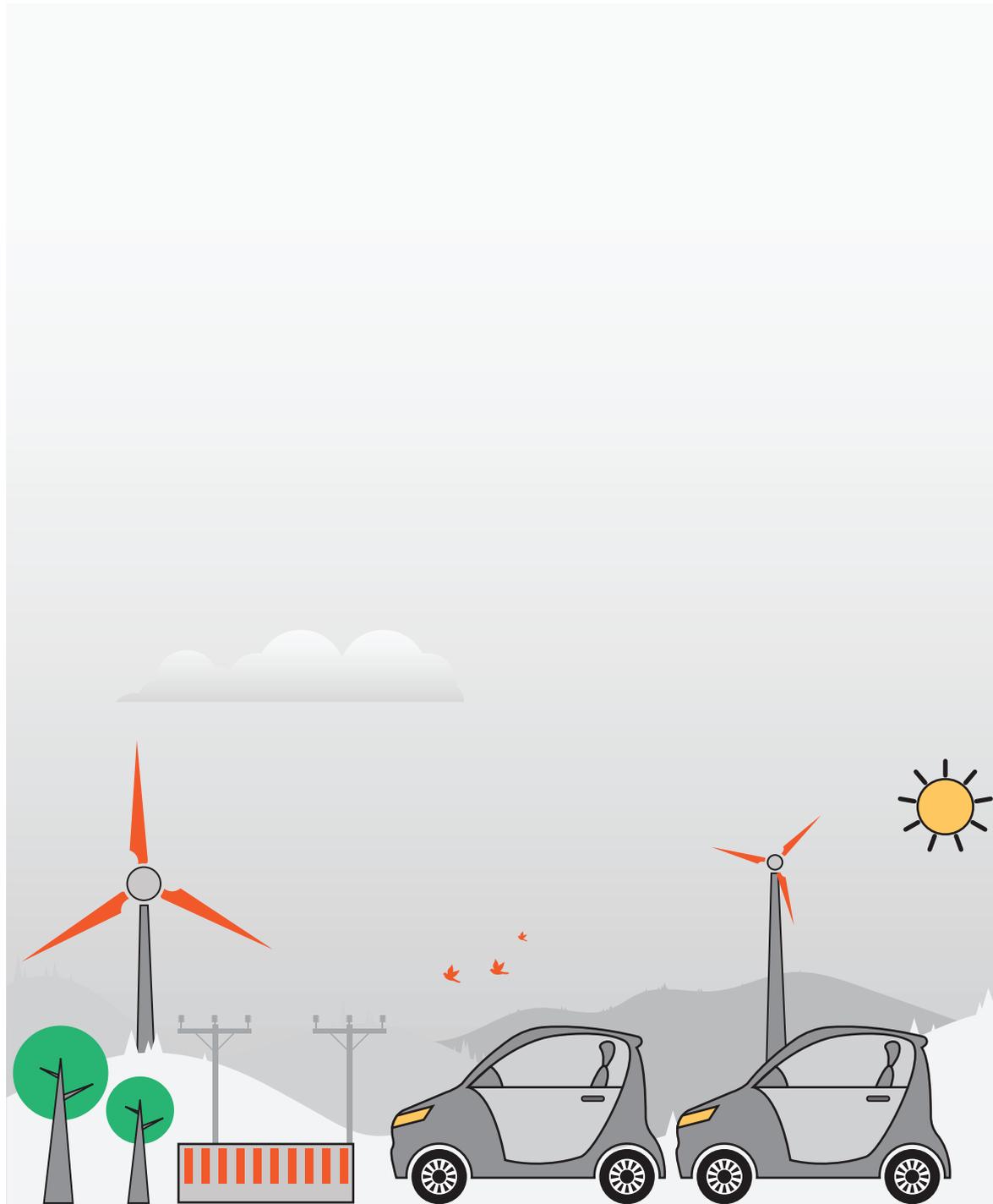


INDO-GERMAN ENERGY FORUM NEWSLETTER

VOLUME 08, ISSUE 03

OCTOBER 2021



Contents

1 Introduction



Dr. Stephan Hesselmann,
Economic Minister
Counsellor at the
Embassy of the
Federal Republic of
Germany in India

Page 8

2 Events and Activities



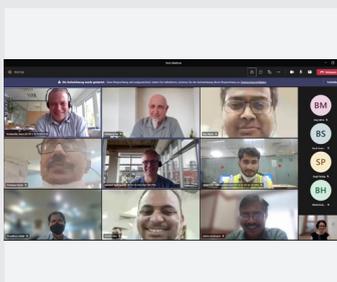
**Knowledge Session:
Large Scale Green
Hydrogen Production**

Page 9



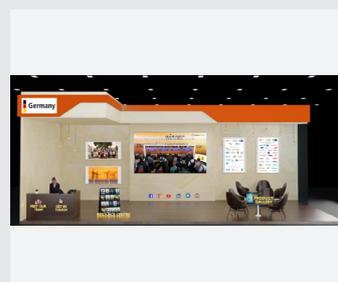
**Aatmanirbhar Bharat
- Self-Reliance for
Renewable Energy
Manufacturing**

Page 13



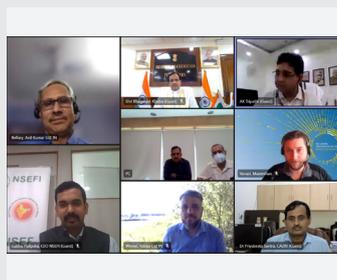
**New record: 36%
Minimum Load reached
at the Maithon Power
Plant in India**

Page 14



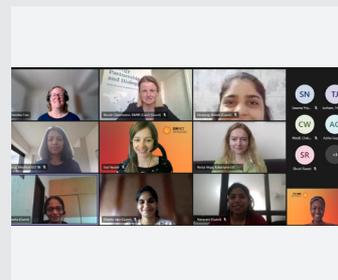
**8th Indo-German
Energy Day at REI
E-Expo**

Page 16



**Capacity Building
Program on Agri PV
Plants and RE Grid
Integration**

Page 18



**Energising Women to
Advance the Energy
Transition**

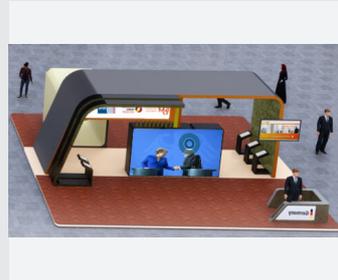
Page 21

Contents



**Knowledge Session:
Transport of Green
Hydrogen**

Page 22



**World Energy Storage
Day (WESD) 2021**

Page 25



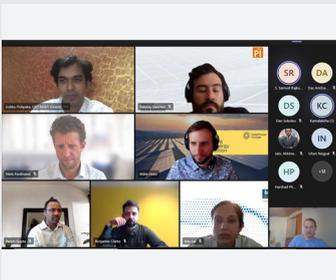
**Hydrogen Energy
Conference**

Page 26



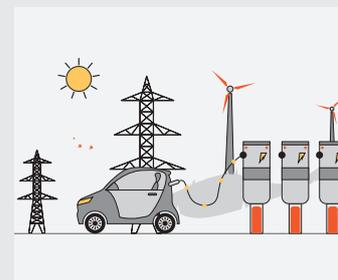
**German Pavilion and
Session on Agrivoltaics
at REI Expo 2021**

Page 27



**Strategy Meeting of
SolarPower Europe and
the National Solar
Energy Federation of
India**

Page 29



**8th Energy Storage
Solutions Meet**

Page 30

3 Developments in Indo-German Energy Cooperation



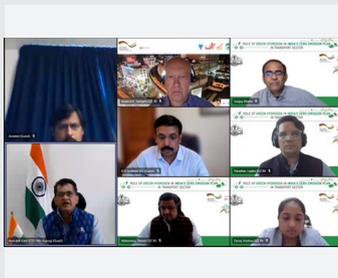
Adoption of Digital Payments in the Off-Grid Renewable Energy Sector

Page 31



Fact-Finding Mission “Charging Infrastructure and Storage Technologies for E-mobility”

Page 33



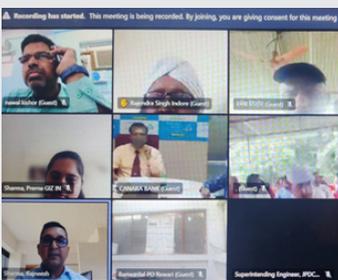
Green Hydrogen and India’s Zero Emission Plan in the Transport Sector

Page 35



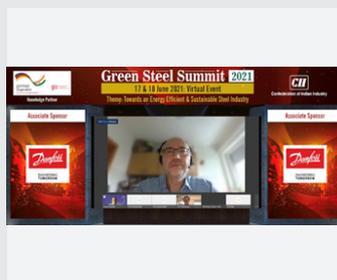
Digital Monitoring of PM KUSUM Implementation

Page 36



Two Days Events for PM-KUSUM & DRE Initiatives to Celebrate 75 Years of Independence “Azadi ka Amrit Mahotsav” by MNRE and GIZ

Page 37



First edition of Green Steel Summit 2021

Page 38



Program on “Financing of Solar-based Decentralized Energy Solutions”

Page 39



15th Paper Tech 2021

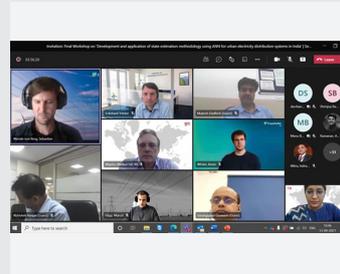
Page 40

Contents



69th IFC & IFEX Virtual Expo 2021

Page 41



Final Workshop on "Development and Application of State Estimation Methodology Using ANN for Urban Electricity Distribution Systems in India"

Page 42

4 Quote of the Month from India and Germany



Quote of the Month from India

Page 43



Quote of the Month from Germany

Page 43

5 Energy Transition News



What exactly is Repowering of Wind turbines?

Page 44

Contents

6 Publications



**Renewables 2021
Global Status
Report**

Page 46



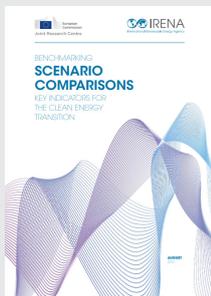
**Renewables
Integration in
India**

Page 46



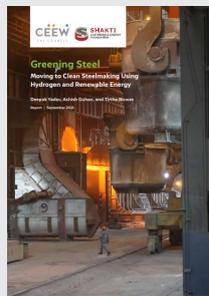
**Levelized Cost
of BtM Storage
in India 2021 – A
Status Report**

46



**Benchmarking
Scenario
Comparisons:
Key indicators
for the clean
energy transition**

Page 47



Greening Steel

Page 47

7 Upcoming Events



World Hydrogen Energy Summit 2021

Page 48



RenewX

Page 48



World Wind Energy Conference 2021

Page 49



Intersolar India

Page 49



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

Page 49



Retired German energy experts offering their support to Indian institutions

Page 50



Information about DeveloPPP

Page 50

1

Introduction



**Dr. Stephan Hesselmann,
Economic Minister Counsellor
at the Embassy of the Federal
Republic of Germany in India**

“ I am looking forward to support and form part of India’s Energy Transition. India and Germany both have a major global responsibility and role model function. Under the Indo-German Energy Forum, innovative solutions with the potential of global upscaling have been put on the agenda.”

Dr. Stephan Hesselmann is currently serving as Economic Minister Counsellor at the Embassy of the Federal Republic of Germany in India. He is responsible for economic affairs and energy policy. Before joining the German Embassy in India, he served as Head of Division, Mobility Concepts and Transport Policy at the Federal Ministry for Economic Affairs and Energy (BMWi), Government of Germany.

Having grown up in Germany, Spain and the United States, Dr. Stephan Hesselmann was exposed to an international and globally thinking environment early in his life. He obtained his high school diploma from the German school in Washington D.C. and pursued his studies in business administration at George Mason University in Virginia, from which he graduated in 1982. He continued his path in higher education in the field of economics with a doctorate at the University of Bonn in Germany. From 1987 until 1990, Dr. Hesselmann was a research associate at the Research Institute for Small and Medium Enterprises (SME) in Bonn. Thereafter, he joined the German Federal Ministry for Economic Affairs and Energy, becoming involved in various activities in the departments of SME, foreign trade and industrial policy. He was further assigned as parliamentary group advisor to the Christian-democratic and liberal-conservative political party CDU in the German parliament. In this position, he was actively involved in policy reforms related to economic affairs, foreign trade and the financial sector. With his appointment to the Permanent Mission of the Federal Republic of Germany to the OECD in Paris, he assumed responsibility for matters of the International Energy Agency (IEA), among other duties. Dr. Hesselmann is looking forward to intensifying the Indo-German cooperation in the energy sector for the next three years.

2

Events and Activities

Knowledge Session: Large Scale Green Hydrogen Production

14 July 2021 | Virtual

India, with its great potential for record low price green electricity generation from wind and solar, is internationally regarded as a key country to shape a global green hydrogen economy said, Mr. Peter Müller-Baum from the German Engineering Federation VDMA at a recent event on a large scale green hydrogen production. As Germany and many other countries will remain a net importer of energy in a global hydrogen economy, there is high interest in sourcing green hydrogen from around the world with India able to achieve the lowest costs. After having decarbonized its

economy India has all the potential to become a net exporter of green hydrogen. As per the latest figures from Bloomberg New Energy Finance (BNEF) presented by Mr. Müller-Baum and Mr. Rajesh Nath, VDMA India, India may reach a levelized cost for green hydrogen (LCOH₂) production of down to 1 USD/kg by the year 2030 (see figure 1). In 2050 the LCOH₂ could reach 0.40-0.59 USD/kg. Such price developments motivate more than 140 member companies across the entire value chain to participate in the presented VDMA platform for hydrogen and other Power-to-X technologies.



Media partner:



Knowledge session

Large Scale Green Hydrogen Production

Wednesday | 14th July 2021
13.00 pm – 15.00 pm IST
9.30 am – 11.30 am CEST



Mr. Stefan Halusa
Director-General
Indo-German Chamber
of Commerce (IGCC)



Dr. Nicole Glanemann
Deputy Head, Federal Ministry
for Economic Affairs and Energy (BMWi)
Government of Germany



Mr. Peter Müller-Baum
Managing Director
VDMA P2X4A



Mr. Rajesh Nath
Managing Director
VDMA India



Mr. Chirag K Shah
Chief Manager
SIEMENS Ltd



Mr. Jai Prakash Soni
Sr. General Manager & Head of Process
thyssenkrupp Industrial
Solutions (India) Pvt. Ltd

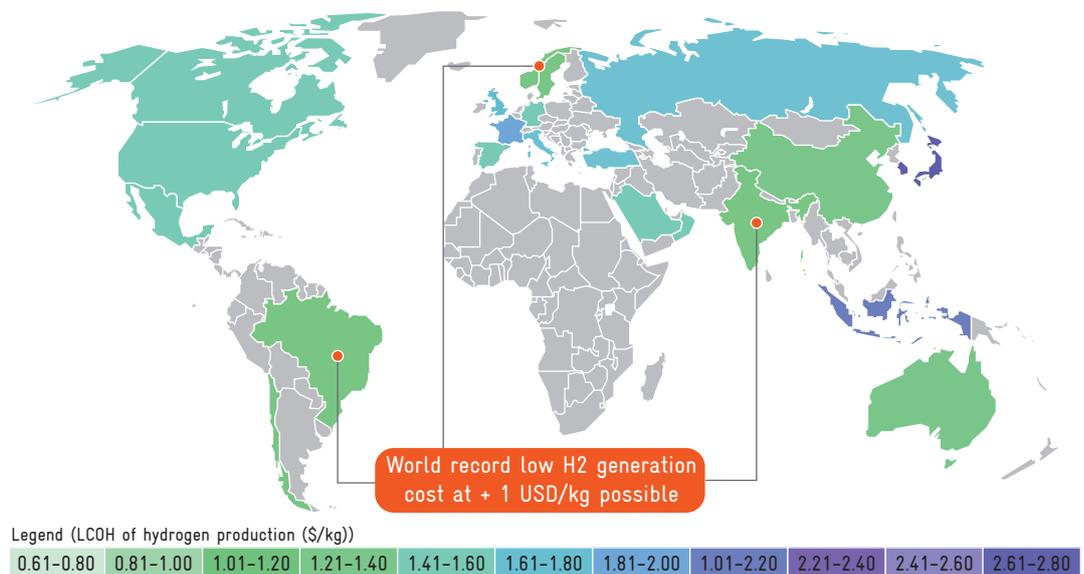
Mr. Chirag Shah from Siemens Energy presented the latest PEM electrolyser technology available in India. The Silyzer 300 was presented as a flexible, efficient and scalable solution for large hydrogen production with one full module array able to produce 335 kg of green hydrogen per hour. "Siemens realized that decarbonization is the need of the hour, not only in India but globally," Mr. Shah said. Siemens Energy is a spin-off by the Siemens Group with around 88,000 employees around the world. The company's participation in the Hydrogen Council, H2Future Initiative and the pilots such as the EnergiePark Mainz as well as the world's largest hydrogen pilot facility in Austria for decarbonizing steel production are all testament to its long-standing commitment to the new energy business. Sector coupling of green energy and hydrogen production with consumption sectors is the key lever for the decarbonization of all end-user sectors. Being able to adapt to highly fluctuating electricity supply from renewables, the PEM technology is ready to play an increasing role with further price reductions and technological advances expected.

Mr. Jai Prakash Soni from Thyssenkrupp gave the latest insights into projects using the company's large scale modular Alkaline Water Electrolysis (AWE) technology for green hydrogen plants. Thyssenkrupp is a business conglomerate covering sectors such as automotive technology, steel, and marine systems with more than 100,000 employees worldwide. Thyssenkrupp has long experience in large-scale conventional and green hydrogen plant construction around the world, particularly in the fertilizer and chemicals sector. The vast experience gained over the last 50 years from working with electrolysis plants has driven the development of AWE technology, a highly reliable and efficient way to produce green hydrogen. The large modules make it possible to scale projects up to a gigawatt scale where downstream chemical value chains are completely integrated with green hydrogen. Amongst others, Mr. Prakash Soni gave insights into the advancements in the construction of an impressive multi-gigawatt alkaline electrolyser facility in the Middle East.

Figure 1.
Source: EVInside based on BNEF 2021.

Germany will remain a net importer of energy

High interest in sourcing green hydrogen from around the world with India able to achieve lowest costs worldwide (in USD in 2030)



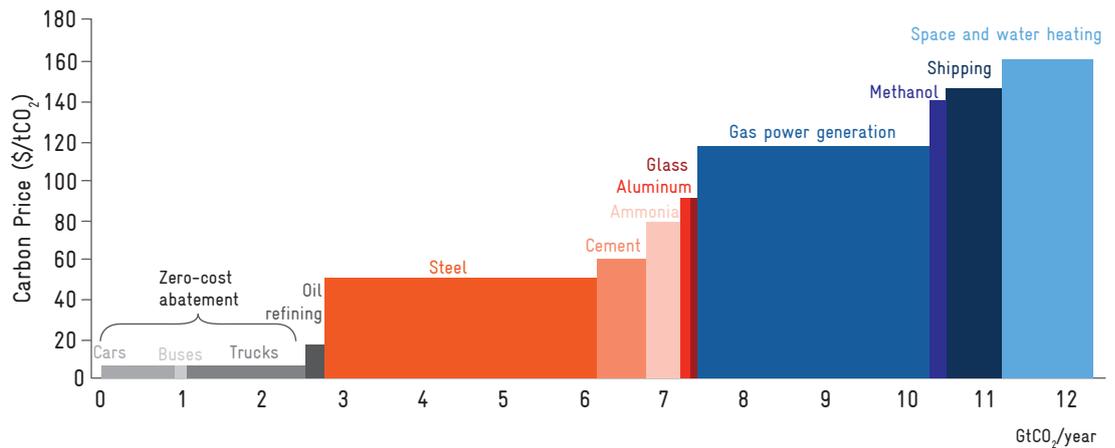
The presentations were followed by a lively discussion based on questions from the audience. Amongst others, potential future offtake markets, the potential for India to also export green hydrogen, perspectives of green hydrogen in the mobility sector and for storage applications were discussed. Mr. Peter Müller-Baum specifically drew attention with a presented cost curve for green hydrogen offtake markets. It showed that at 1 USD/kg, green hydrogen application becomes cost competitive to fossil fuel-based alternatives given the price for CO₂ emissions is high enough. After heavy duty transport, refining and then steel production were found to be the first cost competitive market segments. With higher carbon prices hydrogen was found to become competitive also in the fertilizer manufacturing business (See figure 2).

Mr. Stefan Halusa, Director General, Indo-German Chamber of Commerce (IGCC) confirmed that substantial funding from the Govt. of Germany will be made available for Indo-German Joint Venture projects to bring down the cost for green hydrogen and to boost large scale global green hydrogen production. Participants from Germany were fascinated by the fact that India counts with the highest solar energy security throughout the entire year. The data presented by the Indo-German Energy Forum is based on actual generation from photovoltaic power plants all over India in the year 2020 (see figure 3). It shows that even on days with the least solar generation achieved, the generation output from solar remains extremely high and can be fully relied on at an all India level with no seasonal fluctuations at all - excellent conditions to become a global leader in large scale green cost effective green hydrogen production.

Figure 2.
Source: BNEF 2020.

Marginal cost curve using H2 at 1 US\$/kg

If H2 at 1 US\$/kg between 2030-50, the use of hydrogen for green steel production requires a CO₂-price of 50 US\$/tCO₂ to be competitive.



The “Indo-German Knowledge Session on Large Scale Green Hydrogen Production” was organised by the Indo-German Chamber of Commerce (IGCC) in collaboration with the Indo-German Energy Forum (IGEF) and the German Engineers Association VDMA on 14 July 2021. With around 6000 member companies, IGCC is a powerful German voice in the Indo-German business world. VDMA is the largest industrial association in Europe and focuses on networking, advocacy, technology exchange and international markets. In India, VDMA’s head office is situated in Kolkata. Dr. Nicole Glanemann, Deputy Head of the Division for Bilateral Energy Cooperation of the German Federal Ministry for Economic Affairs and Energy (BMWi) and Mr. Stefan Halusa, Director General, IGCC inaugurated the session which is part of a larger series of

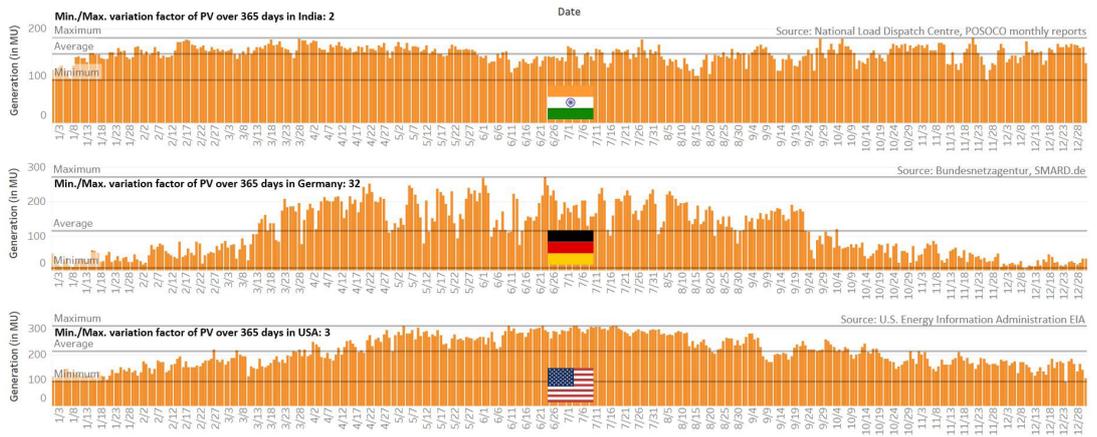
events covering small-scale stationary hydrogen production, large-scale hydrogen production, logistics of a global hydrogen economy and green hydrogen based chemicals. The knowledge session was moderated by Mr. Tobias Winter, Director of the Indo-German Energy Forum Support Office. More than 350 participants attended the Indo-German Knowledge Session.

All presentations of the knowledge sessions can be downloaded [here](#). Videos can be found on the IGEF YouTube channel please find the link [Knowledge Session: Large Scale Green Hydrogen Production](#). Fuel Cell India, India’s first magazine for the hydrogen economy, was the exclusive media partner of this knowledge session on the transport of green hydrogen.

Figure 3. Source: IGEF based on POSOCO, SMARD and EIA.

India has highest solar energy security

365 days of solar photovoltaic (PV) generation in India, Germany and USA in the year 2020



Aatmanirbhar Bharat - Self Reliance for Renewable Energy Manufacturing

15 – 16 July 2021 | Virtual

The Confederation of Indian Industry (CII) organised the conference “Aatmanirbhar Bharat - Self reliance for Renewable Energy Manufacturing” from 15-16 July. In cooperation with the Indo-German Chamber of Commerce (IGCC), the Indo-German Energy Forum (IGEF) organised a virtual German Pavilion. The conference was attended by a large number of Indian and foreign government officials and industry representatives as well as the Indian Minister of Energy Shri R. K Singh and the German Ambassador Mr. Walter Lindner.

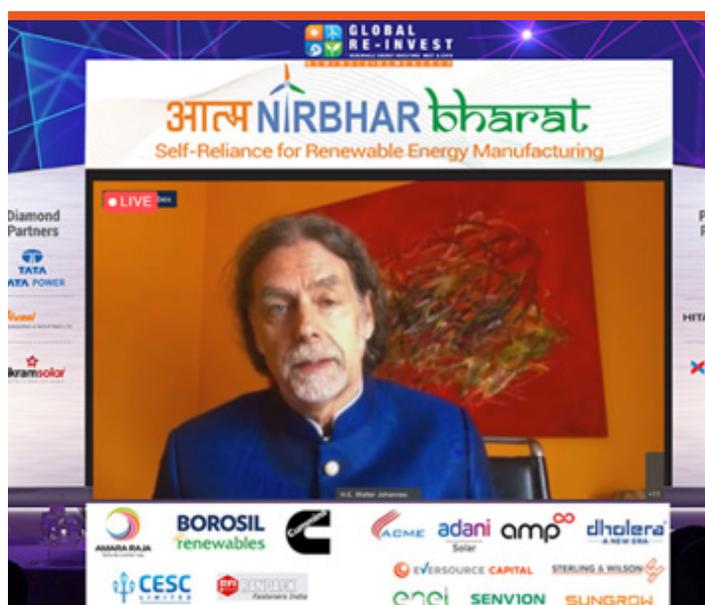
In his speech, Shri R. K Singh highlighted India’s rapid expansion of renewable energy and reiterated the government’s target of 450 GW of renewables by 2030, saying India is a “world leader in the energy transition”. Already, India has almost achieved its target under the Paris Climate Agreement of 40% of its electricity capacity from non-fossil sources at 38.5%, he said. Shri R. K. Singh stressed that the expansion of renewables, especially in the solar sector, should be done by the domestic industry. Indian jobs should be created and import duties are planned to protect the own economy from dumping products.

India also wants to become the world market leader for green hydrogen. Thus, the phase-out of grey hydrogen from imported natural gas is to be pushed and the use of green hydrogen for sectors such as fertilizer and fuel is to become mandatory. In addition, it should become easier for companies to purchase green electricity through their production or the grid.

In his address, the German Ambassador to India, His Excellency Walter Lindner, reiterated the long-standing partnership between the two countries in the energy sector and the fight against climate change. Companies such as Bosch and Siemens have been active in India for decades and have created thousands of jobs. German wind turbine manufacturer Enercon is planning to produce its new model exclusively in India and several other German companies are keen to collaborate with Indian manufacturers in the solar sector. “Germany wholeheartedly supports the Indian government’s ‘Make in India’ approach, but please use German machinery” Mr. Lindner said.

For more information click [here](#).

German Ambassador H.E.
Walter Lindner during
his speech.



New record: 36% Minimum Load reached at the Maithon Power Plant in India

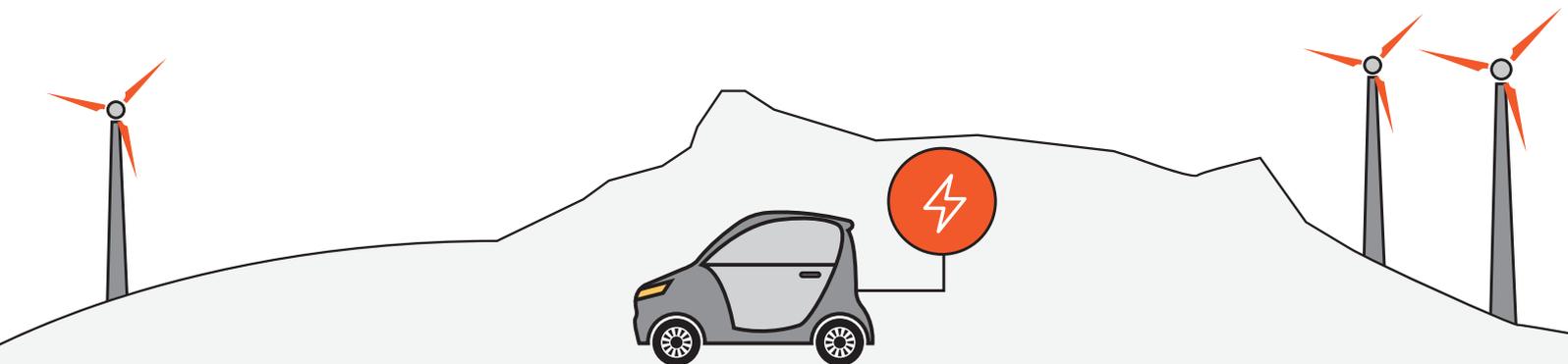
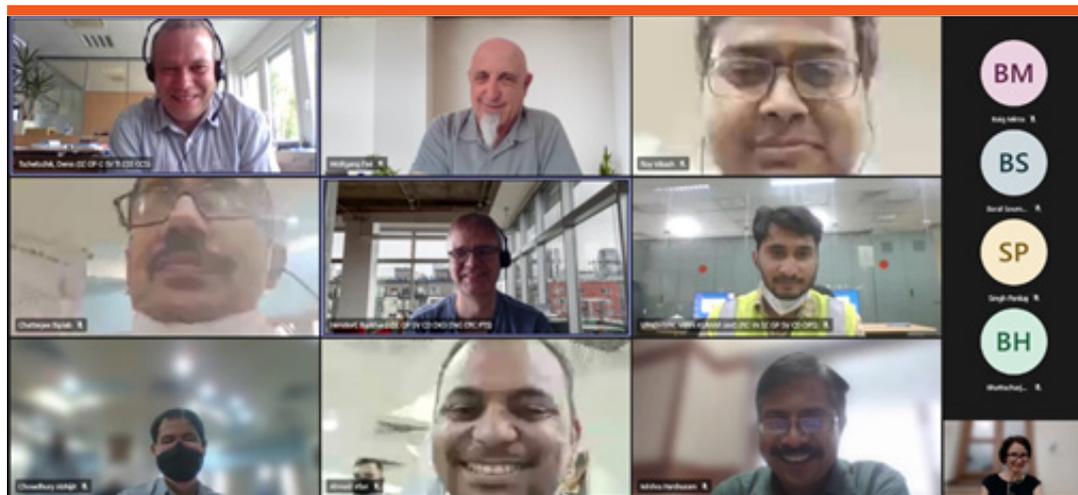
20 – 28 July 2021

From 20 to 28 July 2021, a German-Indian team coordinated by the VGB conducted flexibility test runs at the Maithon power plant. The investigations were carried out in the 525 MW unit 2 of the power plant, which is situated in the state of Jharkhand and operated by Tata Power. The record value of 190 MW minimum load was achieved. Further tests about load ramps and coal distribution provided valuable input to derive measures for permanent flexible operation.

The tests were preceded by months of preparation. An online coal flow measurement

and variable orifices were installed on one of the nine coal mills. The aim was to include information on the distribution of coal when evaluating the operating data – particularly about the combustion process – and to test options for equalizing the coal flow. Since the German part of the team could not be present on site due to the corona-related travel restrictions, it was also necessary to set up a remote connection to the power plant control system. In the end, the collaboration worked extremely well despite the distance.

For seven days, the German-Indian team met virtually every day for several hours.



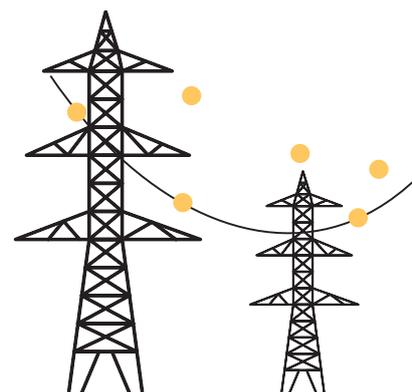
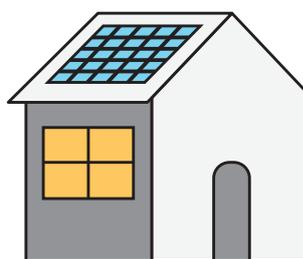
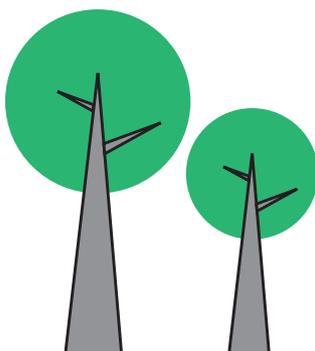
System Integration of Renewables by Flexibilisation of Generation Assets

The test runs are part of the activities of the Indo-German Energy Forum (IGEF). The flexible operation of existing Indian coal-fired power plants as an enabler for the system integration of renewable energies is a central IGEF topic. The work is coordinated by the IGEF Flexibility Task Force, which is headed by the Director of Operations at NTPC (National Thermal Power Corporation). On the Indian side, in addition to NTPC, the Central Electricity Authority (CEA), the network operator POSOCO (Power System Operation Corporation) and BHEL (Bharat Heavy Electricals) are involved in the task force.

The VGB partner organization EEC (Excellence Enhancement Center) coordinates the work that is supported on the German side by the VGB and the Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (GIZ). In addition to TataPower, the following companies are involved in the test run project as industrial partners: BMW Steels (India), Envea (Germany), Siemens Energy (Germany), Siemens (India) and Toshbro (India).

For more information on the topic of flexibilisation click [here](#) and on EEC [here](#).

Professionals from the CEA, EEC and IGEF-SO visited the Maithon power plant during the test runs. ©IGEF-SO



8th Indo-German Energy Day at REI E-Expo

5 – 6 August 2021 | Virtual

The Indo-German Energy Forum (IGEF) celebrated the 8th Indo-German Energy Day with a series of presentations and events within the virtual Renewable Energy India E-Expo (REI E-Expo) 2021 from 5-6 August.

In cooperation with the Indo-German Chamber of Commerce (IGCC), IGEF organised a virtual German Pavilion with representation from more than 40 German companies and associations. The virtual fair focused on Renewable Energy technologies and served as a platform for stakeholders to establish contacts and exchange knowledge. More than 100 participants visited the German Pavilion and had the opportunity to learn more about promising PV niche-markets like Agri-photovoltaics (AgriPV).

Dr. Stephan Hesselmann, Economic Minister Counsellor of the German Embassy, New Delhi was among the dignitaries who inaugurated the REI E-Expo. In his speech, Dr. Hesselmann emphasized the strong partnership between India and Germany in working towards an energy transition. For more than a decade, both countries have met under the umbrella of IGEF

to work on topics such as the expansion of renewables, energy efficiency and e-mobility. Today, solar energy and grid integration of renewables remain the most important areas for cooperation.

After the inauguration ceremony, Dr. Stephan Hesselmann, as well as, Dr. Steffen Koch, Head of Economics and Global Affairs from the German Embassy interacted with participants from the private sector during a closed door meeting of IGEF's Local Business Council. Challenges and opportunities for German and Indian businesses in the renewables sector were discussed.

On 6 August, IGEF hosted a session on "New Agrivoltaic Developments in India" as part of REI E-Expo, where international experts gave an update on recent developments in the Agrivoltaics sector. The session was inaugurated by Dr. Nicole Glanemann, Dpty. Head of Division, Federal German Ministry for Economic Affairs and Energy and Mr. Rajneesh Khattar, Group Director Energy Portfolio, Informa Markets in India.

German Pavilion at
the 8th Indo-German
Energy Day.



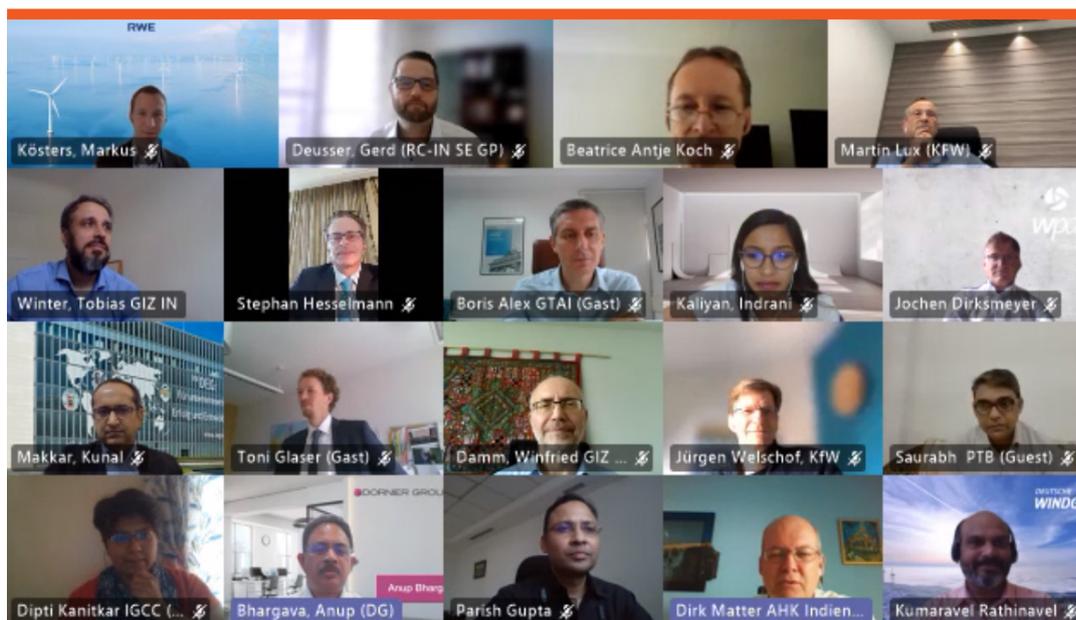
Mr. Subrahmanyam Pulipaka, CEO, National Solar Energy Federation of India Ltd, gave his presentation on AgriPV plants in India - Challenges, Opportunities and Road Ahead and also gave detailed information on India's Agri-Solar Scheme (KUSUM). Dr. Jai Prakash Singh, Technical Director of the National Institute of Solar Energy (NISE) talked about vertically installed bifacial photovoltaic modules. He presented the first findings from a pilot project at the NISE in Gurugram. Mr. Shravan Sampath, Chief Executive Officer of Oakridge Energy, spoke about the development of their latest 110 kW Agri-photovoltaic project in cooperation with

Krishi Vigyan Kendra. Mr. Maximillian Vorast, Research Scientist at Fraunhofer ISE, Germany elaborated on Agri-photovoltaic experiences from Germany and Europe and showcased different types of agrivoltaic systems and their categorization. Additionally, he stressed the need to build a worldwide Agri-photovoltaics community.

Participants of the Local Business Advisory Council.

For more information click [here](#).

Participants of the Local Business Advisory Council.





Capacity Building Program on Agri PV Plants and RE Grid Integration

12 – 13 August 2021 | Virtual

The Indo-German Energy Forum (IGEF), World Water Council and the Central Board of Irrigation and Power (CBIP) organised an online Training and Capacity Building Program on Agri PV Plants and RE Grid Integration on 12 and 13 August 2021. The program was supported by the National Solar Energy Federation of India (NSEFI).

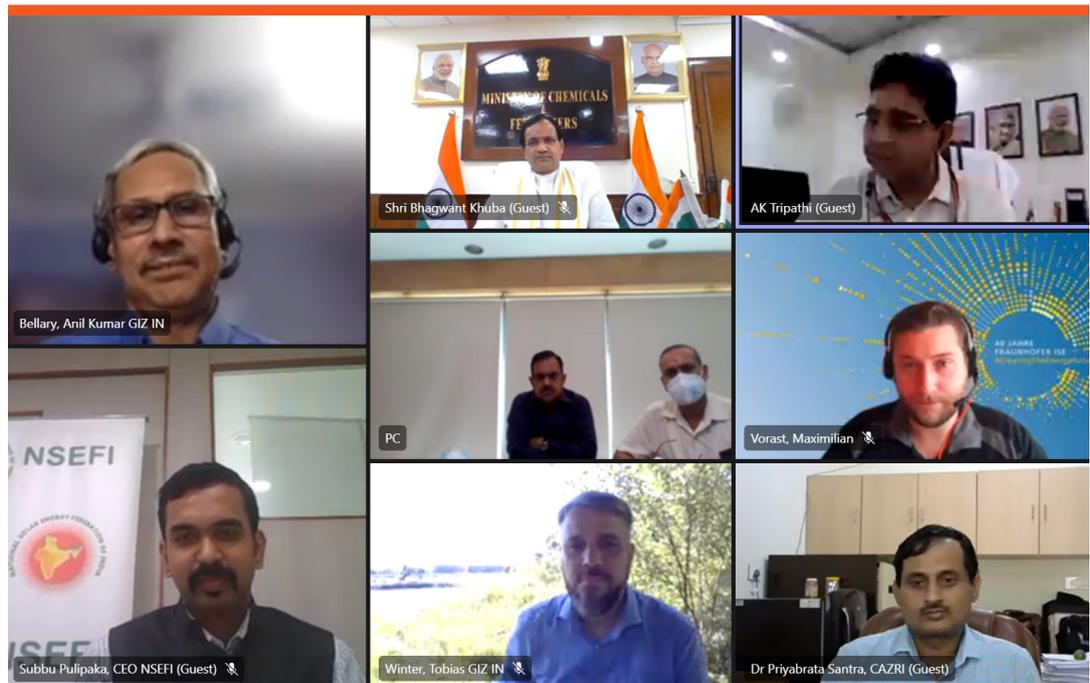
Shri Bhagawanth Khuba, Honourable Minister of State, Chemicals and Fertilizers and New and Renewable Energy, Government of India in his inaugural address, said that India is full of energy and its energy future is bright and secure. He elaborated that despite various challenges like COVID-19 disruption to supply chain etc., India was projected to emerge as a leading Renewable energy developer and achieve its target of 450 GW set by 2030. Hon'ble Minister of State (MoS) emphasized, "India believes that access to energy must be affordable and reliable and only then socio-

economic transformations can take place". He praised the idea of co-locating Solar-PV and Agriculture together which will transform the lives of farmers and their livelihood. The ministry will support such innovation to be implemented on a large scale.

The program was attended by more than 180 participants from Central & State Governments, Power departments, CERC and SERC, all State Electricity Boards and its constituent Corporates, CPSUs, SPSUs and other relevant stakeholders.

The importance and significance for reconciling agricultural activities with the generation of solar PV power on the same land area – by growing crops as well as harvesting energy through solar PV installations was the focus area of technical session-1. Under this approach, several benefits accrue such as a significant increase in land use efficiency, increased added value for land in rural areas close to urban

Shri Bhagawanth Khuba, Honourable Minister of State, Chemicals and Fertilizers and New and Renewable Energy, giving the inaugural address.
©IGEF/ISO.



energy demand centres and opportunities for new farming practices and increased plant growth besides an increase in the income of the farmers.

In technical session-2 the panellists pointed out the benefits and advantages of agriphotovoltaic (AgriPV) plants and renewable energy integration with the grid. How solar energy can be integrated with the different agricultural practices and change the energy scenario. As an emerging economy, India's demand for power has increased by almost 40% over the last five years. The focus increasingly has shifted towards solar power capacities additions which now undercut thermal generators in terms of price per unit of energy (Levelized cost of energy, LCOE). Moreover, the Indian Government has set itself an ambitious goal of achieving 300 GW of installed capacity of solar photovoltaics by 2030 in response to international efforts to decarbonise the economy.

The session called out the way to drive the energy transition in India through practising AgriPV. The need to accelerate the deployment of advanced renewable energy solutions in Agriculture. This deployment should also consider Energy-Water-Food security. Hence, it is imperative to use the same piece of land for energy generation, food production and saving water losses.

Speakers pointed out that the economics of renewable energy for electricity generation with the agricultural sector will be a win-win solution. This practice will solve many issues all together i.e., doubling farmers income, accelerating solar energy proliferation, Food-Energy-Water Nexus and climate change.

As a result of the two days program, the following recommendations were made based on the deliberations and technical presentations made.

Major recommendations to further increase Agriphotovoltaics in India

1. Define Agriphotovoltaics
 - Indian norm may be drafted by assessing and analyzing the German standardisation [DIN SPEC 91434:2021-05](#)
 - Define minimum standards and specifications for PV modules to ensure quality issues are addressed adequately
 - Min. of 80% of the total surface is available and used for agricultural purposes
 - Crop cultivation plan, cleaning concept and annual reports to be made mandatory
 - Foresee further adaptations based on continuous feedback from farmers and developers for design improvement
 - Especially explore practical experiences of large utility scale >10 MWp agrivoltaic farms
 - In consultation with the Ministry for Agriculture & Farmers Welfare to ensure a clear ownership structure from the very beginning.
2. Define deployment targets for Agriphotovoltaics for the next 10 years
 - Start with annual targets in MW towards potential GW targets until 2030
 - Involve states with a request to submit state wise targets to ensure ownership
 - Involve the Ministry of Agriculture & Farmers Welfare to improve collaborative efforts of the agricultural and energy sector.

3. Initiate special “innovation tenders” for Agriphotovoltaic projects
 - ▼ Through SECI, NTPC, NHPC and other nodal agencies
 - ▼ Draft a federal tender guideline supporting states to easily adjust and adapt to regional conditions
 - ▼ Consider different cost structures of various agrivoltaic concepts by defining subgroups within agrivoltaics tender guideline (distinguish between tenders for vertical and horizontal agrivoltaics)
 - ▼ Allow projects to be constructed on agricultural land
 - ▼ Consider offering around 25% viability gap funding for a certain amount of initial capacity
 - ▼ Create bank financing products specific to Agri PV projects through IREDA, NABARD and others
 - ▼ In consultation with the Ministry of Agriculture & Farmers Welfare explore opportunities for synergies in the horticulture sector e.g. for grapes or other fruits or vegetables that require protection from sun scorching or other extreme weather events.
4. Introduce the 10th category of “agrivoltaic land” to the current classification of land in India
 - ▼ Based on <http://mospi.nic.in/45-nine-fold-classification-land-use>
 - ▼ Provide legal certainty to farmers by certifying their land holdings especially regarding agricultural land productivity and clearly defined rights in a potential lease agreement
 - ▼ Category to assure developers to get all construction permits if in line with the definition of Agrivoltaics.
 - ▼ Provide guidelines for supporting states to elaborate common approval procedures in their region.
5. Establish a multi ministerial committee to coordinate action
 - ▼ With members from MNRE, Ministry of Agriculture & Farmers Welfare and Ministry of Science and Technology
 - ▼ With the involvement of interest groups from Industry and Agriculture and states
6. Introduce Agrivoltaics Award of the Year
 - ▼ With NISE on a national level
7. Establish a dedicated national research program on Agrivoltaics
 - ▼ Create a compendium of suitable Agri and Horti crops and the extent of increase in productivity based on climatic zones which will aid in project design and development
 - ▼ Involve Ministry of Agriculture & Farmers Welfare
8. Establish dedicated skill development and capacity building programs
 - ▼ E.g. in cooperation with Skill Council for Green Jobs

More information on Agrivoltaics in India can be found [here](#).

Energising Women to Advance the Energy Transition

7 June 2021 | Virtual

To advance the role of women as agents of change, the Global Women's Network for the Energy Transition (GWN) in partnership with Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ GmbH) and on behalf of the German Federal Ministry for Economic Affairs and Energy (BMWi), launched a mentoring programme "Energising Women to Advance the Energy Transition". The programme aims to advance the careers of mid-career women working in the energy transition, across select countries under the German bilateral energy partnerships.

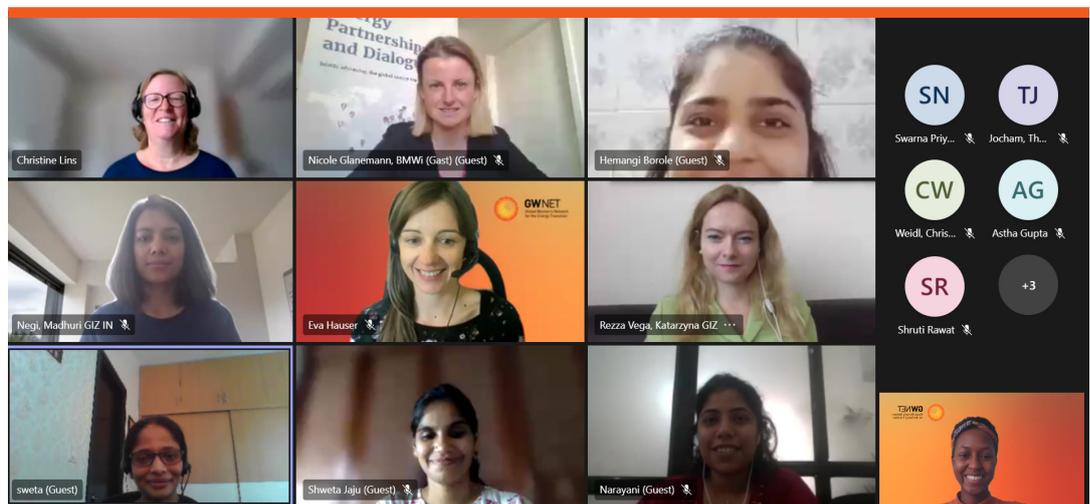
GWN received 260+ applications from women working in sustainable energy, from India 10 mentees were selected. The regional kickoff webinar of a mentoring programme for India

was organised on 7 June 2021. Dr. Nicole Glanemann, Deputy Head Bilateral Energy Cooperation, Ministry for Economic Affairs and Energy pointed out in her welcome address that "Mentoring has proven as a promising tool to strengthen women's confidence and to help them advance in their career."

The mentee-mentor pairing process was based on how closely the goals of the mentee match the skills and experience of the mentor. The programme duration is 12-months, which includes online courses for 6-months. Additionally, personal exchange between mentors and mentees and other networking sessions take place throughout the year.

For more information click [here](#).

Regional
kickoff
webinar for
India.



Knowledge Session: Transport of Green Hydrogen

26 August 2021 | Virtual

India has been internationally recognized as one of the countries able to bring down the cost for green hydrogen production from around 4 USD/kg today to around 1 USD/kg until 2030. On the other hand, countries like Germany are well aware that they will remain a net importer of energy also in a hydrogen dominated world. Will India be able to export green hydrogen to Europe? Which costs are involved in long distance transport but also last mile delivery of hydrogen? Is any corresponding port infrastructure already under development? Are dedicated pipelines of more than 3000 km length considered to be viable? To answer these salient questions, the Indo-German Chamber of Commerce (IGCC) and the Indo-German Energy Forum (IGEF) Support Office organised a knowledge session on "Transport of Green Hydrogen".

Dr. Stephan Hesselmann, Economic Minister Counsellor from the German Embassy and Ms. Sonia Prashar, Deputy Director General at IGCC initiated the session by confirming Germany's requirement as a net importer of energy. With

5 GW of electrolyser capacity planned until 2030, additional green hydrogen would need to be imported. Dr. Hesselmann emphasized on the diversification of the energy mix as an imperative step towards the official goal of Germany to become climate neutral by 2045. So far, the Government of Germany has committed funds for 9 billion Euros to support an upcoming green hydrogen economy with 2 billion Euros being committed for international projects. German investors into green hydrogen production facilities in India are eligible for funding. But how and at which cost green hydrogen may be transported to Europe remain challenging questions.

Mr. Matthias Schimmel from Guidehouse pointed out that energy should ideally be transported in the form in which it is required by the demand side to avoid conversion losses. Repurposed natural gas pipelines tend to be the most cost-efficient hydrogen transport alternative also for long distance transport. For very long distances (of above 3000 km), ships have been economically more viable. But in absence of a

Speakers at the joint knowledge session.



Knowledge session

Transport of Green Hydrogen

Thursday | 26th August 2021
15.00 pm - 16.30 pm IST
11.30 am - 13.00 pm CEST



Ms. Sonia Prashar
Deputy Director-General
Indo-German Chamber
of Commerce (IGCC)



Dr. Stephan Hesselmann
Economic Minister Counsellor
Embassy of the Federal
Republic of Germany in India



Mr. Matthias Schimmel
Managing Consultant
Guidehouse



Ms. Karin Debacher
New Business Development
Hamburger Hafen und Logistik AG



Mr. Jörg Bargest
Business Development
EVOS Hamburg GmbH



Mr. Volker Wilms
Manager - Technology
Oiltanking Deutschland
GmbH & Co. KG



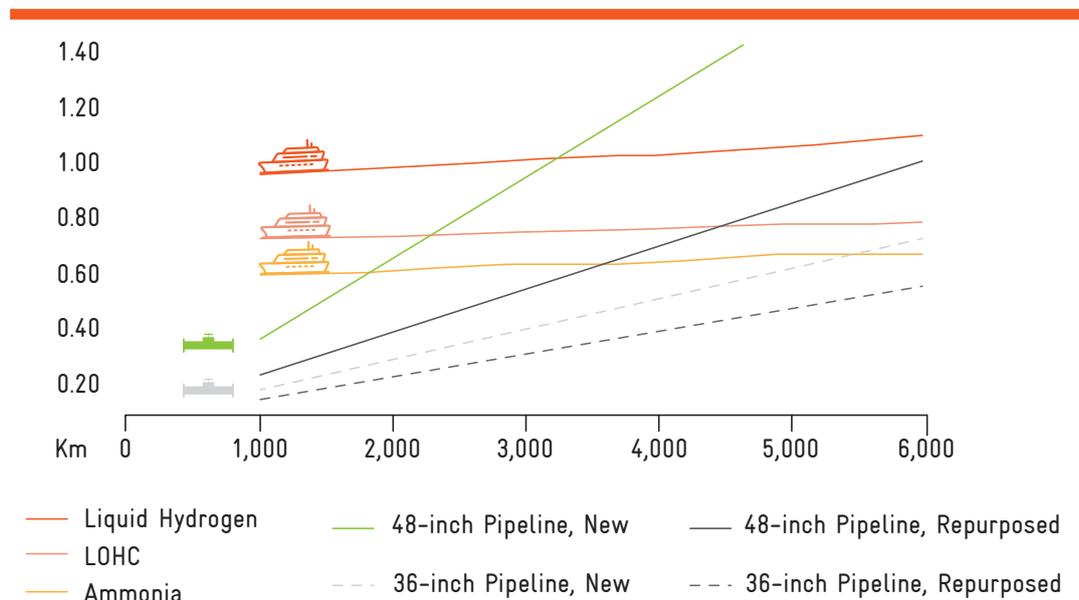
Mr. Jonas Schneemeier
Project Engineer Energy
Economics and Hydrogen
Fichtner Consulting



Mr. Anish Paunwala
Director, BD, Investment Projects,
South Asia
Linde Plc



Cost comparison ship vs. pipeline transport of hydrogen in Euro/kg
Source: Guidehouse / European Hydrogen Backbone (2021)



viable technology for hydrogen transport via ship, hydrogen would have to be converted into derivatives such as ammonia or special e-fuels also called liquid organic hydrogen carriers (LOHCs). Ammonia has the advantage that it is already traded internationally and can also be used to fuel the ship itself. However, the reconversion or cracking of ammonia back into nitrogen and hydrogen is relatively inefficient and has not yet been tested on an industrial scale. Therefore, hydrogen exports to Europe may become ammonia exports to avoid conversion losses. LOHC has low conversion costs, but typically consumes more fuel for shipping as it is heavier than ammonia and the carrier material must be shipped back unused.

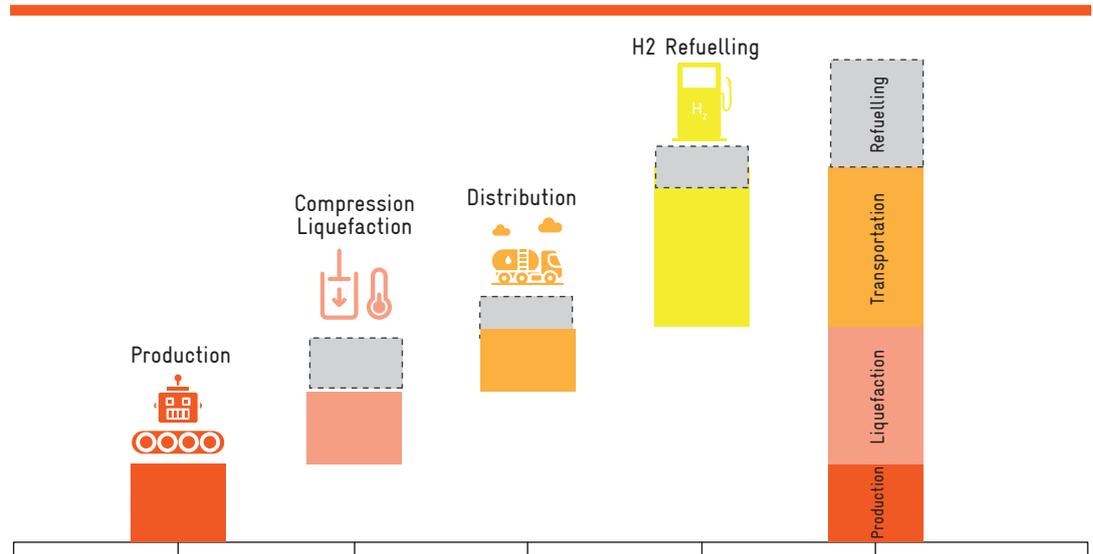
The final choice of the most viable carrier solution also determines which storage facilities must be integrated into the port infrastructure. The port of Hamburg has been a vital part of Germany's and wider European inter-continental trade flows. Located in the vicinity of heavy industry producing steel, aluminium and copper, there is great potential in utilizing green hydrogen. Ms. Karin Debacher from the Hamburger Hafen und Logistik AG (HHLA)

presented on their role as a transporter of hydrogen but also as a consumer of hydrogen. Apart from battery power vehicles already in place, hydrogen and fuel cell technology in port vehicles is currently under development. The harbour has developed a strategy to become climate neutral by 2040.

Ms. Debacher stressed the importance of resilient partnerships as HHLA comes together with Airbus to make the hydrogen economy a reality. Mr. Joerg Bargest from EVOS Hamburg also emphasized the importance of the early involvement of multiple stakeholders. As an international storage provider with a combined storage capacity of 2.5 million m³ at 4 different port facilities in Europe, EVOS is already developing storage capacities for ammonia, methanol and LOHC. Security and environmental risk assessment as well as related permission processes for new liquid fuels are found to be a new challenge.

Mr. Volker Wilms from Oiltanking Deutschland confirmed that it is technically possible to have large-scale hydrogen storage capacities, but that costs and safety risks are the most important

Landed cost for hydrogen in USD/kg
Source: Linde India



factors to take into consideration. For the storage of pure hydrogen, the cost for cooling or pressurizing infrastructure is relatively high and significant security risks remain in comparison to its derivatives, LOHC or e-fuels. The observations from Oiltanking document that LOHC's and e-fuels are way safer and associated costs are multiple times less.

Mr. Anish Paunwala, Director Business Development, Large Investment and H2 Projects at Linde India especially focused on the last mile delivery of hydrogen. He emphasized the importance of actual landed costs at the final consumer besides the often talked about production costs of hydrogen. The main cost components in the hydrogen value chain apart from the production cost itself are conditioning of H2 via compression or liquefaction, the cost for distribution via truck at a working pressure of around 500 bar and the costs associated with the refuelling process.

The costs for transport and de-hydrogenation in the case of LOHC are usually higher than the cost for the green hydrogen production itself.

Mr. Jonas Schneemeier from Fichtner Consulting confirmed the importance of infrastructure to

enable a green hydrogen economy. Blending of 2, 10 and 20% of hydrogen with natural gas in existing pipeline networks is possible based on a case-by-case evaluation. If connected to car filling stations for CNG it may be restricted to 2%. For large parts of the network, 10% have been tested and found feasible. For higher blending rates tests are ongoing and identified thresholds must be integrated into standards. The levelized transportation costs for hydrogen in mainly repurposed natural gas pipelines are estimated to lay between 0.11-0.21 Euro/kg. More expensive are dedicated hydrogen pipelines converted or newly built for point-to-point supply or local networks. Ideally, these pipelines should be planned in proximity to cavern storage sites. Existing cavern storage sites used for natural gas are currently being tested in Germany for their suitability to store hydrogen.

All presentations of the knowledge sessions can be downloaded [here](#). Videos can be found on the IGEF YouTube channel <https://youtu.be/ewGgqxPjfyo>. Fuel Cell India, India's first magazine for the hydrogen economy, was the exclusive media partner of this knowledge session on the transport of green hydrogen.

For more information click [here](#).

World Energy Storage Day (WESD) 2021

22 September 2021 | Virtual

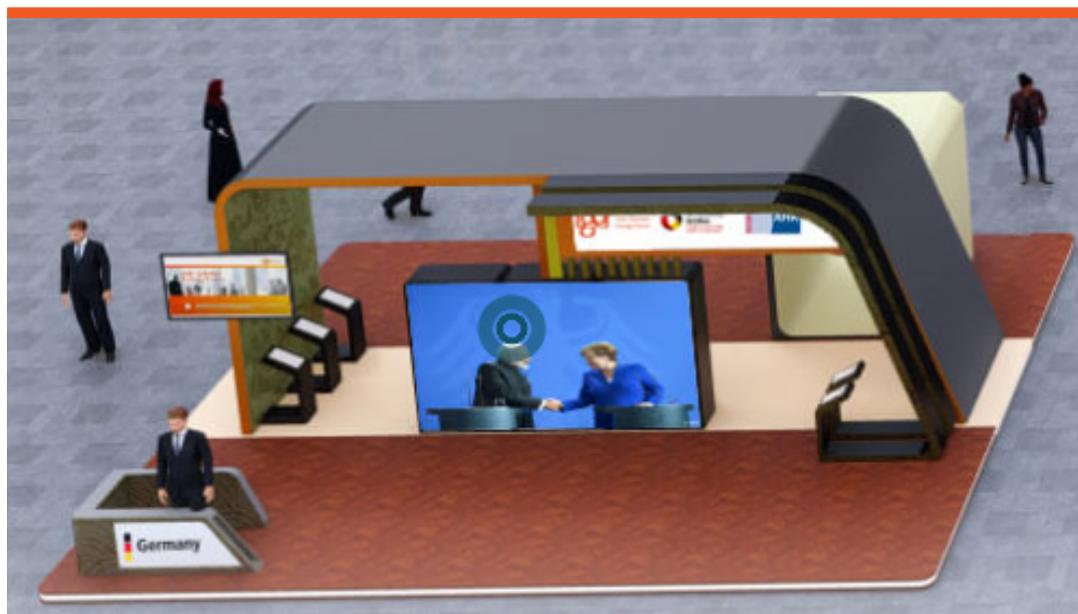
The commemoration of the 5th World Energy Storage Day (WESD) that took place virtually on 22 September, saw the event unfolding across the world over 24 hours. The event covered four global regions (encompassing Asia, Europe, Africa, Middle East, Australia, North & South America) with virtual sessions on stationary energy storage, e-mobility and charging infrastructure, manufacturing, innovation, R&D and green hydrogen.

In cooperation with the Indo-German Chamber of Commerce (IGCC), the IGEF-SO organised a virtual German Pavilion. The event witnessed

global participation from over 100 countries and 150+ international speakers. Total virtual footfall was 44,022. The event kicked off with sessions on Asia and continued through the day as Europe, the Middle East and Africa and the Americas joined up later. The event had four six-hour conference tracks that were accessible by participants in different languages including English, Chinese, Japanese, German, and Spanish.

For more information please contact Mr. Ashok Thakur athakur@ces-ltd.com or click [here](#).

German Pavilion at the World Energy Storage Day.

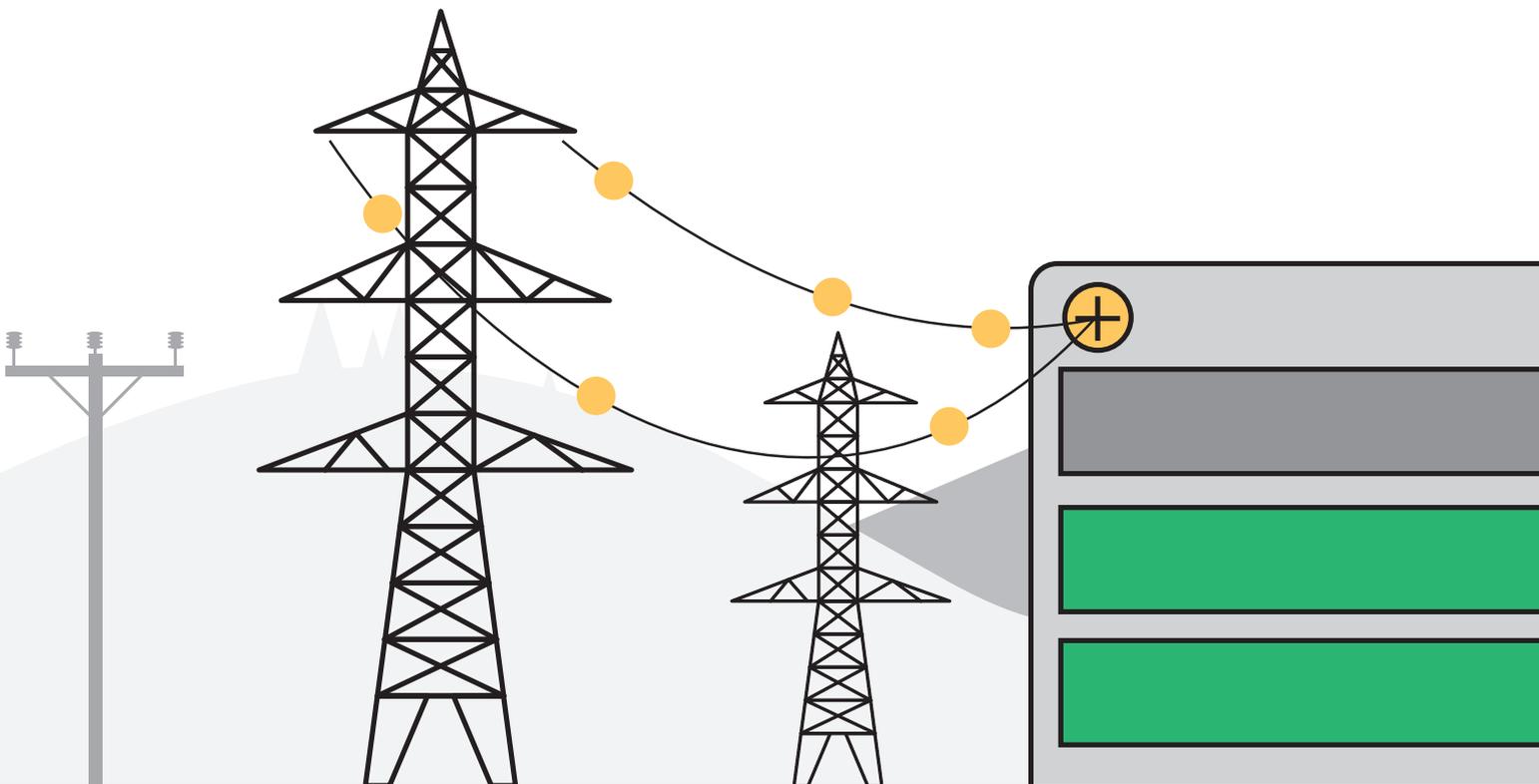


Hydrogen Energy Conference

16 July 2021 | Virtual

The Indian Chamber of Commerce organised a special Hydrogen Energy conference on 16 July. In the session "Production of Green Hydrogen and Grey Hydrogen", the panellists discussed the importance of hydrogen as a fuel, its utilisation and production and how green hydrogen, given the right incentives and lower costs, can play a much bigger role in decarbonization. Speakers agreed that hydrogen should be used in sectors difficult to decarbonize, for instance in steel making and chemical manufacturing. In Europe, 7 out of 8 major steel makers have pledged to

the net zero by 2050 and agree that this is not possible by using coking coal. Another possibility would be the usage of green hydrogen as a green fuel for heavy duty transport and long-distance transportation, as this is where electric mobility is still challenged. In the second panel revolving around batteries, more sustainable mobility opportunities were discussed. As of now, electric vehicles (EVs) are found the best option for sustainable mobility but policy interventions remain to be required to achieve area-wide coverage of electrical mobility.



German Pavilion and Session on Agrivoltaics at REI Expo 2021

15 – 17 September 2021 | Hybrid

The 14th Renewable Energy India (REI) Expo took place from 15 to 17 September 2021. It provided a platform to facilitate the dialogue between actors and stakeholders within the sector of Renewable Energies in India. This year, the fair was held in a hybrid format and focused on renewable energy technologies, bringing together experts under the motto “Let’s Reconnect and Rebound” thus referencing the impact of COVID-19 on industry exchange over the past months. The event was, amongst others, inaugurated by Hon’ble Minister Shri Bhagwanth Khuba, Ministry of New and Renewable Energy (MNRE) and the German Ambassador to India H.E. Walter Lindner, who highlighted the several decades long collaboration between India and Germany in the energy sector and especially in the solar energy market. On that same note, he pointed out that there are still many

milestones to be reached by both countries in their transformation journey to achieve a clean and renewable energy supply in accordance with their climate strategies.

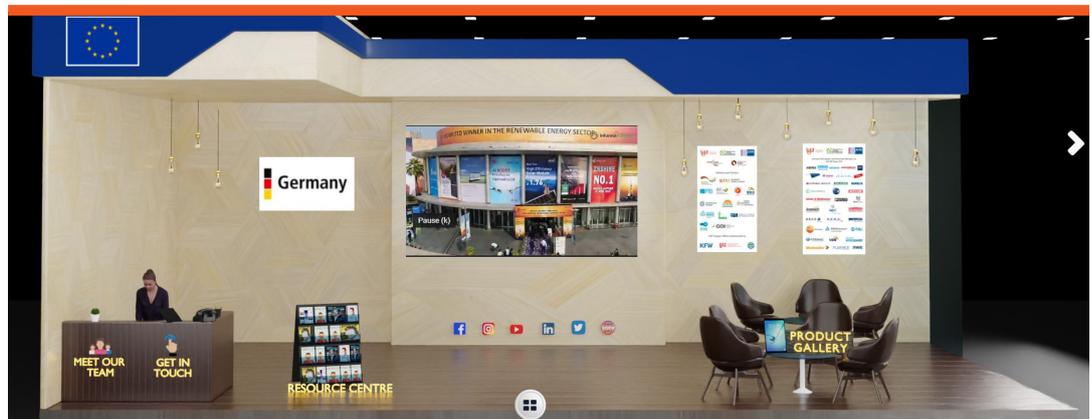
In his opening speech, the Hon’ble Minister of State for Chemicals and Fertilizers, New and Renewable Energy of the Government of India elaborated on the solar sector’s great potential in India. In cooperation with the Indo-German Chamber of Commerce (IGCC), the IGEF-SO organised a virtual German Pavilion at which more than 45 German companies and associations were represented.

On the third and final day of the expo, IGEF-SO and the National Solar Energy Foundation of India (NSEFI) hosted an event aiming to foster best-practice exchange from industry

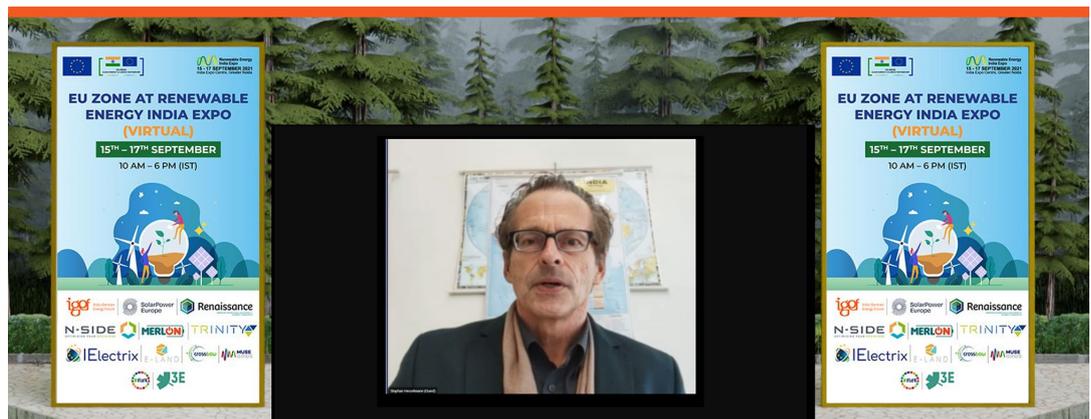
H.E. Walter Lindner
and Hon’ble
Minister of State
Shri Bhagwanth
Khuba during
the inauguration.
©IGEF-SO



The German Pavilion was jointly organised by IGCC and IGEF-SO in the EU Zone.



Dr. Stephan Hesselmann inaugurated the session on “New Agrivoltaics Developments in India.”



experts in the field of Agriphotovoltaics (AgriPV). Inaugurated by Dr. Stephan Hesselmann, Economic Minister Counsellor at the German Embassy in New Delhi, the session hosted four guest speakers to provide all attendees with their expertise and experience in the various projects they are conducting in India and Europe. Mr. Subrahmanyam Pulipaka, CEO of NSEFI, initiated the discussion with his remarks on Indian policy reforms on AgriPV. Mr. Miguel Herrero Cangas from SolarPower Europe (SPE) continued with a presentation of SPE’s “best-practice guide” for AgriPV, detailing insights into successful projects paired with lessons-learned, as well as a full life cycle assessment of agriphotovoltaic infrastructure. Thirdly, participants were provided with an exclusive glance at a rather scientific approach to the topic: Mr. Vivek Saraf from Indian

company SunSeed APV introduced their artificial intelligence platform as means to analyze micro-climate, water-crop requirements and light-shading to simulate crop yield and resulting revenues. Thereafter, Mr. Shavan Sampath (Oakridge Energy Pvt. Ltd) offered his learnings from a pilot project to add to the discussion on the potential challenges and synergies of AgriPV. In a final presentation, Mr. Maximilian Vorast from Fraunhofer ISE elaborated on the development of regulatory frameworks concerning AgriPV norms in Germany, aiming to further the Indian pathway to strong domestic standards.

All presentations of the session can be downloaded [here](#). Videos can be found on [YouTube](#).

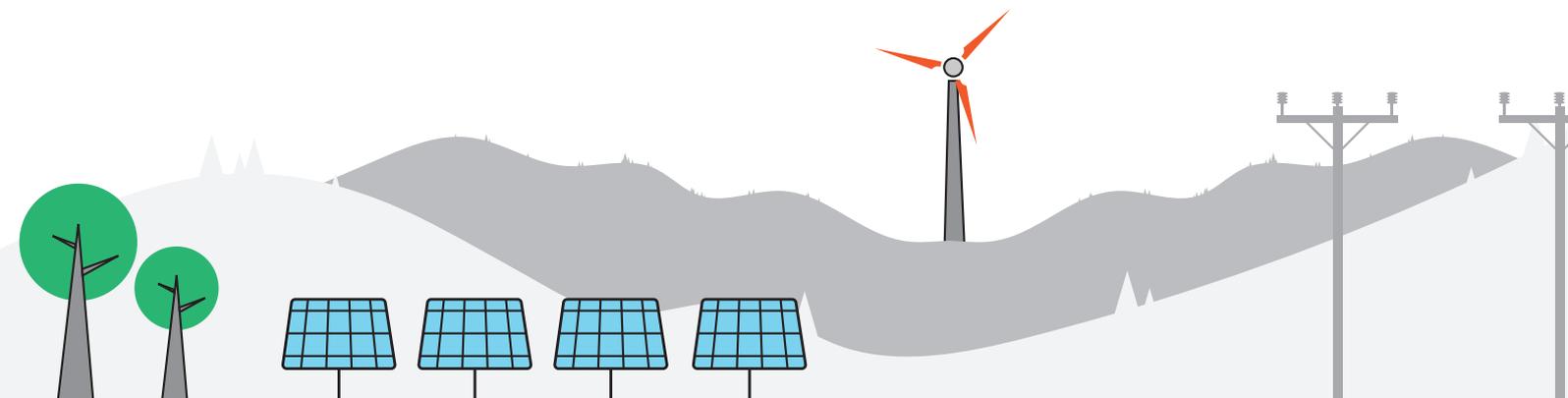
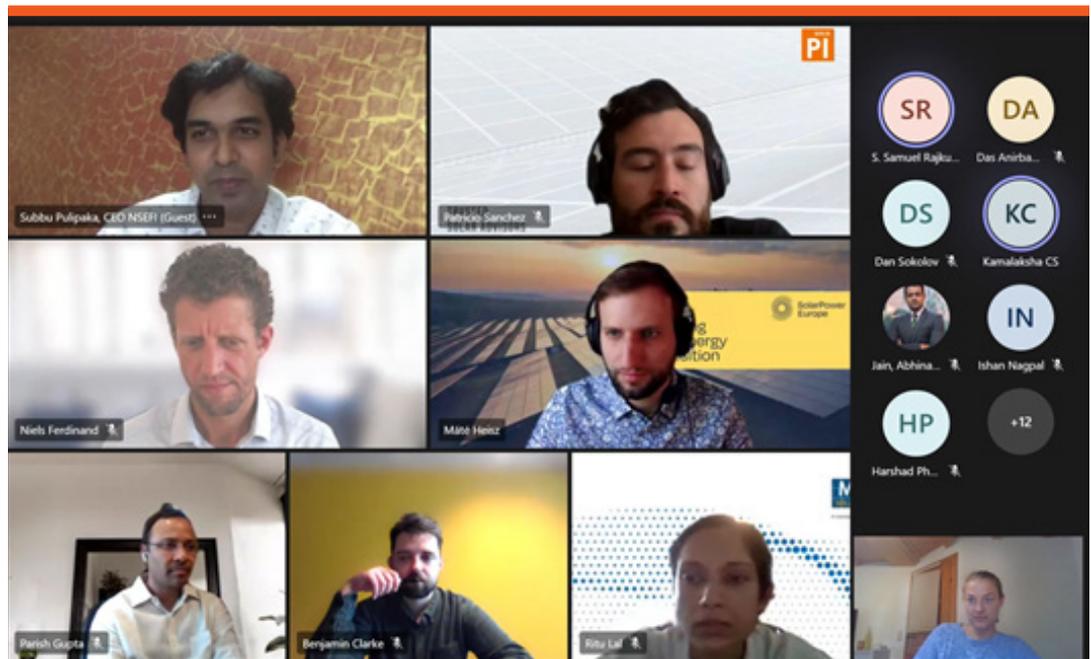
Strategy Meeting of SolarPower Europe and the National Solar Energy Federation of India

10 June 2021 | Virtual

On 10 June, the annual strategy meeting of the European Solar Association and the Indian Solar Energy Federation (NSEFI) was held. Around 25 participants from various European and Indian solar companies discussed future developments,

such as hydrogen, agriphotovoltaics, PV rooftop and storage, best practice cases for the construction of high-quality PV-plants, PV waste management, as well as the impact of extreme weather on insurance premiums.

Participants
of the annual
strategy meeting
of SolarPower
Europe and
NSEFI.



8th Energy Storage Solutions Meet

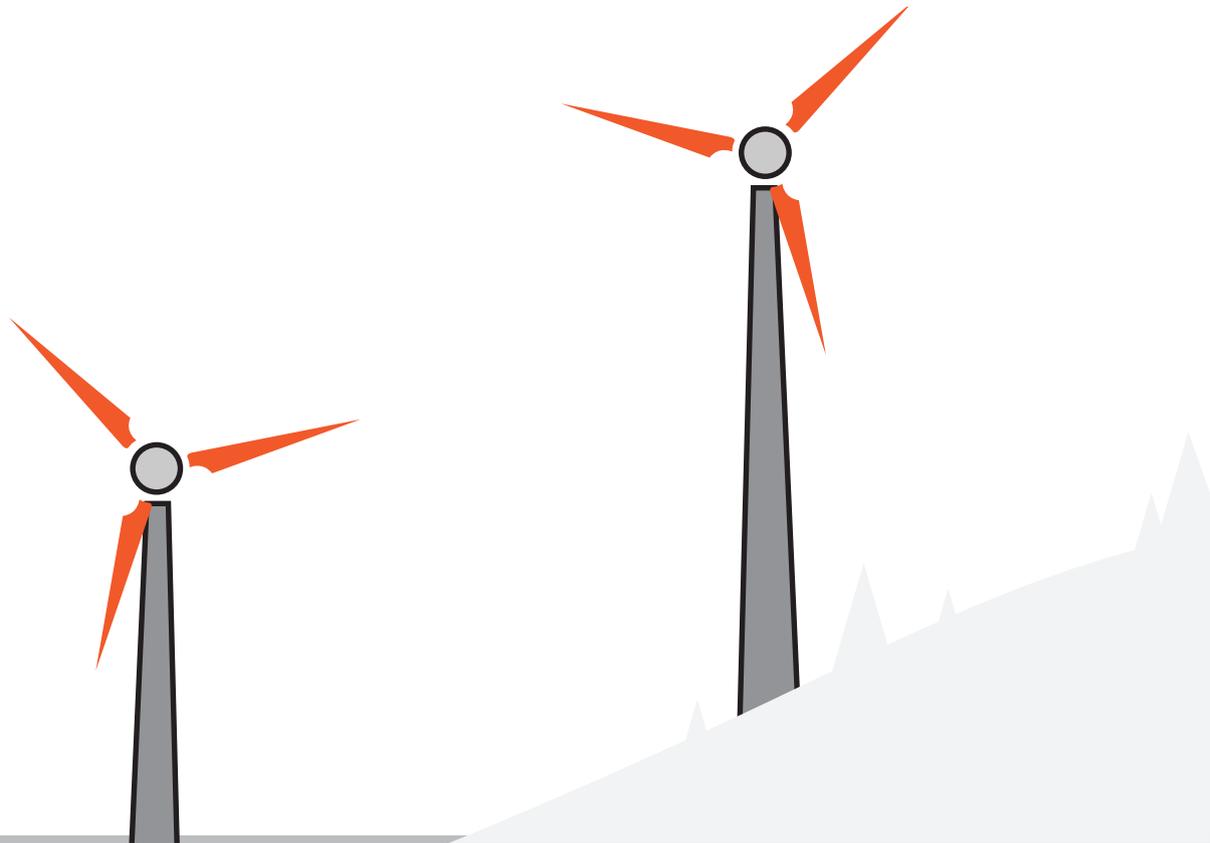
15 July 2021 | Virtual

India Energy Storage Alliance (IESA) organised the 8th ESSMEET (Energy Storage Solutions Meet) as a virtual conference on 15 July 2021. The objective behind this meet was to provide information about energy storage solutions for commercial & industrial consumers in the following four business models:

- ▶ To increase revenue by solving power quality and reliability issues.
- ▶ To reduce diesel consumptions by adopting energy storage as a backup.
- ▶ To develop rooftop solar & energy storage installations.
- ▶ To save energy costs through open access & energy storage.

The Indo-German Energy Forum Support Office (IGEF-SO) was a supporting partner and speaker at the event which was well attended by 250 participants. In the session "Deregulation of the DISCOM sector", Mr. Tobias Winter, Director, IGEF-SO said "We believe that the future for India is bright. With more storage projects in India being implemented, the involved CAPEX should soon be lower than the global average. Why import oil and burn it, if batteries can be used again and again." Other panelists in the session were Mr. K N Rao, ACC Cement, and Mr. Rahul Jain, Renew Power.

For more information please contact Mr. Ashok Thakur, athakur@ces-ltd.com.



3

Developments in Indo-German Energy Cooperation



Adoption of Digital Payments in the Off-Grid Renewable Energy Sector

20 August 2021 | Virtual

KfW in collaboration with Indian Renewable Energy Development Agency (IREDA) and PwC India, organised a 1-day workshop on the “Adoption of Digital Payments in Off-grid Renewable Energy Sector” on 20 August. 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 the first of its kind, through incentives the line has attracted attention from different categories of players such as honed private sector Companies, start-ups in the sector, NBFCs, MFIs, and more for a veteran or new technology solutions and services to be implemented in the rural areas.

The workshop was organised for off-grid renewable energy sector organizations active in India and was attended by 30+ participants. The workshop provided hands-on training to IREDA’s potential and existing sub-borrowers on the advantages and disadvantages of adopting digital payment platforms for payment collection from the customers and how such companies can integrate digital payment collection into their existing business operations. The workshop was delivered by Mr. Vineet Bhatia, Associate Director at PwC India – Clean Energy Practice.

Topics covered during the workshop

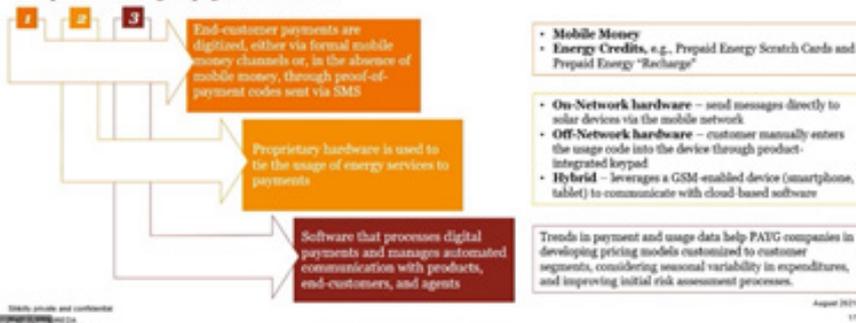
- ▼ Overview of cash as an energy payment mechanism
- ▼ Analysis of digital payment ecosystem in India
- ▼ Business Model Segmentation for adoption of digital payments in access to energy sector in India
- ▼ Enhancing the up-take of digital payments in India
- ▼ Threats and vulnerabilities in using digital payments
- ▼ Indian CII Protection Framework
- ▼ Managing cyber security Challenges in India
- ▼ Panel Discussion

The first session focused on summarizing the digital payment landscape globally and in India, as well as discussing the key barriers to expanding energy access to the rural population that the spread of digital payments could support in overcoming. The session also centred around the business model segmentation for the adoption of digital payments with the discussion elaborating on the most common variables found in digital transactions with an end-user, as well as on implications on the overall business model for a company.

Solar Home-lighting Systems and RE based Mini Grids

Several energy enterprises across globe are now leveraging digital finance—especially mobile payments—to deliver modern energy to the poor, sold on a pay-as-you-go (PAYG) basis.

PAYG solar solutions on the market today generally have three basic parts to how digital payments are used:



The second session of the workshop focused on the cyber-security challenges that digital payments present. The analysis offered a snapshot of some important trends and incidents and how those could be mitigated. This session also included a conversation about the critical information infrastructure (CII) protection framework existing in India.

A special panel discussion was also organised as part of the workshop. The panelists for the

discussion included Mr. Chintan Shah, Director Technical, IREDA, Mr. Naveen Garg, Global CFO, Husk Power, Mr. Piyush Mathur, Chief Business Officer, Odyssey Energy Solutions, Inc. and Director, CLEAN and Mr. Ravi Pittie, Founder and CEO of KPay Innovation Pvt. Ltd. and Chair of GOGLA's India Working Group. The key topics of the panel discussion included:

Topics covered during the workshop

- ▶ Key enablers for digital payments in the Access to Energy market
- ▶ Type of government support is required for digital payment landscape to flourish
- ▶ Steps companies can undertake to ensure a sustainable shift cash collection to digital payments
- ▶ Synergies that can be drawn from Africa's experience of digitalization of Pay-as-you-go business model in India



Fact-Finding Mission “Charging Infrastructure and Storage Technologies for E-mobility”

14 – 17 June 2021 | Virtual

A fact-finding mission on the topic of “Storage Technology and Charging Infrastructure for E-mobility” in Germany was organised by the Indo-German Chamber of Commerce (IGCC) from 14 to 17 June 2021 in association with eclareon GmbH. The fact-finding mission was funded by the German Federal Ministry for Economic Affairs and Energy (BMWi) as part of the German Energy Solutions Initiative. The programme was designed for stakeholders in the E-mobility industry in India.

The objectives of the mission were to arrive at an understanding of the existing policy framework and business models & current research and technical developments in the E-mobility sector in Germany.

On 14 June, the online event kicked off with a round of introductions that was followed by presentations from companies namely, NOW-GmbH and H2 Mobility by Mr. Christian Dieckhoff and Mr. Benjamin Jödecke respectively. “Charging infrastructure planning in Germany”, and hydrogen technology and infrastructure, were the topic of their presentations. The second theme for the day was “Battery Systems.” Dr. Marius Bauer of Zentrum für Sonnenenergie- und Wasserstoff-Forschung Baden-Württemberg (ZSW) presented an overview of battery technologies, whereas Mr. Bijan Abdolrahimi

from Route Charge delivered a presentation on battery exchange systems for transportation, especially for the logistics industry.

The second day of the virtual event was marked by project presentations on “Current scientific developments & applications.” “Charging infrastructure 2.0” was the topic of the presentation by Dr. Christian Spalthoff and Dr. Martin Braun from Fraunhofer IEE. The research project “Charging Infrastructure 2.0” examines the influence of electric mobility on the energy networks of the future. The next presentation by Ms. Manuela Schaller from Pracht Licht GmbH was about the charging system technology offered by the company.

On 16 June, the topic was “E-mobility in practice”. On one hand, Ms. Stefanie Dedeyne from BTB GmbH Berlin deliberated on “Project FlexNet4E-mobility”, on the other hand, Mr. Rene Wetzel from Ubitricity GmbH shed some light on “Smart Charging in Practice”.

The project “FlexNet4E-mobility” aims to understand possibilities for the optimized use of excess renewable energy for electric vehicles, as well as to analyse the effectiveness of electricity storage systems at different grid levels and eventually to develop intelligent operating and control strategies.

The theme for the last day revolved around battery systems and storage technologies. In the first session Frank Baumann, BMZ group gave a presentation, which is a global player in Lithium Ion battery systems. This was followed by a presentation by Andreas Schaal of MANZ AG, which offers production equipment for lithium-ion battery cells, modules and packs.

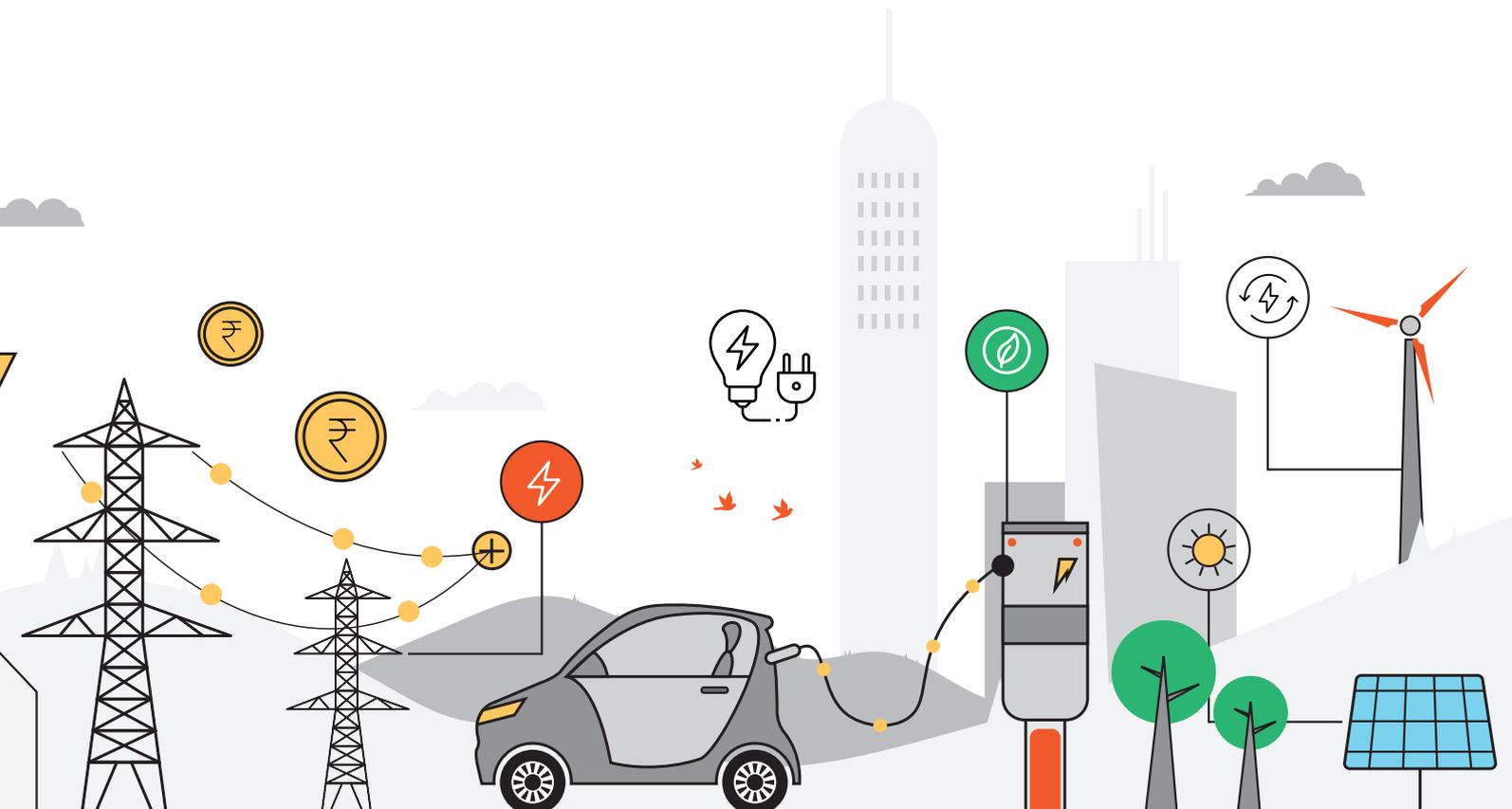
In the second session the areas of focus were "Fuel Cells in action" presented by Mr. Matteo Schmid from Proton Motor Fuel Cell GmbH, and "Battery Control Systems" portrayed by Mr. Nicolas Rau from Twaice GmbH. The day was rounded up by a feedback session offering a reflection of the entire mission.

All the sessions were followed by an interactive Q&A round. These rounds were characterized by several important discussions on topics such as incentive mechanism and regulatory policies in Germany, ways of enhancing the roll-out of EVs; the application of H2 technology in heavy-

duty vehicles, surveys and analyses related to various adoption scenarios for E-mobility, the pricing issues of e-vehicles, details of fuel cell technology, set up of EV charging platforms, costs of charging, the feasibility of battery charging and so on.

The sessions were moderated by Ms. Dipti Kanitkar from IGCC and Ms. Lena Möller from eclareon GmbH. The fact-finding mission was well attended by over 50 participants from industry associations and leading companies in charging and battery technologies from India. The participants were highly satisfied with the program structure and content which provided a valuable learning experience. The fact-finding mission ended on an optimistic note with the hope of mapping out a concrete path for E-mobility adoption in the very near future.

For more information please contact
Ms. Dipti Kanitkar, dipti.kanitkar@indo-german.com.



Green Hydrogen and India's Zero Emission Plan in the Transport Sector

4 September 2021 | Virtual

India has announced the target of zero greenhouse gas emissions by 2050 as per the Paris Agreement. To achieve this, India is looking at clean fuel transportation systems and has come up with an electric vehicle policy, while now in the process of preparing the "Roadmap for Carbon Friendly Green Hydrogen in National Hydrogen Mission", as announced by the Prime Minister on the Independence Day.

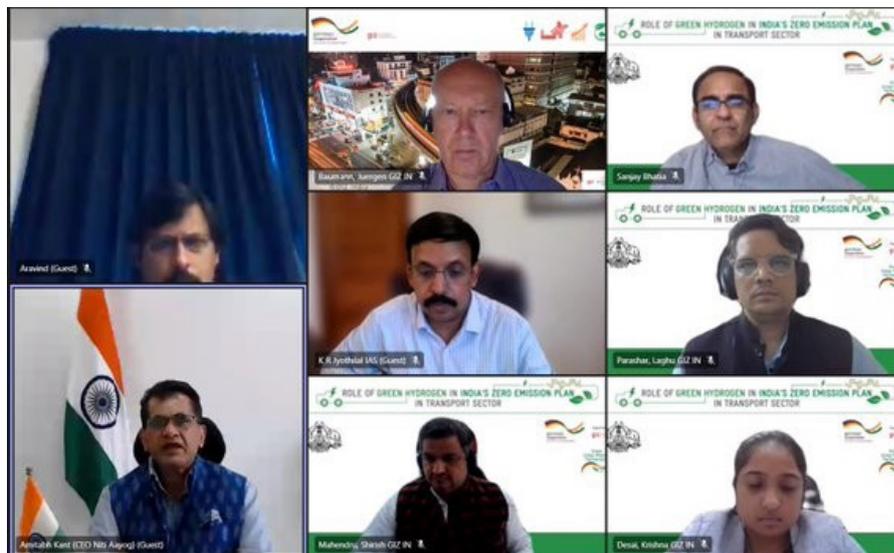
The Transport Department, Government of Kerala, organised a virtual workshop on Green Hydrogen and India's Zero Emission Plan in the Transport Sector on 4 September 2021. The Workshop was supported by the Integrated Sustainable Urban Transport Systems for Smart Cities (SMART-SUT) project, implemented by the Ministry of Housing & Urban Affairs and GIZ, and funded by the German Federal Ministry for Economic Cooperation and Development (BMZ) under the Green Urban Mobility Partnership (GUMP).

Highlights from the speakers:

- Dr. Nicole Glanemann, Deputy Head, BMWi shared Germany's Green Hydrogen Strategy, focusing on the viability gap, and how the Govt. of Germany is supporting the rollout of a global Hydrogen economy.

- Green Hydrogen is currently enjoying unprecedented political support and we have to make the best of it. Being an early adopter of Hydrogen energy technology will benefit India in the long run, owing to hydrogen's cross-sector sustainability."- Shri Amitabh Kant, CEO, NITI Aayog.
- "Manufacturing technology for the storage and transportation of liquid hydrogen is found to be the biggest challenge. Transporting hydrogen as high-pressure gas could be the most popular mode in India in the future, and we need to ensure it is done safely." - Mr. Tom Joseph
- "In less than 10 years, it will be cheaper to run Fuel-Cell electric vehicles than Electric Vehicles or Internal Combustion Engines (ICE), in certain commercial applications." - Mr. Oben Uluc, Ballard
- "Green Hydrogen is currently enjoying unprecedented political support and we have to make the best of it." - Shri Amitabh Kant speaking on National Hydrogen Mission

For further information please contact Mr. Shirish Mahendru, shirish.mahendru@giz.de and Ms. Krishna Desai, krishna.desai@giz.de.



PM-KUSUM: Maximising Productive Outcomes

26 August 2021 | Virtual

As part of the on-going “Azadi ka Amrit Mahotsav” celebrations, a (virtual) policy dialogue on “Maximising the Productive Outcomes” of Government of India’s PM-KUSUM initiative was co-organised by the Ministry of New and Renewable Energy (MNRE), the International Water Management Institute (IWMI) and Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH with support from CGIAR Research Programs on Climate Change, Agriculture and Food Security (CCAFS), Water, Land and Ecosystems (WLE) and the Indian Council for Agricultural Research (ICAR).

The event marked the launch of the “Solar Irrigation Pump Sizing Tool”, co-developed by IWMI, CCAFS and ICAR for PM-KUSUM with support from GIZ. The (virtual) session included an overview presentation that highlighted the importance of “right-sizing” solar irrigation pumps and enumerated pathways for maximising productive outcomes of PM-KUSUM. An online,

as well as a desktop version of the SIP sizing tool, were demonstrated. Furthermore, field experiences from Bihar and Jharkhand were shared and an emphasis was placed on the need for innovative financial models that can help small farmers adopt solar technologies. Additional insights from a large survey of solar farmers in Uttar Pradesh, Rajasthan, Odisha and Tamilnadu were shared with the audience.

The session also saw participation from PM-KUSUM beneficiaries and solar irrigation entrepreneurs. The farmers expressed relief at the significant lowering of irrigation costs as a result of solar adoption, but also reiterated the need for technical support to help them maximise productive uses of solar energy.

Nearly 100 participants joined the dialogue.

For further information please contact Mr. Florian Postel, florian.postel@giz.de.

PV Port System
installed in Gujarat.





Two Days Events for PM-KUSUM & DRE Initiatives to Celebrate 75 Years of Independence “Azadi ka Amrit Mahotsav” by MNRE and GIZ

26 – 27 August 2021 | Virtual

On the occasion of “Azadi ka Amrit Mahotsav”, India’s 75th Year Independence, the Ministry of New and Renewable Energy (MNRE), Government of India, and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) - IGEN Promotion of Solar Water Pumps (the programs supported by the German Federal Ministry for Economic Cooperation and Development (BMZ) and implemented by MNRE in partnership with GIZ India) came together to organise a 2-day event. The event highlighted the importance, potential as well as the achievements of Pradhan Mantri – Kisan Urja Surksha evam Utthaan Mahabhiyaan (PM KUSUM). GIZ co-organised 4 sessions in the 2-day event for PM KUSUM.

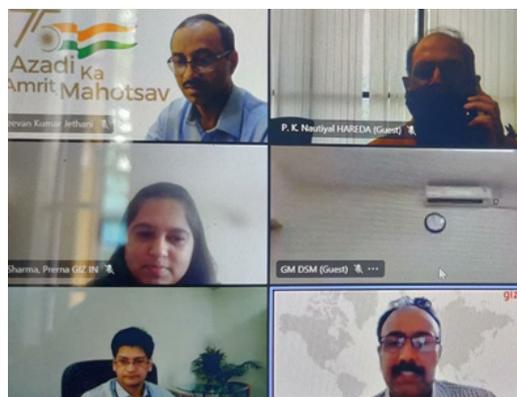
On 26 August, the first session was on “Dissemination of Communication Material for PM KUSUM” prepared by Deloitte, where Mr. Amitesh Kumar Sinha, Joint Secretary, MNRE gave the key-note address and highlighted the importance and progress under PM KUSUM. In the open discussion session, the states provided feedback on the communication material and highlighted their challenges, plans and initiatives for the dissemination of communication material and outreach to

farmers. In the second session, a virtual policy dialogue on maximising the productive outcomes of the Government of India’s PM-KUSUM was co-organised by MNRE, GIZ and International Water Management Institute (IWMI). The event marked the launch of the “Solar Irrigation Pump Sizing Tool”, co-developed by IWMI, CCAFS and ICAR for PM-KUSUM with support from GIZ.

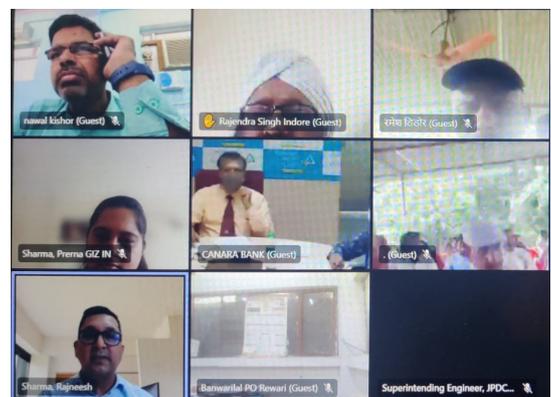
On 27 August, the first session was on the “Discussion on the Financing for PM KUSUM”. A brief about the financing gaps identified under a GIZ’s funded project by Deloitte was followed by a moderated panel discussion. The Panelists were from KfW bank, Canara Bank, Former Chief General Manager of NABARD, SECI and farmers who took loans under Component A. The next session was an online quiz program that was realized among state agencies implementing the PM KUSUM scheme, with the objective to understand the KUSUM scheme with finer details. Team Maharashtra (MSEDCL), Team Haryana (HAREDA) and Team Uttar Pradesh (UPNEDA) emerged as winners for Component A, Component B & Component C respectively.

For further information please contact Ms. Perna Sharma, perna.sharma@giz.de.

Session 1- Dissemination of Communication Material for PM KUSUM.



Session 3- Discussion on Financing for PM KUSUM.



First edition of Green Steel Summit 2021

17 – 18 June 2021 | Virtual

The Confederation of Indian Industry (CII), in association with Energy Efficiency, Industry & Data GIZ organised the “Green Steel Summit 2021”, the first edition of the two-day virtual conference on 17 and 18 June. The objective of this conference was to create a platform to disseminate knowledge and discuss the opportunities and issues in the steel sector. More than 150 distinguished speakers from leading manufacturers and technology providers from India and abroad, Government agencies and industry associations participated.

Shri R. K. Rai, Secretary, Bureau of Energy Efficiency (BEE) emphasized that “Sustainability is key for the long-term health of the steel industry”. In pursuance of their ambit of assisting the industries, he mentioned that the Bureau of Energy Efficiency has been implementing demonstration projects on sector-specific energy-efficient technologies. These demonstration projects have acted as catalysts in encouraging several other industries to replicate the same in their operations. He also mentioned that the BEE is planning to launch a voluntary scheme for MSMEs called “Perform, Achieve and Earn”. In this scheme, the MSME units will save their energy and get equivalent certificates which will be brought back by BEE,

resulting in a double-win situation for the MSME sector.

Dr. Winfried Damm, Head of the Energy Cluster at GIZ India, highlighted that as “the Iron & Steel sector is one of the most energy-intensive sectors and a major CO₂ emitter, it is imperative to focus on energy efficiency practices, shift to CO₂ neutral energy supply, and demand shift”. He emphasized the importance of having a regulation in place by the Government as a mandate for the industries to be carbon neutral.

Key points from the Conference:

- ▶ Concepts on energy efficiency in the primary and secondary steel segment
- ▶ Best operating practices in thermal system & electrical system in large & medium steel industries
- ▶ Sharing of emerging technologies and implemented case studies
- ▶ Waste Heat Recovery Opportunities in Steel industries
- ▶ Adoption of sustainable practises in the steel industry – Production of green steel

For further information please contact
Mr. Nitin Jain, nitin.jain@giz.de.

Green Steel
Summit: Glimpse
of the Event.





Program on “Financing of Solar-based Decentralized Energy Solutions”

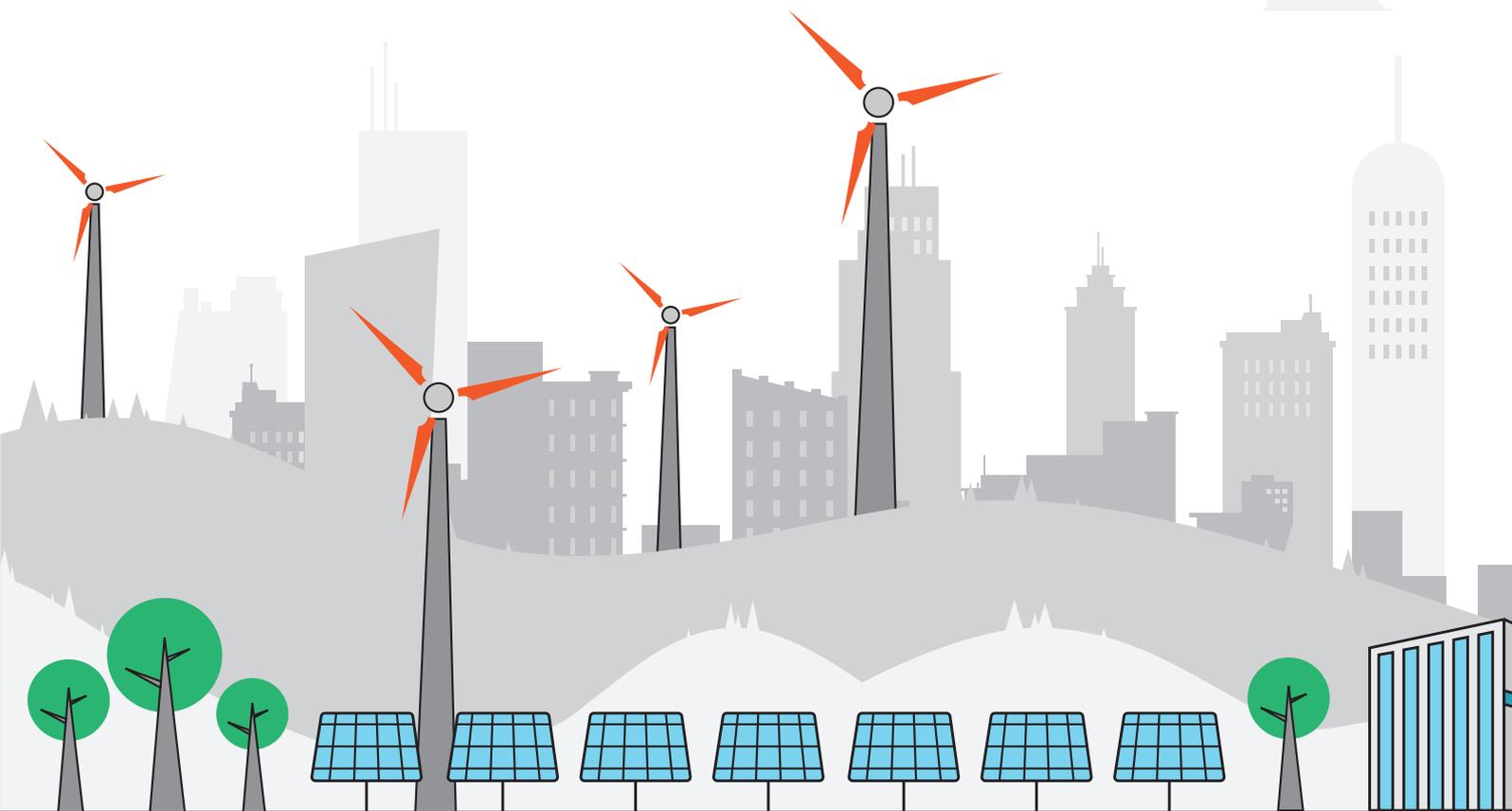
25 – 27 August 2021 | Virtual

The Bankers Institute of Rural Development (BIRD) has conducted a program on “Financing of Solar-based Decentralized Energy Solutions” from 25 to 27 of August. This program was to train bankers, CSR Foundations, and NGOs regarding the development in the DRE sector. GIZ provided technical support in 6 sessions that were spread over a three-day program. Out of the 6 sessions, GIZ supported BIRD in taking up 4 sessions and provided the trainees with insights into DRE technologies, financing, the role of Corporate Social Responsibility, understanding Solar Water Pumps, and the PM KUSUM Scheme.

On the 25 August 2021, the first session was on an “Overview of the RE Sector/ Development of Solar in India”, delivered by Mr. Rajesh Yadav, BIRD, while the second session called “Overview of DRE Market in India” was covered by Ms. Annanya Sahini, Policy Associate, CLEAN. She explained the various DRE technologies and their applications. On 26 August 2021, the

first session was taken by Mr. Ankit Gupta, Associate Vice President at Intellectap, who gave an overview of the “Application of DRE in livelihoods - Experience sharing on bank finance in Decentralised Renewable Energy sector”. The next session was taken by BIRD on Financial Viability Aspects of DRE and conducted an appraisal of DRE Projects. On the last day of the training program, 27 August 2021, the first session was about “Experience sharing on implementation of DRE applications with special reference to sustainability - Role of CSR”, which was taken up by Mr. Adwait Joshi, CEO CLEAN and Ms. Kritika from CLEAN. The last session was on “Technical and financial parameters of Solar Pump Scheme - KUSUM Scheme of Government of India”, presented by Mr. Anupam Ray, Senior Advisor KPMG.

For further information please contact
 Ms. Perna Sharma, perna.sharma@giz.de.



15th Paper Tech 2021

12 – 13 August 2021 | Virtual

The Confederation of Indian Industry (CII), in association with Energy Efficiency -Industry & Data, GIZ India organised the 15th edition of Paper Tech, a two-day virtual conference from 12 to 13 August. The theme of this conference was to make the Indian Pulp & Paper Industry World Class. Eminent speakers from the Industry participated.

The two-day virtual event was organised under the Chairmanship of Mr Sanjay Singh, Group Head at Paper & Packaging, ITC Ltd. Mr Ganesh Bhadti, President, SPB Ltd. was the Co-Chairman.

The conference deliberated on major areas and economically feasible sustainable solutions for the Indian Pulp and Paper sector and welcomed

over 250 participants from various major paper manufacturing groups.

Key points discussed:

- ▶ Latest advancements in Pulp & Paper manufacturing
- ▶ Best Practises for Pulp & Paper sector
- ▶ Energy Efficiency & best practices in medium & small paper mills
- ▶ Energy & Productivity improvement opportunities
- ▶ Best operating practices in Pulp & Paper mills.

For further information please contact Mr. Piyush Sharma, piyush.sharma@giz.de.

Paper Tech: Sneak Peek of the event.



IPMA
Confederation of Indian Industry
german cooperation
giz Knowledge Partner

15th Edition
PAPERTECH 2021
12 & 13 Aug 2021

“An online conference for the Pulp & Paper industry”
Theme: Make Indian Pulp & Paper industry World Class

Listen to the leaders

Mr N Gopalaratnam
Chairman, Seshasayee Paper and Boards Limited

Mr A S Mehta
President, IPMA & President & Director, M Paper Ltd.

Mr Sanjay Singh
Chairman, PaperTech 2021 & Group Head – Paper & Packaging, ITC Ltd.

Mr Pramod Agarwal
President, IAPMA & Chairman and Managing Director, Rama Paper Mills Ltd.

Dr. Ashok Kumar
Executive Director, Podurjee Pulp and Paper Mills Ltd.

Sessions on

- ◆ Latest developments in paper manufacturing process
- ◆ Environmental management best practices
- ◆ Energy and productivity improvement opportunities
- ◆ Best operating practices from Paper industries

69th IFC & IFEX Virtual Expo 2021

2 – 8 September 2021 | Virtual

GIZ participated in the 69th Indian Foundry Congress IFC & 17th International Foundry Exhibition - IFEX 2021 which was held virtually from 2- 8 September. The theme of the Expo was "Transforming Foundries: New Horizons" to showcase the Global Foundry scenario with an Indian perspective and to reveal the "New Horizon" that beckons us to think differently. It provided an excellent platform for the Indian as well as overseas companies to showcase their state-of-the-art technologies and services being offered to this vibrant industry to get exposed to new business opportunities.

The Virtual Exhibition featured various national & international exhibitors showcasing the latest technological developments in the Foundry and allied industries - cast components, foundry equipment, sourcing materials, logistics and simulation software, among others. Buyers and trade visitors from pan India and nearby countries visited the virtual expo.

Key highlights from the Expo:

- ▶ The MSME session emphasized the dissemination of technology, marketing

possibilities and funding options under various schemes for Foundries and brought together casting manufacturers, OEMs and Government officials on a common platform.

- ▶ B2B meetings were arranged to get buyers and exhibitors to meet each other. They provided an ideal opportunity for small and medium-sized businesses to build connections and find new clients.
- ▶ Techmart served as a meeting venue and market outlet to facilitate the technology commercialization, business partnership and cooperative ventures for the Foundry industry and allied technologies.
- ▶ Business/Management Symposium provided a platform to researchers and practitioners from both academia and industry to meet and interact with eminent Management Experts & Business Consultants who shared their knowledge on modern management concepts, and how it can be applied to resolve issues of significance faced by the Foundry industry.

For further information please contact
Mr. Piyush Sharma, piyush.sharma@giz.de or
Mr. Ayan Ganguly, ayan.ganguly@giz.de.



Final Workshop on “Development and Application of State Estimation Methodology Using ANN for Urban Electricity Distribution Systems in India”

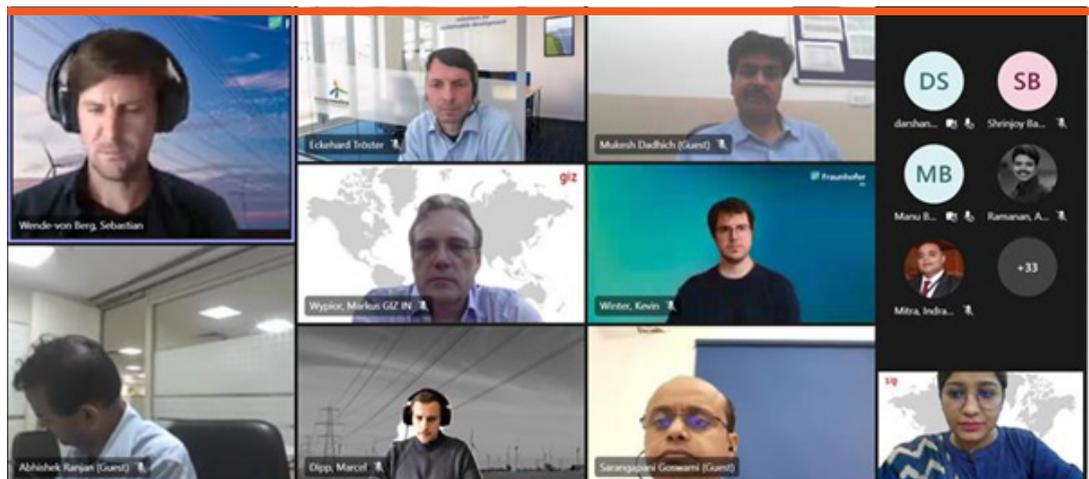
13 September 2021 | Virtual

The final workshop on “Development and application of state estimation methodology using ANN for urban electricity distribution systems in India”, held under the aegis of Indo-German Energy Program, Energy Transition with DISCOMs project implemented by GIZ on behalf of the Government of Germany in collaboration with three Delhi distribution utilities, BSES Rajdhani Power Ltd., BSES Yamuna Power Ltd., and TATA Power DDL, took place on 13 September 2021 virtually.

The workshop was conducted in the presence of Mr. Markus Wypior, Deputy Program Coordinator, Indo-German Energy Program, GIZ, Prof. Dr. Martin Braun, Director for Grid Planning and Operation, Fraunhofer IEE, Mr. Abhishek Ranjan, Head-DSM, Energy Analytics and Renewable, BSES Rajdhani Power Limited, Mr. Shrinjoy Bagchi, Head-Distribution Automation and Protection, TATA Power Delhi Distribution Limited, Mr. Sunil K Sharma, Senior Manager, BSES Yamuna Power Ltd., and other dignitaries

from more than ten Indian DISCOMs. The result dissemination workshop was organised to showcase the results, findings, and to discuss the outcomes of the assignment with the key stakeholders i.e., Indian distribution utilities. The workshop also demonstrated the State Estimation Application developed under the project. The participants and the three Delhi DISCOMs, BRPL, BYPL, and TPDDL, who were the beneficiaries of this assignment, lauded the efforts of the project team and the technical experts for proposing an excellent state of the art methodology to accomplish ANN based State Estimation for better grid monitoring without increasing the measurement points in the network. The findings from this workshop also highlighted the future expansion scenarios of PV and how they will impact the various voltage and thermal loadings of network components. The DISCOMs acknowledged that such state-of-the-art solutions act as the foundation stone and facilitate utilities in their grid automation journey.

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



4

Quote of the Month from India and Germany

Quote of the Month from India



Shri Narendra Modi,
Prime Minister of India



We have to make India a Global Hub for Green Hydrogen Production and Export in the 'Amrit Kaal'. This will not only help India to make a new progress in the field of energy self-reliance but will also become a new inspiration for the Clean Energy Transition all over the world. New opportunities from Green Growth to Green Jobs are opening up today for our start-ups and youth".

Source: PIB

Quote of the Month from Germany



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



In addition to tackling the current crisis, we must also set our sails for the future and drive forward the global energy transition by exploiting the full potential of renewable energy. It is now a matter of setting the course in a way that enables us to achieve our goals of building sustainable energy systems that combine effective climate-change mitigation with sound economic sense and the same high security of supply we have now."

Source: BMWi Newsletter Energiewende - Energiewende direkt (englische Ausgabe) (bmwi-energiewende.de)

5

Energy Transition News

What exactly is Repowering of Wind turbines?

Generating more environmentally friendly electricity with fewer wind turbines thus minimising the impact on the environment – Repowering could be another key ingredient in the further expansion of wind energy and it could also become easier to use. Repowering simply means the upgrading of existing power plants or installations. The idea is to replace older turbines or parts of these with modern ones that are more powerful. In principle, this can be done with any type of power plant or installation. Wind power, however, is a technology that is particularly well-suited to repowering. Instead of tuning just one single, older wind turbine, an entire wind farm with a large number of older turbines is dismantled and replaced with more efficient and powerful installations. This means that by repowering existing wind farms, half as many turbines would be able to generate many times more wind power.

Modern wind turbines can have much larger towers and longer rotor blades than the turbines of the past and are thus able to generate much more electricity at fewer rotations per minute. This is also good news for biodiversity: with turbines increasing in size and decreasing in number, their impact on many species of bird is being reduced. In addition to all the technical benefits, repowering is also making an important contribution to the energy transition and helping to raise acceptance for the environmentally-friendly transformation of our energy supply, for example because slower-turning wind turbines are visually more pleasing and calming to the eye than faster rotors and because fewer installations are needed to deliver the same amount of capacity.

The key mission: to replace older wind turbines with more efficient and powerful models on existing wind farm sites

Germany's first wind turbines were installed in the 1990s and have been generating electricity ever since. They have received government funding for at least 20 years. This year, the first of these older installations will see the funding they have received under the [Renewable Energy Sources Act](#) discontinued. According to the Renewable Energy Sources Act Progress Report, almost 15 Gigawatts (GW) of wind capacity will be affected by this up to 2025, and almost 24 GW by 2030. So what does this mean for the energy transition? Will all these turbines be dismantled, will they go on operating, or will they be replaced by new turbines? The answer is that the majority of the old wind turbines are likely to continue operating, as the sale of wind power no longer requires the funding

provided under the Renewable Energy Sources Act in order to be profitable. Nevertheless, older installations will at some point reach their expected lifespan.

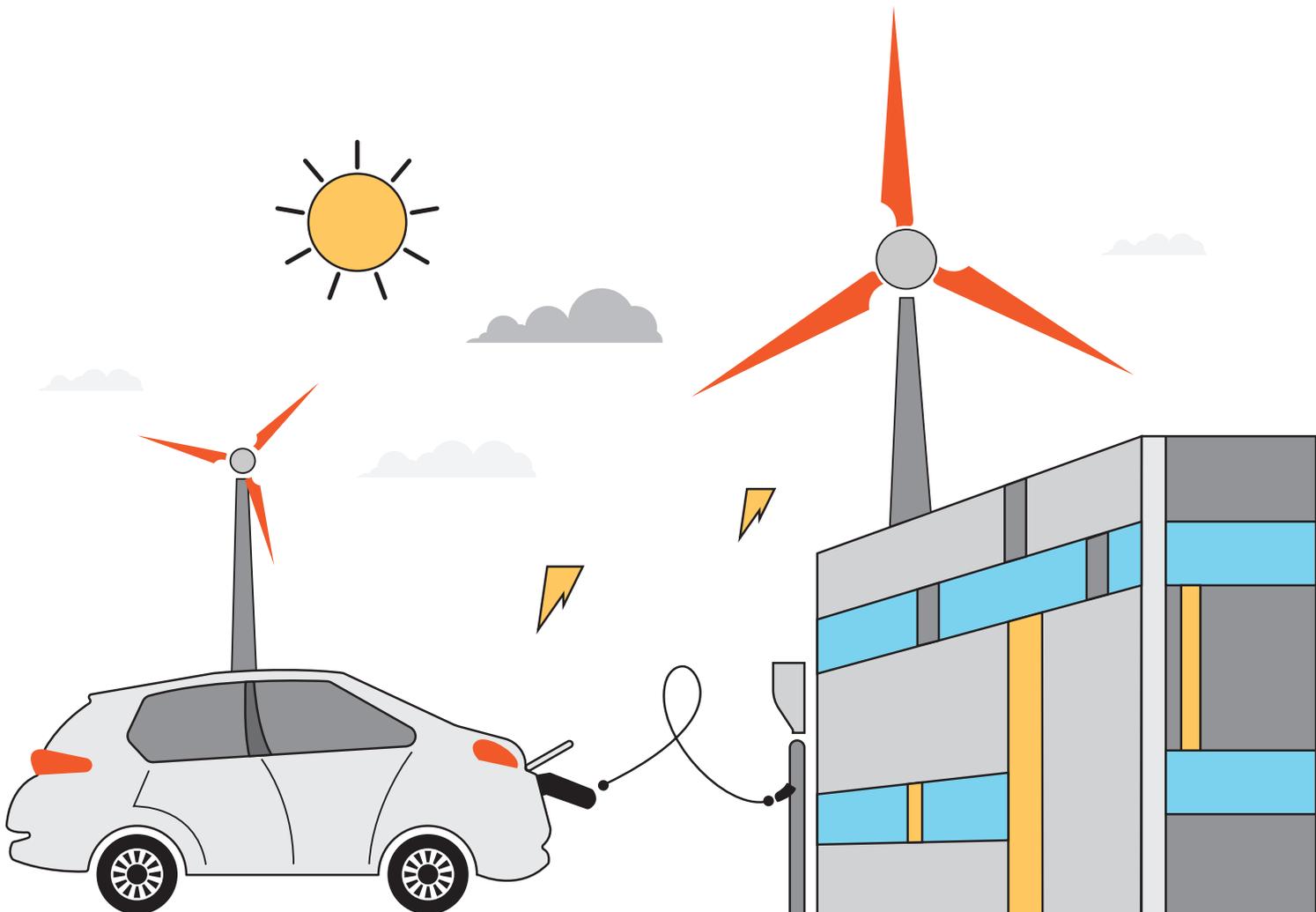
This opens up new opportunities for the energy transition as, in accordance with the 2021 version of the [Renewable Energy Sources Act](#) (EEG 2021), Germany's installed wind capacity is to be increased from 53 GW in 2019 to 71 GW in 2030. In order to ensure the implementation of the [Green Deal](#) – which is to turn Europe into the world's first climate-neutral continent – this capacity will actually need to be expanded even further. Many believe that repowering could be the solution to this problem.

EU Member States required to streamline approval procedures for wind power

Even though repowering opens up great opportunities for wind energy, in practice, there are often many bureaucratic hurdles to turbine replacement, not least due to planning and approval rules. The EU's Renewable Energy Directive (RED II) will now make things easier. For example, it sets out streamlined procedures that the Member States had to implement by the end of June 2021.

In Germany, these rules will be implemented into national law by adding a new paragraph to the Federal Immission Control Act. Up to now, repowering had been treated the same

way as new greenfield projects in terms of nature conservation, biodiversity and noise protection requirements to be met – and this despite the fact that wind turbines meeting these requirements had already been operated at these sites for a very long time. The most important change brought about by the new legislation is that new turbines that create no greater adverse effects or even fewer than the existing turbines, will benefit from streamlined approval procedures. The rule is that new wind turbines must not be subjected to much stricter requirements than older models. This could help retired wind turbines to be replaced swiftly.



6

Publications



Renewables 2021 Global Status Report

As the world's only crowd-sourced report on Renewable Energies, the "Renewables 2021 Global Status Report" (GSR) is in a class of its own. It covers policies, markets, and much more, while telling the most up-to-date global story on renewable energy.

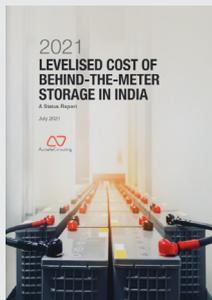
The full report is available for download [here](#).



Renewables Integration in India

SolarPower Europe has developed the Agrisolar Best Practices Guidelines as a continuation of their Agrisolar briefing released in 2020. These new guidelines focus on establishing standards and best practices for different Agrisolar business models in Europe, in order to build trust and create a dialogue with policymakers, support the harmonisation of national frameworks, and advise local and international actors on how to successfully develop Agrisolar projects.

The guidelines can be downloaded [here](#).



Levelized Cost of BtM Storage in India 2021 – A Status Report

This status report aims to present a snapshot of the current cost of energy storage in India for behind-the-meter (BtM) applications, and project them over the next 10 years to analyse when energy storage will start seeing significant adoption. Based on a detailed cost model for Solar-PV and energy storage with 50+ parameters & data on battery energy storage systems (BESS) gathered from several vendors in India, the levelized cost of solar plus energy storage and standalone energy storage is evaluated in the report.

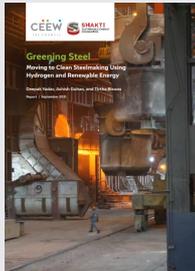
The full report is available for download [here](#).



Benchmarking Scenario Comparisons: Key indicators for the clean energy transition

This report synthesises experts' views on how to improve scenario comparison studies to gain insights for the clean energy transition and maps out the motivation, focus and methods of such studies.

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



Greening Steel

This study evaluates the feasibility of green hydrogen-based steelmaking [hydrogen-based direct reduced iron (H-DRI) & electric arc furnace (EAF)] in India by providing insights into the techno-economics and associated environmental benefits. It considers four-time horizons: 2020 (current), 2030 (medium-term), and 2040 to 2050 (long-term).

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

7

Upcoming Events

World Hydrogen Energy Summit 2021

16 – 17 November 2021 | Virtual

As Hydrogen accelerates into the mainstream energy sector, it's crucial for policy makers and industry stakeholders to increase collaboration, cross-sector dialogue and knowledge-share to ensure the rapid scale-up and delivery of a global hydrogen economy. Therefore, the Energy And Environment Foundation, with the support of the Ministry of Petroleum & Natural Gas, Government of India & NITI Aayog is delighted to organize the virtual World Hydrogen Energy Summit (WHES21) from 16 to 17 November 2021.



This year's theme is "Green Hydrogen: Cleaner and Zero Emission Fuel for a Sustainable Green Economy".

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

RenewX

19 – 20 November 2021 | Hyderabad, India

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



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

World Wind Energy Conference 2021

24 – 26 November 2021 | Virtual

World Wind Energy Association (WWEA) and The Energy and Resources Institute (TERI) are organising World Wind Energy Conference (WWEC) 2021. WWEC 2021 has been scheduled to take place from 24-26 November 2021, with the theme “Powering the World with Wind”. The Conference will focus on the clean energy transition propelled by spectacular progress of renewable energy with prime focus on accelerating the capacity additions of wind and solar energy into the country’s energy systems in line with Paris agreements. The conference is supported by International Solar Alliance (ISA) and International Solar Energy Society (ISES).



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

Intersolar India

2 – 4 December 2021 | Gandhinagar, India

Intersolar is the world’s leading exhibition & conference series for the solar industry. As part of this event series, Intersolar India is India’s most pioneering exhibition and conference for India’s solar industry. It takes place annually and has a focus on the areas of photovoltaics, PV production and solar thermal technologies. Since 2019, Intersolar India is held under the umbrella of The smarter E India – India’s innovation hub for the new energy world.



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

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

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



If you are interested in a fellowship with the German Solar Association BSW you should get in touch with Mr. Knaack via knaack@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 and looking for a German expert to lower your expenditures for Energy?

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

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

Information about DeveloPPP

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.



Where business meets development.

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, to securing value chains and improving ecological and social standards in production plants.

Four times a year, companies can submit their project ideas to DEG or GIZ. 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!**World Hydrogen Energy Summit 2021**

16 - 17 November 2021 | Virtual
www.worldhydrogensummit.in

RenewX Hyderabad

19 - 20 November 2021 | Hyderabad
www.renewx.in

World Wind Energy Conference 2021

24 - 26 November 2021 | Virtual
www.wwec2021.org

Business delegation to India on “Renewable energies and storage technology for charging infrastructure”

6 - 10 December 2021
www.german-energy-solutions.de

Intersolar India

2 - 4 December 2021 | Gandhinagar, India
www.thesmartere.in

World Sustainable Development Summit 2022

16 - 18 February 2022 | Venue (TBC)
<http://wsds.teriin.org/>

8

DISCLAIMER

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

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

9

CONTACT INFORMATION

New Delhi >>

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

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

Berlin >>

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

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

Follow us on  www.twitter.com/igefso

Like us on  <https://www.facebook.com/IndoGermanEnergyPartnership/>

Subscribe to us on  <https://www.youtube.com/channel/UC1Mb0LtVKTEu-mkDxuY5p3Q>

Thank you for subscribing to our newsletter. If you wish to unsubscribe, please view [manage your subscription](#)

To access all hyperlinks, please visit the online version of the IGEF Newsletter available on: <http://energyforum.in/newsletter.html>