Indo-German
Energy Forum
Support Office

Make in India Mittelstand – Webinar on Renewable Energies in India

Tobias Winter - New-Delhi, 30 April 2020

Stakeholder of IGEF

Since 2006 IGEF is the platform for dialogue on energy issues for both Governments

Indo-German Energy Forum Support Office

The Federal Government

सत्यमेव जयते

Federal Ministry for Economic Affairs and Energy

GOVERNMENT OF INDIA
MINISTRY OF POWER

Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety

Federal Ministry for Economic Cooperation and Development

GOVERNMENT OF INDIA
MINISTRY OF NEW AND RENEWABLE ENERGY

Indo-German Energy Forum Support Office implemented by:

KFW giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

ENERGY IS LIFE
BEE
CONSERVE IT

IGEF Stakeholders (excerpt)

Different stakeholders from GOI and Govt. of Germany working in different subgroup meetings

Indo-German Energy Forum Support Office

Embassy of the Federal Republic of Germany

सत्यमेव जयते
EMBASSY OF INDIA

NISE
National Institute of Solar Energy

सेकी SECI
सूर्य सदैव SUN FOR EVER

राष्ट्रीय पवन ऊर्जा संस्थान NATIONAL INSTITUTE OF WIND ENERGY
नीवे NIWE

इरेडा IREDA

केविप्रा CEA

PTB
Physikalisch-Technische Bundesanstalt
Braunschweig und Berlin

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

KFW DEG

ENERGY IS LIFE
BEE
CONSERVE IT

GTAI GERMANY TRADE & INVEST

पावर सिस्टम ऑपरेशन
POSOCO

EESL

dena
Deutsche Energie Agentur

CENTRAL BOARD OF IRRIGATION & POWER
ESTD. 1927
NEW DELHI

पावरग्रिड
Power Grid Corporation of India

एनटीपीसी NTPC
NATIONAL THERMAL POWER CORPN. LTD.

Business Associations, Think Tanks and Initiatives

Different Stakeholders from India and Germany form part of the IGEF

Indo-German Energy Forum Support Office

Confederation of Indian Industry

FICCI

NSEFI

BSW GERMAN SOLAR ASSOCIATION

Alliance for an Energy Efficient Economy

EEC Excellence in Power

INDO-GERMAN AHK Indo-German Chamber of Commerce
Deutsch-Indische Handelskammer
Mumbai · Delhi · Kolkata · Chennai
Bengaluru · Pune · Düsseldorf

IWTMA INDIAN WIND TURBINE MANUFACTURERS ASSOCIATION

InWEA INDIAN WIND ENERGY ASSOCIATION

IESA India Energy Storage Alliance

CEEW Council on Energy, Environment & Water

VGB PowerTech

BEE Bundesverband Erneuerbare Energie e.V.

Fachverband BIOGAS

iba Fertilizing Energy

teri

STEINBEIS

Start Up Energy Transition Award

MAKE IN INDIA

MAKE IN INDIA MITTELSTAND!

MITTELSTAND GLOBAL ENERGY SOLUTIONS MADE IN GERMANY

German House for Research and Innovation – New Delhi
Germany Land of Ideas

develoPPP.de

German Companies in India

German companies and associations participate in business councils and B2G roundtables of IGEF

Indo-German Energy Forum Support Office

- Approx. **1800 German companies** operate in India with own production, joint venture or representation
- **Siemens** and **Bosch** are the biggest German companies but almost all **DAX companies are present in India**
- German companies have been highly profitable in India in the past
- 566 German companies employ about **283,000 full-time employees in 2015** and another **300,000 people as exclusive agents, franchise partners or authorised producers**

Source: AHK

New entries to India since 2015 (excerpt)

And many more German suppliers

Indo-German Energy Forum Support Office

only for internal use

ENERCON
ENERGIE FÜR DIE WELT

Weidmüller

DEUTSCHE WINDGUARD

WATTKRAFT

SENVION

Senvion India Pvt. Ltd.

uniper

PI Photovoltaik Institut Berlin

FLUENCE
A Siemens and AES Company

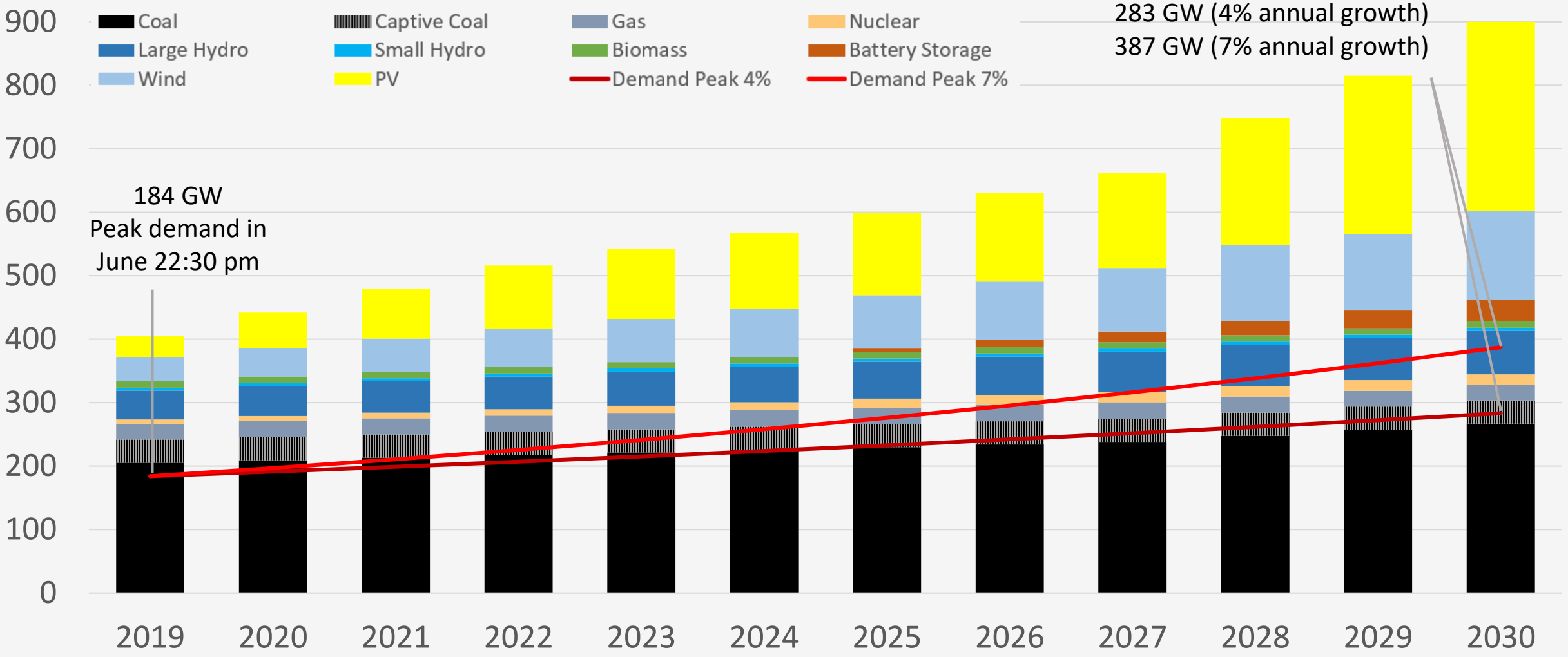
Verbio
Biofuel and Technology

...and many more German suppliers.

Installed Capacity (GW) 2019 to 2030

With net +7 GW annual coal capacity additions planned

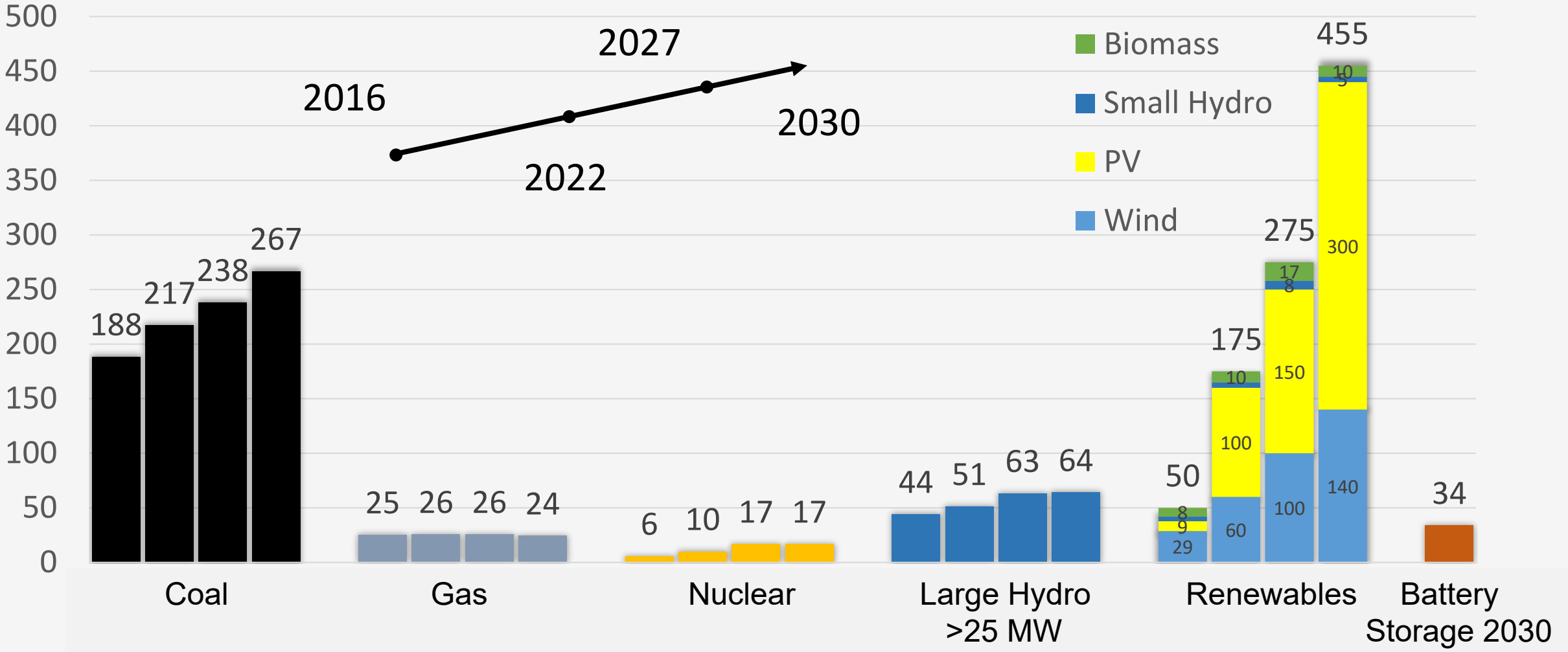
Indo-German Energy Forum Support Office



Development of Indian Utility Power Capacity (in GW)

in 2016, 2022, 2027 and 2030, massive growth of RE

Indo-German Energy Forum Support Office



Source: MNRE 2016; CEA 2018; IGEF 2018; CEA 2019

Backup / Captive / Self-Consumption

Market opportunity for alternatives (approx. +5 GW annual growth)

Indo-German Energy Forum Support Office

Power tariffs in India for final customers

Depends on the state and the type of the consumer! RE + battery competetive?

Indo-German Energy Forum Support Office

State - tariff class	EURct. / kWh
City of **Delhi** - tariff for **industries**	**~11**
State of **Madhya Pradesh** - tariff for **residential homes**	**~9**
State of **Maharashtra** - tariff for **commercial** customers (Shopping center, call center, etc.)	**~14**

BloombergNEF

Price for utility scale power

Large scale RE is able to compete with coal. But can RE deliver during peak demand at night?

Indo-German Energy Forum Support Office

Avg. Coal
~5 EURct./kWh

Lowest PV
~3 EURct./kWh

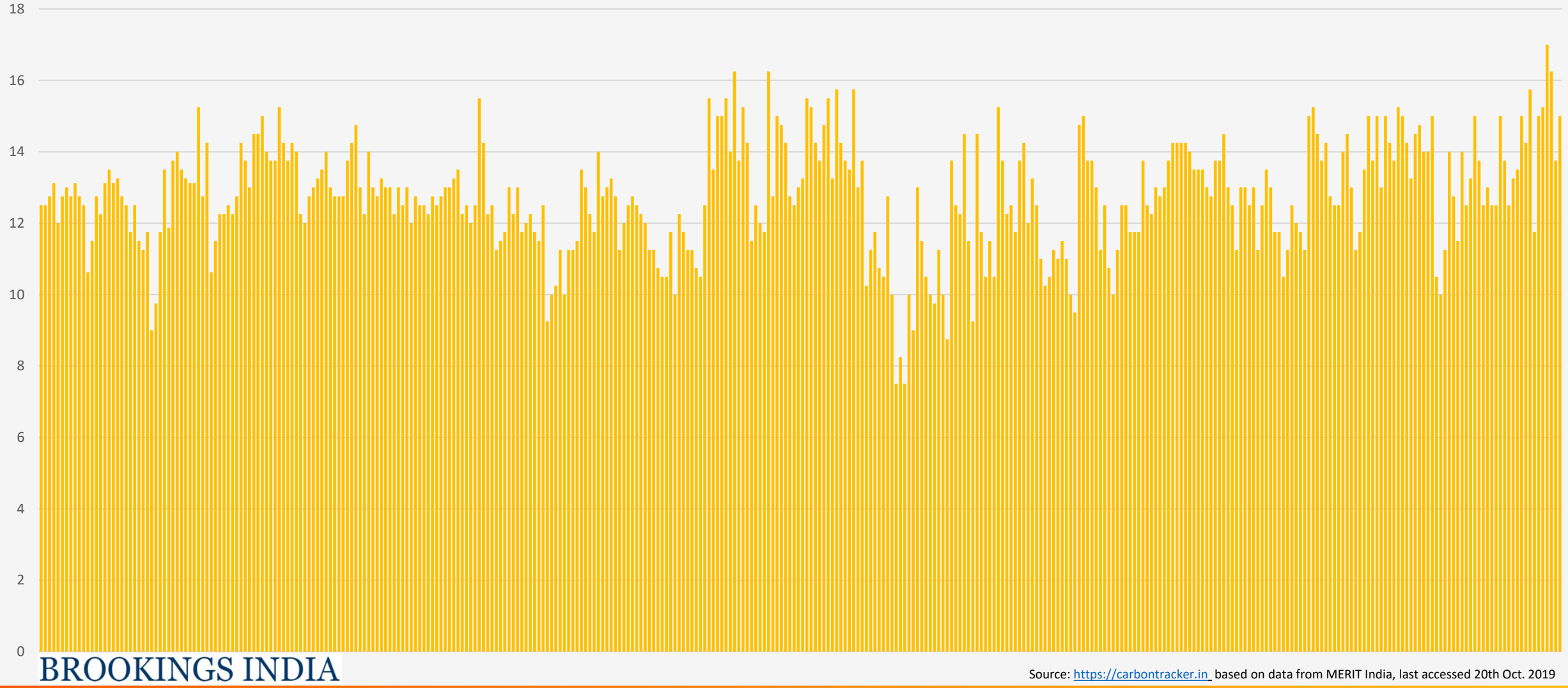
Lowest Wind
~3 EURct./kWh

Sources: https://posoco.in/reports/as3-details/, www.pixabay.com

Daily generation from solar in India 2019

MWp generation, 365 days

Indo-German Energy Forum Support Office



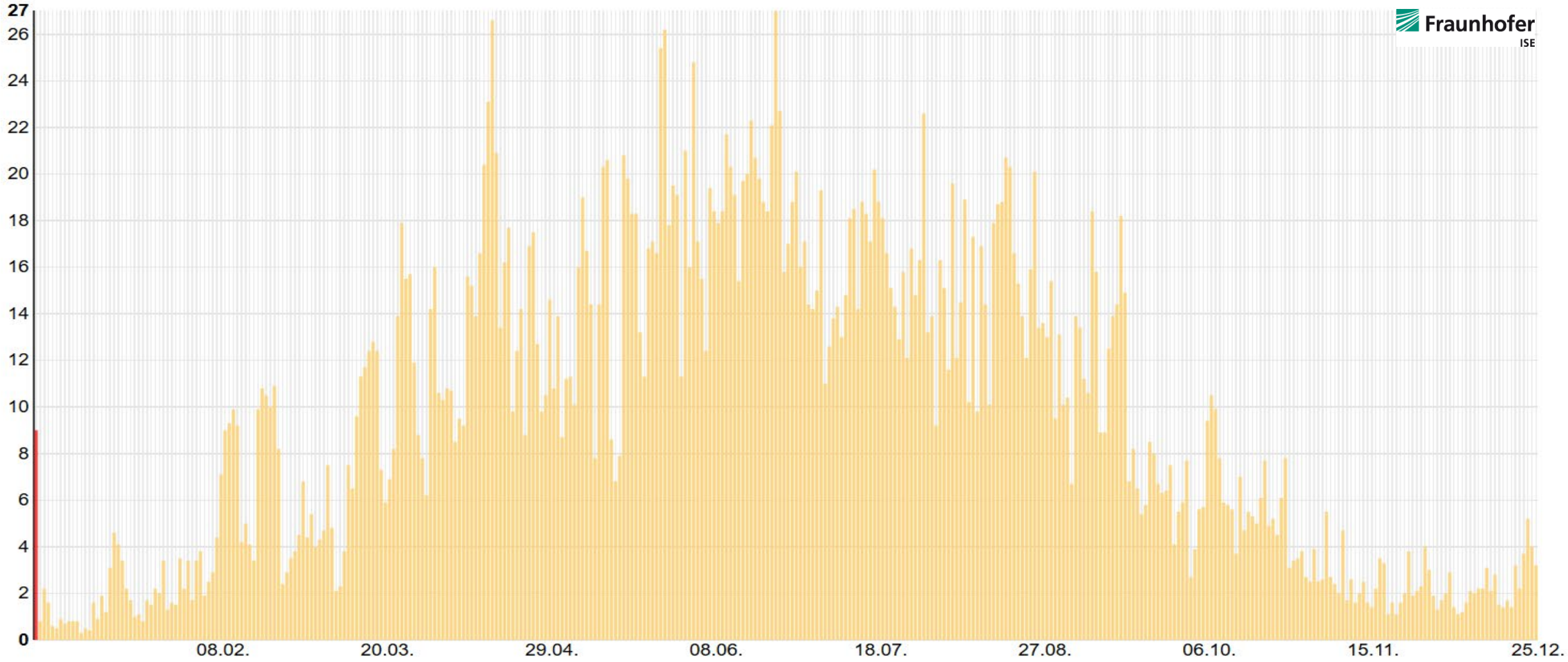
BROOKINGS INDIA

Source: https://carbontracker.in based on data from MERIT India, last accessed 20th Oct. 2019

Daily generation from solar in Germany 2019

Share of total electricity consumption, 365 days

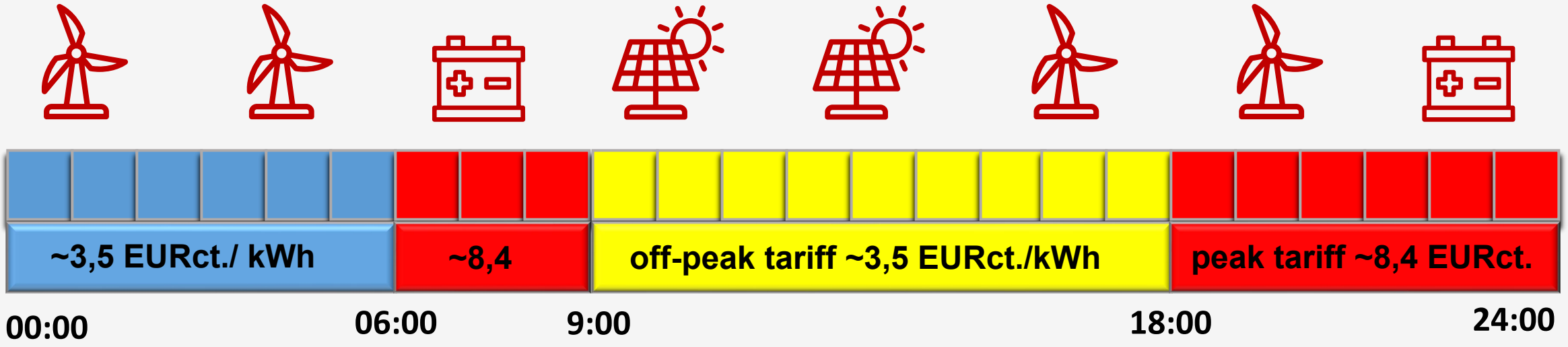
Indo-German Energy Forum Support Office



PPAs with specific peak power tariffs (in EURct./kWh)

Govt. of India giving higher tariffs for peak power if combined with Renewables

Indo-German Energy Forum Support Office



Based on winning bids at SECI RE+Storage tender, Jan 2020 more info here

Selection of print media for electricity with focus on RE

For more info please click on cover of publication

Indo-German Energy Forum Support Office

6.500 prints to all stakeholder

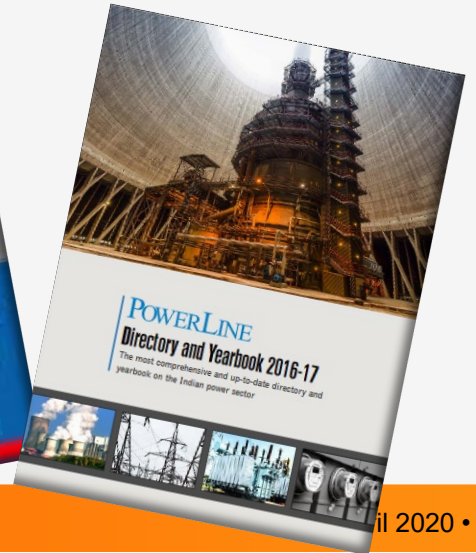
17.000 prints to all stakeholders

MERCOM india | clean energy news and insights

Market Report on Wind Sector.
Link to more info

Bridge to India
Leader in Solar Reports
Link and news

India Infrastructure:
Powerline Directories
for Wind and Power



Promotion of PV- and Wind Market

at Trade Fairs & Annual events supported by IGEF

Indo-German Energy Forum Support Office

BERLIN ENERGY TRANSITION DIALOGUE 2020
Energiewende - A Global Green Deal

3rd GLOBAL RE-INVEST INDIA - ISA PARTNERSHIP
RENEWABLE ENERGY INVESTORS' MEET & EXPO
14 - 17 OCTOBER 2020 • NEW DELHI, INDIA
NEW INDIA • NEW ENERGY

WORLD ENERGY COUNCIL INDIA

RenewX Hyderabad

Renewable Energy India Expo
23 - 25 SEPTEMBER 2020
India Expo Centre, Greater Noida

inter solar connecting solar business | INDIA

inter solar | EUROPE

ees INDIA

India SMART UTILITY Week 2021

ELECRAMA we are all about electricity

World™ Utility Summit

ENERGY STORAGE INDIA

Messe Düsseldorf

CII PARTNERSHIP SUMMIT 2020™
BUILDING GLOBAL PARTNERSHIPS FOR GROWTH

GLOBAL PARTNERSHIP SUMMIT
11th-14th Dec, 2017 | New Delhi, India

WindEnergy Hamburg
The global on & offshore expo

Upcoming Activities

Many of following activities being shifted to digital formats

Indo-German Energy Forum Support Office

Date	Activity
16.-17. Jun	IGEF Event on attractive PV Niche Markets at RenewX, Hitex, Hyderabad (more information here)
Sep	IGEF Expert Study Tour to AgroPV Plants and RE Grid Integration, India
Sep	IGEF Participation in IGCC Business Delegation "India Solar and Bioenergy in Industry"
22.-25. Sep	IGEF Activities at WindEnergy Hamburg (more information here)
23.-25. Sep	IGEF Activities at Renewable Energy India Expo, Greater Noida (more information here)
14.-17. Oct	IGEF Activities at Digital 3rd RE-Invest 2020, Delhi (more information here)
Oct	IGEF Local Business Council, Delhi
Oct	IGEF Workshop on PV and Battery Storage at Energy Storage India, Delhi (more information here)
16. Dec	IGEF Event on AgroPV at The Smarter E India, Mumbai (more information here)

Whom to contact for further information?

Indo-German Energy Forum Support Office

MITTELSTAND GLOBAL EXPORTINITIATIVE ENERGIE

Mr. Malte Peters
Project Manager
peters(at)german-energy-solutions.de

INDO-GERMAN AHK Indo-German Chamber of Commerce
Deutsch-Indische Handelskammer
Mumbai · Delhi · Kolkata · Chennai
Bengaluru · Pune · Düsseldorf

Ms. Dipti Kanitkar
Head - Inbound and Outbound Services
dipti.Kanitkar(at)indo-german.com

GTAI GERMANY TRADE & INVEST

Mr. Boris Alex
Director India
boris.alex(at)gtai.com

MAKE IN INDIA MITTELSTAND!

Mr. Anup Barapatre
Managing Consultant, EAC Mumbai
Anup.Barapatre(at)eac-consulting.de

Indo-German Energy Forum Support Office

Ms. Theresa Jocham
Private Sector Advisor
privatesector(at)energyforum.in

Vielen Dank!

Thank you!

Indo-German Energy Forum Support Office

धन्यवाद

Backup

Tenders in India

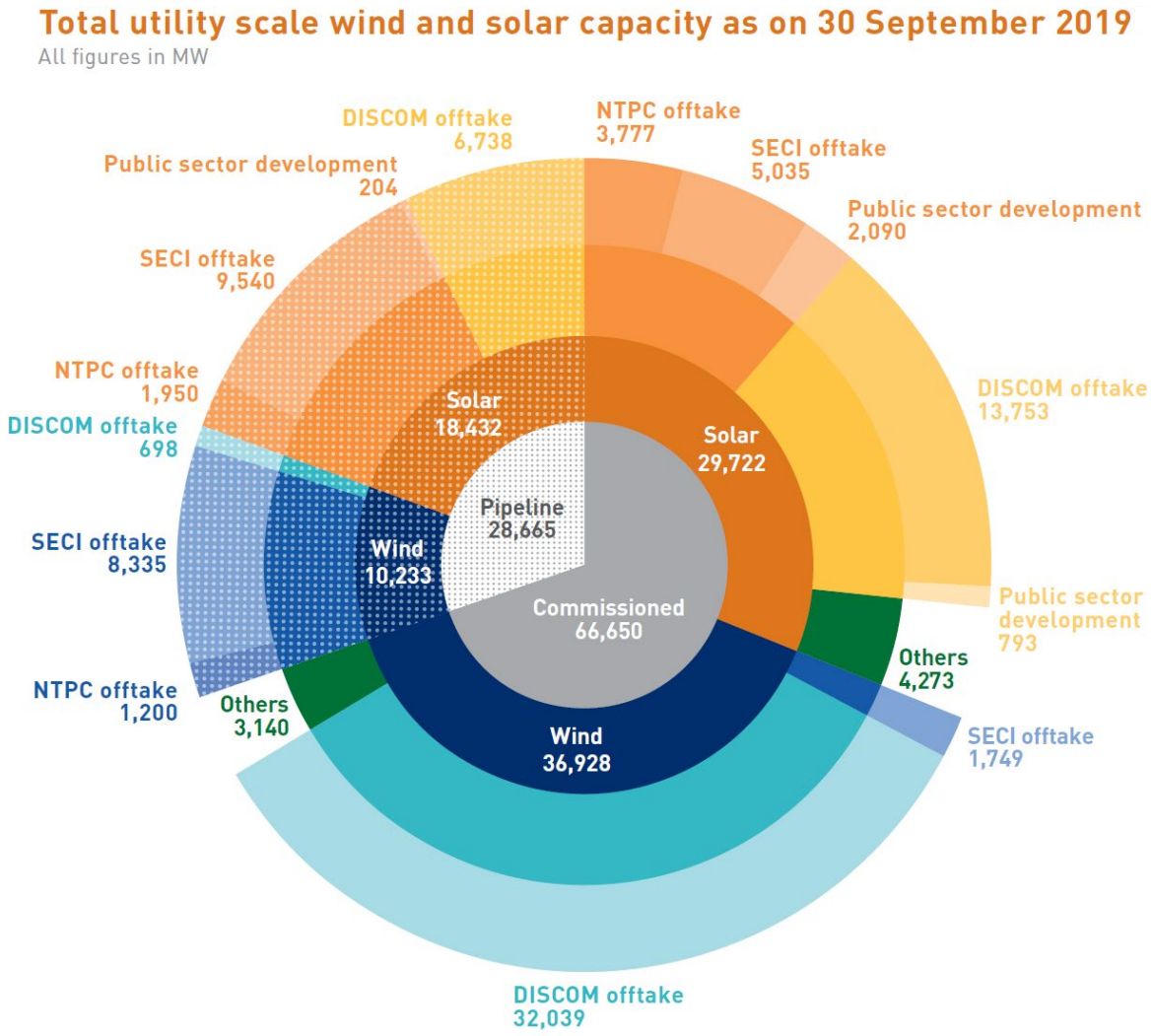
MW scale tenders in Solar and Wind

Indo-German Energy Forum Support Office

India is currently the 2nd largest PV market in the world after China.

19.2 GW of open-space PV systems were tendered in India in 2019 (+62% compared to 2018).

24 GW PV systems are currently (April 2020) up for tendering in India.



Source: https://bridgetoindia.com/report/india-re-map-september-2019/

Websites providing information on public tenders

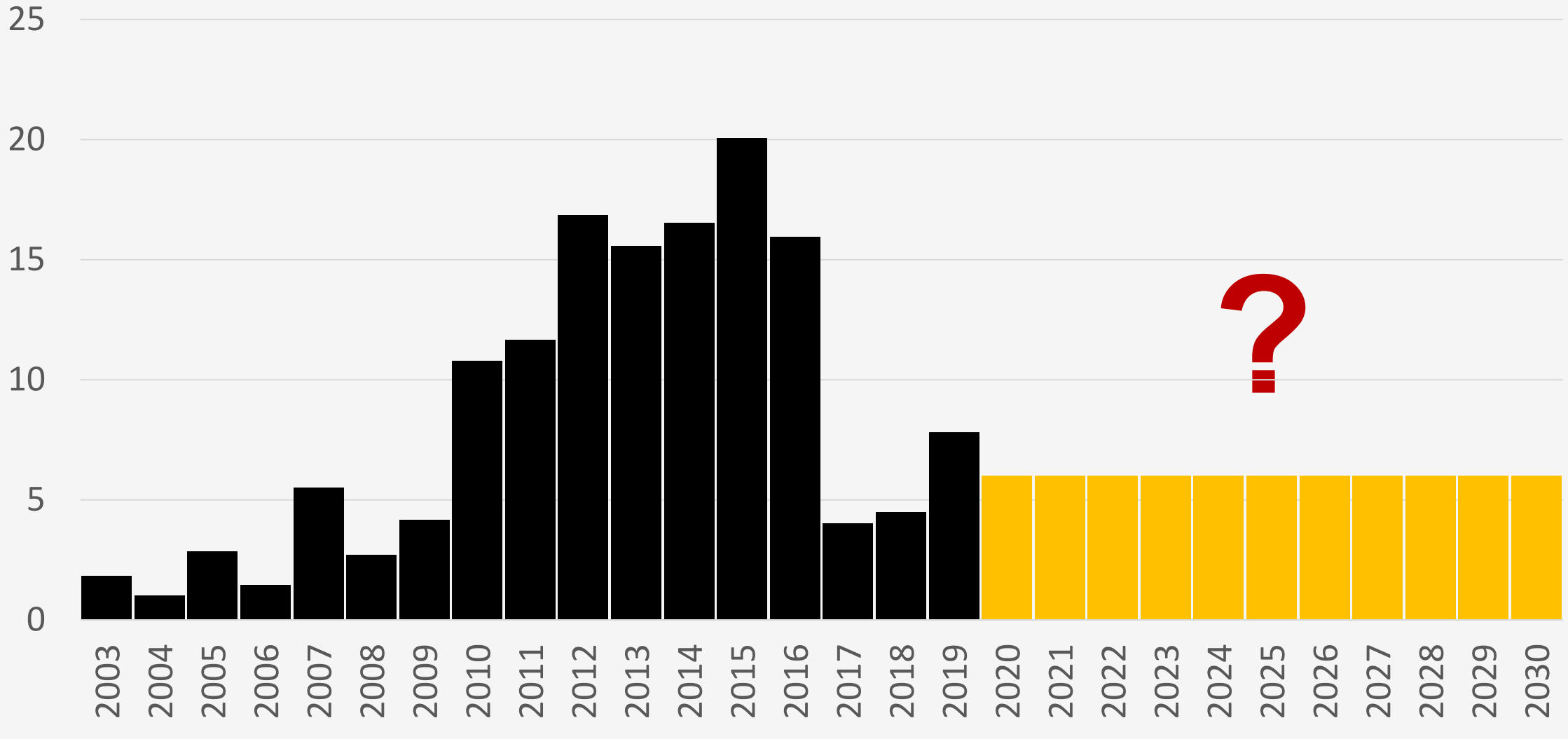
Indo-German Energy Forum Support Office

- Tenders by SECI
- Achievements by Ministry of New and Renewable Energy
- Tenders by NTPC
- Ausschreibungsdatenbank Indien Energie generell GTAI
- Portal für öffentliche Ausschreibungen in Indien
- Solar Navigator India (Bridge to India)

Projected net coal power capacity additions

in India (in GW)

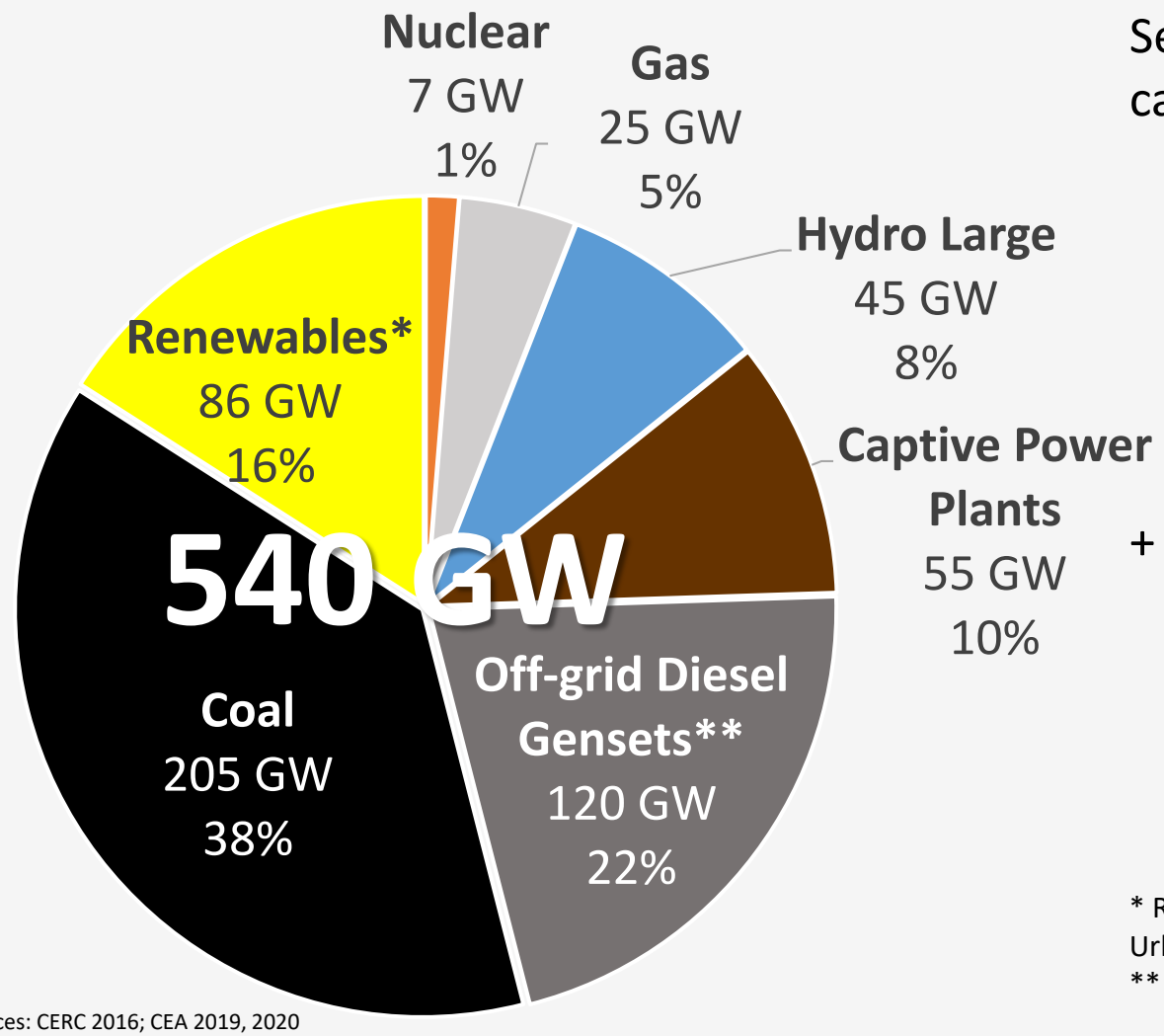
Indo-German Energy Forum Support Office



Source: www.cea.nic.in Compiled by:

Indian Power Capacity (in GW) in 2019

+ approx. 120 GW diesel gensets + 55 GW captive power plants > 1 MW



Sources: CERC 2016; CEA 2019, 2020

Self consumption of own quality power supply from own captive power plants to achieve

- High availability of adequate grid supply
- High quality and reliability of grid supply
- Lower tariffs by avoiding cross-subsidies

→ Approx. 4-5% annual growth of market

→ in the past mainly coal, oil and gas power

+ approx. 120 GW off-grid diesel systems mainly for backup

* RES (Renewable Energy Sources) include Small Hydro Project, Biomass Gasifier, Biomass Power, Urban & Industrial Waste Power, Solar and Wind Energy.

** Estimated figure extrapolated from data, 2016