



Indo-German
Energy Forum
Support Office



Indo German Energy Forum



150 GW Solar Energy in India

Intersolar Europe, Munich, 21th June 2018

Stakeholder of IGEF

IGEF is the platform for dialogue on energy issues for GOI and Federal Government of Germany



The
Federal Government



सत्यमेव जयते



Federal Ministry
for Economic Affairs
and Energy



सत्यमेव जयते

GOVERNMENT OF INDIA
MINISTRY OF POWER



Federal Ministry
for the Environment, Nature Conservation
and Nuclear Safety



Federal Ministry
for Economic Cooperation
and Development



सत्यमेव जयते

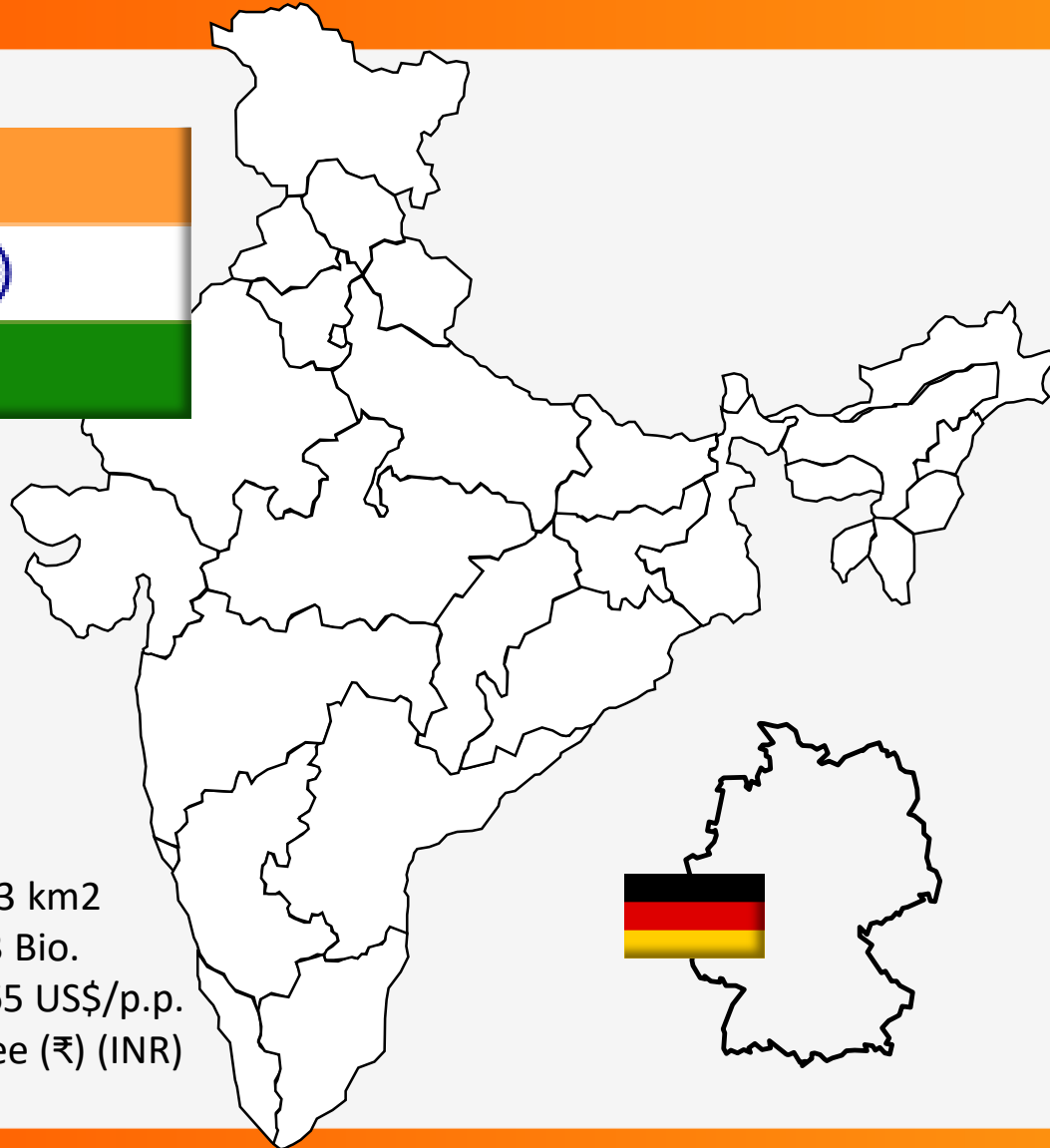
GOVERNMENT OF INDIA
**MINISTRY OF NEW
AND RENEWABLE ENERGY**

Indo-German Energy Forum Support Office implemented by:



India's PV power capacity

Rank 3 worldwide in 2017 in added capacity



Area: 3.287.263 km²
Population: 1,3 Bio.
GDP nom: 1.965 US\$/p.p.
Currency: Rupee (₹) (INR)



+ 8 GW Solar

Rank 3 worldwide in 2017

22 GW installed

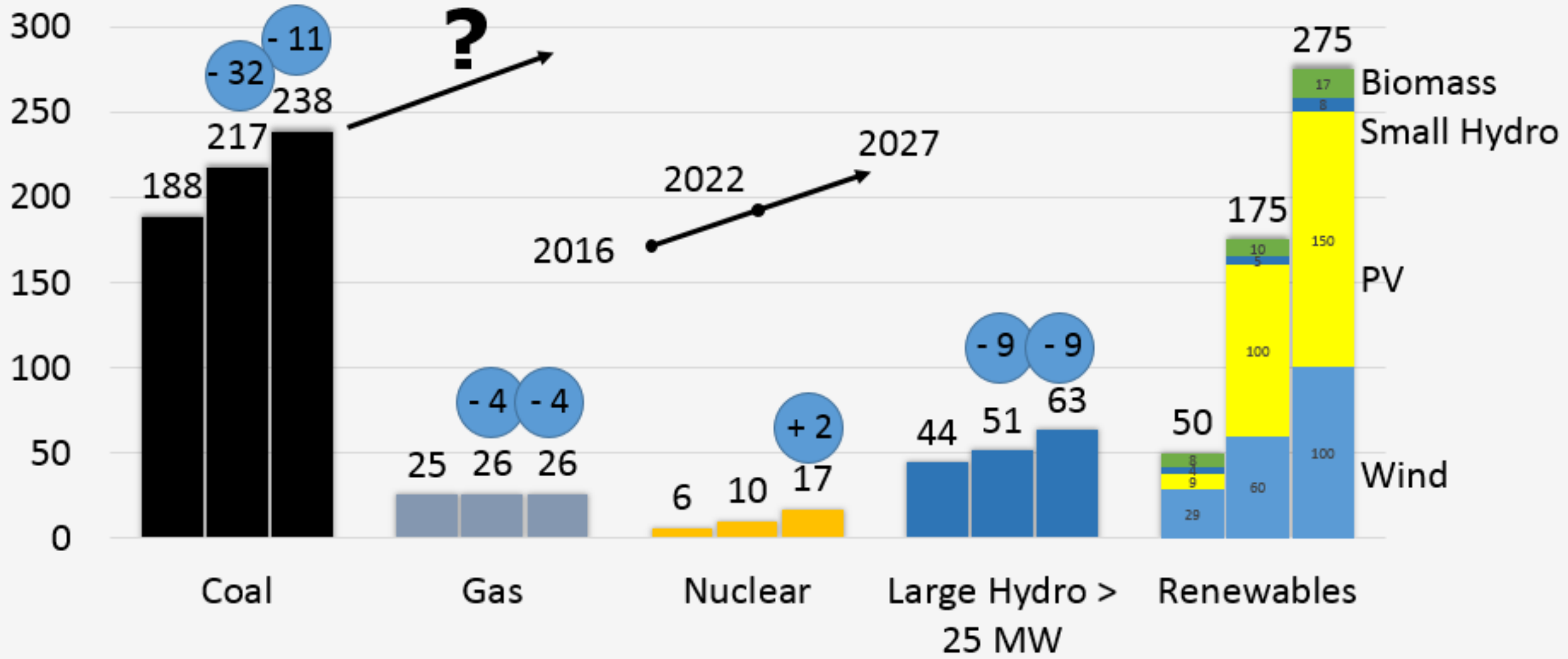
Government of India plans

100 GW by 2022

150 GW by 2030

Development of Indian Utility Power Capacity (in GW)

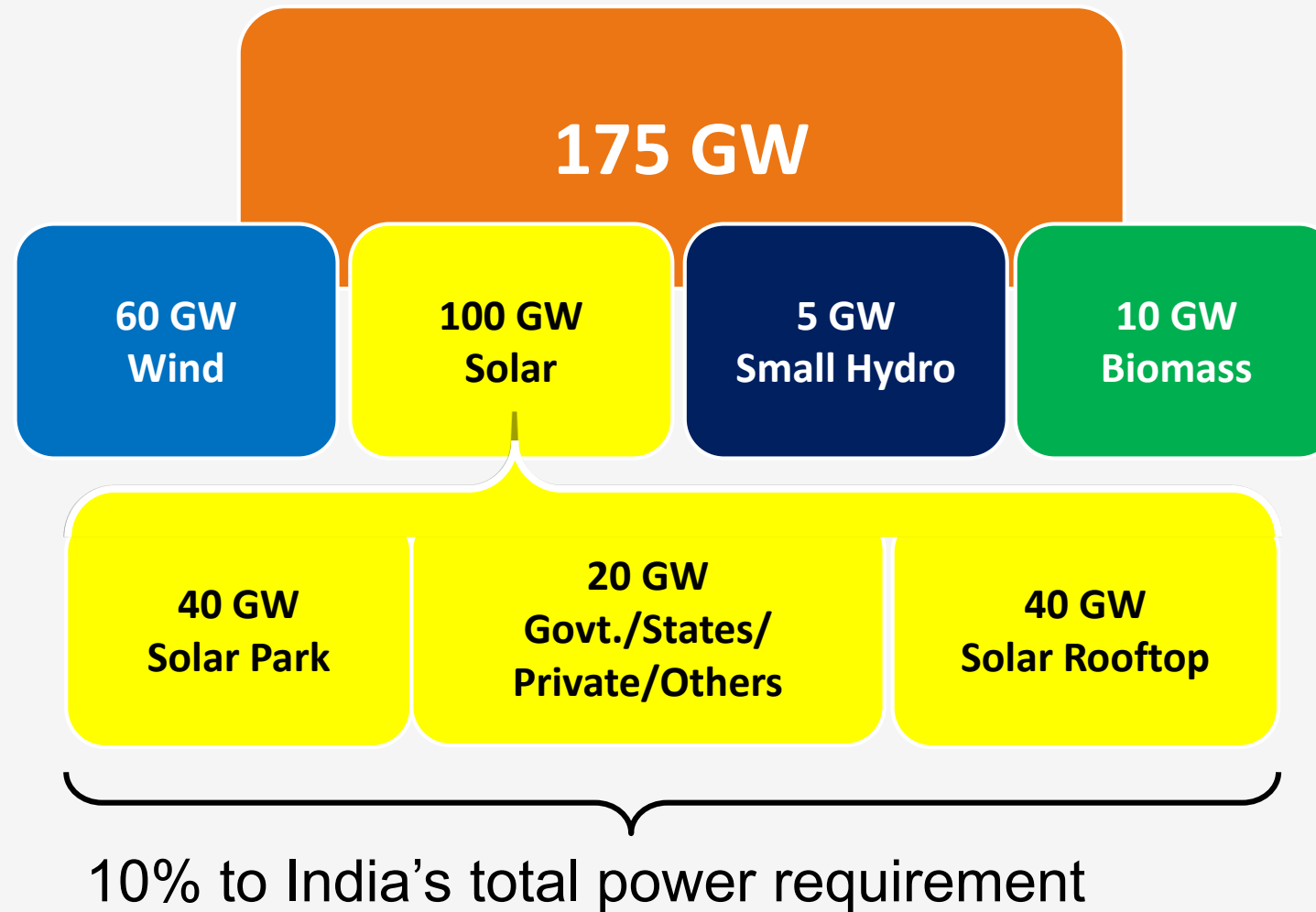
in 2016, present planning for 2022 and 2027, massive growth of RE ● comparison to plan in 2016



Source: MNRE 2016; CEA 2018; IGEF 2018

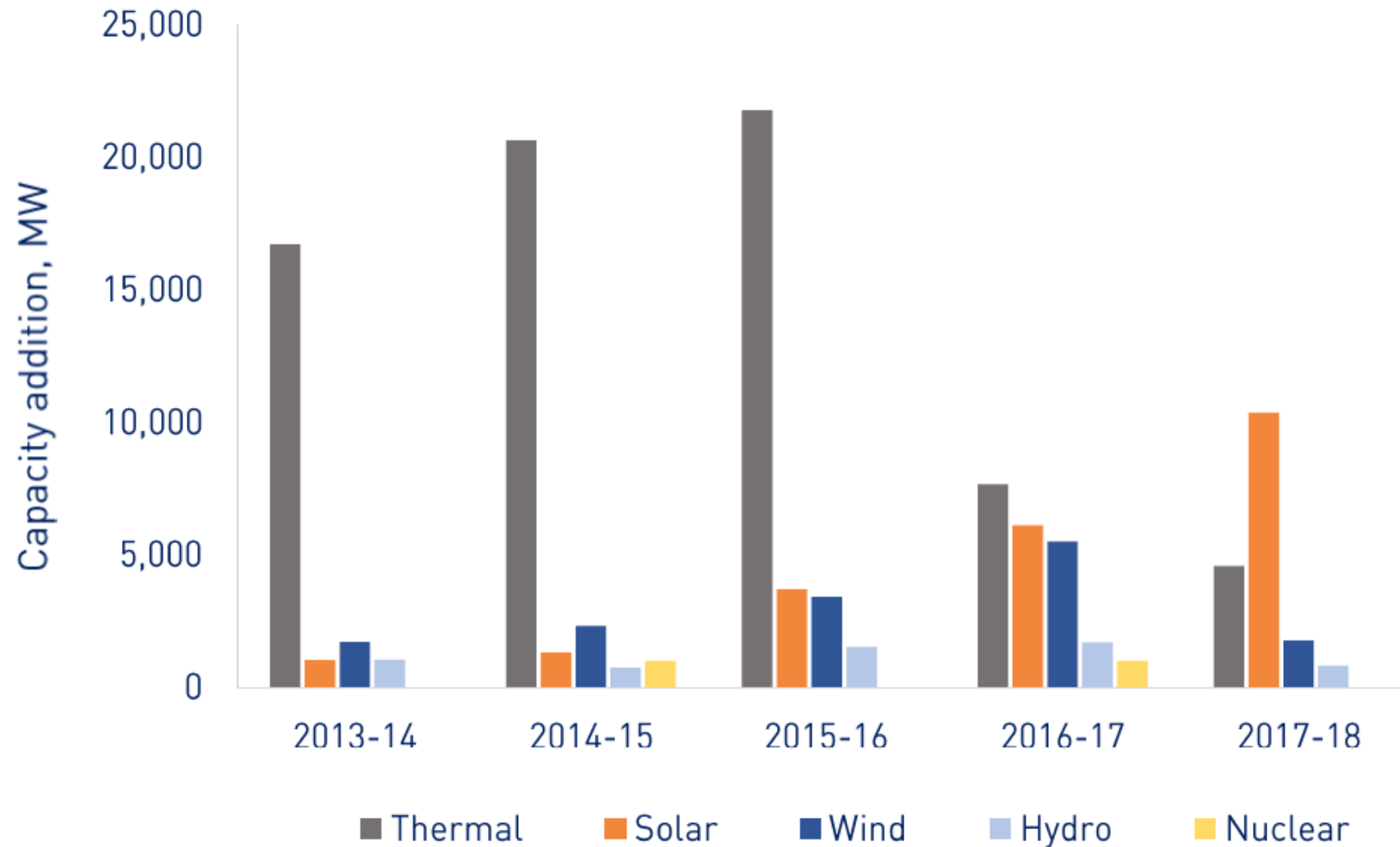
Roadmap for Renewable Power by 2022

India decided to have 175 GW in total by 2022



Solar has overtaken all other sources

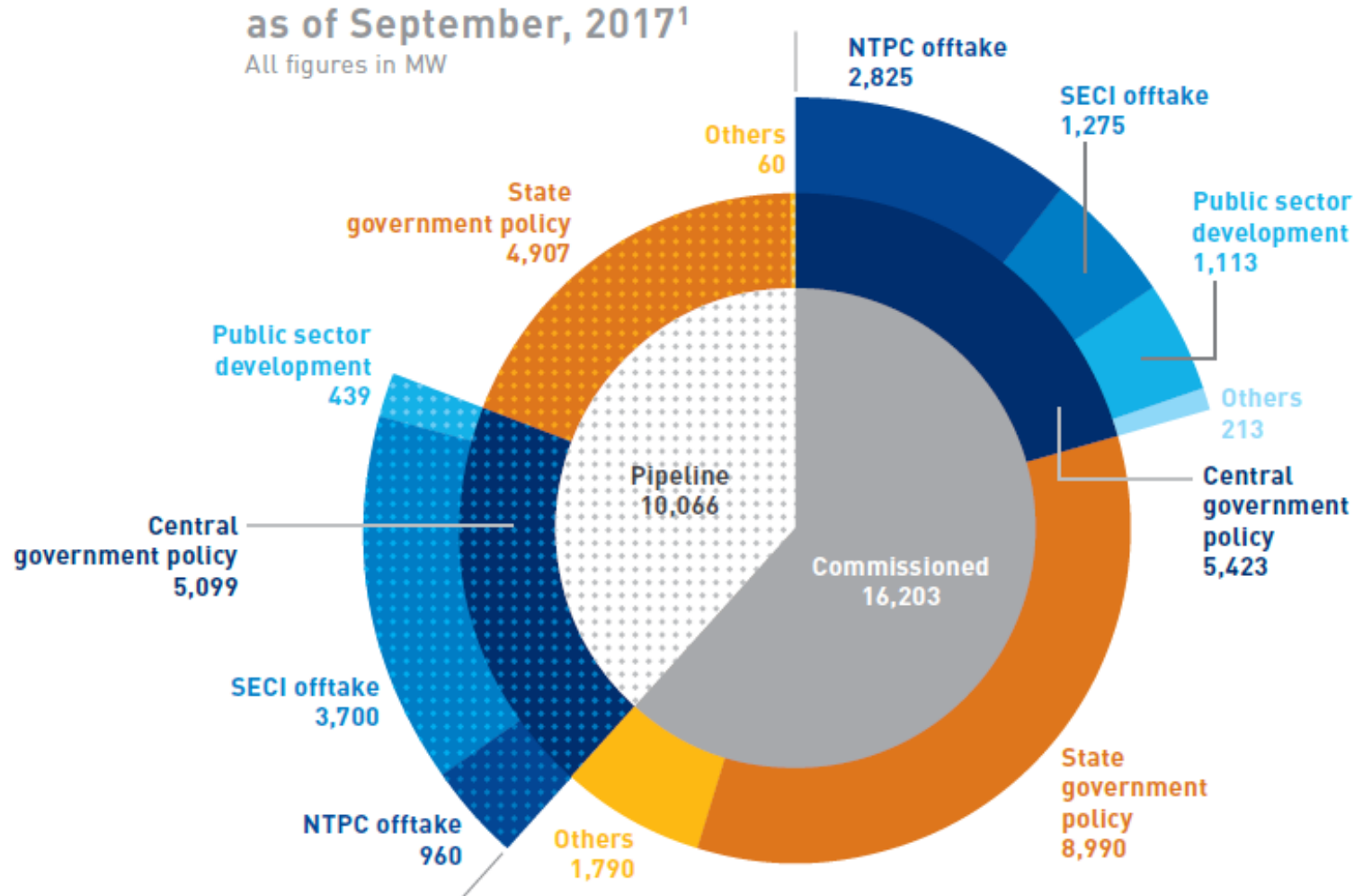
Approx. 1 GW PV installed per month at present



Source: <http://www.bridgetoindia.com/our-reports/india-solar-map/>

Total Utility Scale Solar Capacity

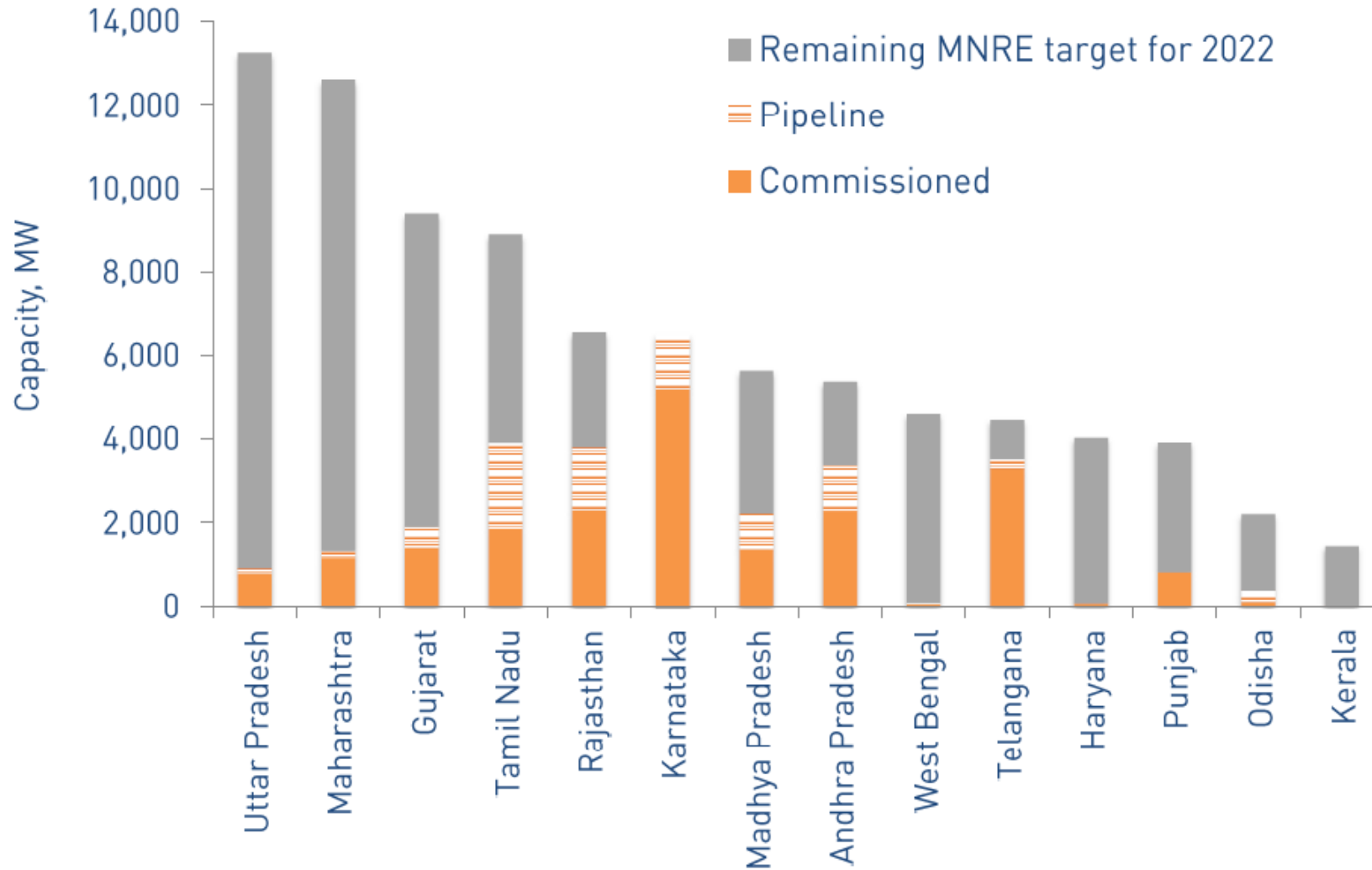
Market segments and capacities as per September 2017, all figures in MW



Source: <http://www.bridgetoindia.com/our-reports/india-solar-map/>

Sector growth has been uneven

Led by Southern States



Source: <http://www.bridgetoindia.com/our-reports/india-solar-map/>

Open Access to grid and private PPAs

connected load of +1 MW

- Open Access = buy cheaper RE-power from the open market
- expected to encourage private investment in electricity supply
- Open Access to transmission and distribution grid on payment of charges to the utility - high grid usage charges, no cap defined
- Resistance by local distribution company (DISCOM)
- Varying implementation across states (positive examples in Rajasthan, Karnataka)

Solar Rooftop PV

Approx. 2 GW at end 2017

- Approx. 10% of overall Indian PV market (at present around 800 MW per year)
- Mainly on industrial and commercial roofs, residential segment a challenge
- Quality issues and financing not easily available
- Captive / self-consumption systems or net-metering implementation
- Awareness a big challenge

Large PV rooftops in India - 7.52 MW

Fed into local grid through PPA with local DISCOM but most plants are for self-consumption



Large rooftop solar power in Bangalore

1 MWp solar power plant, the largest rooftop solar power plant in India on a build-own-operate model



Source: www.cleanmaxenergy.com

Solar Home System and mobile pay per use

250 Mio. people without electricity, political goal of all households connected by march 2019



Source: Mobisol

Major national public entities in Indian solar market

One minister with huge responsibility and national entities vs. state level entities



GOVERNMENT OF INDIA
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AND RENEWABLE ENERGY**



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MINISTRY OF POWER



National Institute Of Wind Energy (NIWE)

- [Solar Forecasting](#) for upcoming Renewable Energy Management Centers
- Solar measurement



Central Electricity Authority

- Grid code
- Power planning



Indian Renewable Energy Development Agency

- Renewable Energy Finance



Association of Renewable Energy Agencies of States (AREAS)

- Network of all State Nodal Agencies to get access to state



Solar Energy Corporation of India Limited (SECI)

- Implementation of GOI projects



Central Electricity Regulatory Commission

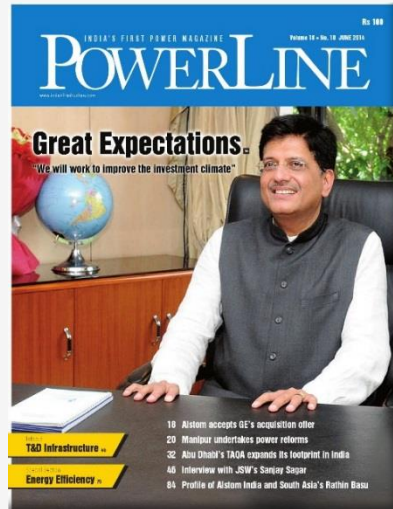
- Regulator of tariffs for generating companies
- Grid code
- Lead in forum of state regulators

Selection of print media for electricity with focus on RE

For more info please click on cover of publication



6.500 prints to all stakeholder



17.000 prints to all stakeholders



4.000 prints on behalf of IREDA Government of India

Market studies New Research Report

SOLAR POWER IN INDIA 2017

Segment Analysis, Trends and Developments

- ◆ Report (PDF)
- ◆ Download (Excel)

Cost: 1.000 EUR
[link](#) to more info

Bridge to India
leader in reports
[Link](#) and news

INDIA SOLAR HANDBOOK 2017

Including the
INDIA SOLAR CEO SURVEY

Lead sponsor
HUAWEI

Associate sponsor
Oriano
Your Solar EPC Partner

India Infrastructure:
Powerline Directories
for Solar and Power



How to finance

“Publikationen” available in German language and free of cost at <http://www.export-erneuerbare.de>



KFW DEG



Make In India Business Support Programme

for German Mittelstand and family owned enterprises



MAKE IN INDIA MITTELSTAND!

Knowledge Partner
Legal & Tax Partner - India
Legal & Tax Partner - Germany
Banking Partners
Facilitation Partners
Incubation Partner
Partner Chamber
Technology Partner
Exhibition Partner
Associate Partner
Industry Associations



Whom to ask for further orientation?

Stakeholders of the sector who are interested in involving German companies



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



MITTELSTAND
GLOBAL
ENERGY SOLUTIONS
MADE IN GERMANY



Confederation of Indian Industry



Consulate General of India
Munich, Germany
ITP Division, Ministry of External Affairs
Government of India



Informationsveranstaltung in Deutschland und AHK-Geschäftsreise nach Indien

Energieeffizienz und Eigenversorgung mit Erneuerbaren Energien für Industriekunden in Indien

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- ✓ **Kostenfreie Vermittlung potenzieller Geschäftspartner**
- ✓ **Kontakt mit Entscheidungsträgern aus Politik und Wirtschaft**
- ✓ **Insider-Wissen durch persönliche Gespräche**
- ✓ **Vortrag auf Veranstaltung in Indien um Bekanntheit Ihres Unternehmens zu steigern**
- ✓ **Ihr Unternehmen trägt die Reisekosten**
- ✓ **Mehr Infos <http://www.export-erneuerbare.de>**

Mit Unterstützung von:



Bundesverband
Kleinwindanlagen



Bundesverband WindEnergie





18.-20. September, 2018; India Expo Centre, New-Delhi

www.renewableenergyindiaexpo.com

Total exhibitors: 700+ from 40 countries; 16.000 sqm

Visitors: 30.000+

German exhibitors: 24

11.-13.12.2018 Intersolar India

in Bangalore, with German Pavilion and IGEF Session on "India's upcoming PV niche markets"

inter
solar
connecting solar business | **INDIA**



CONTACT

MENU

Welcome to the Indo-German Energy Forum



Thank you

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New Delhi

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Rank	Indicative movement on previous index ¹	Market	RECAI score	Technology-specific indices rankings							
				Onshore wind	Offshore wind	Solar PV	Solar CSP	Biomass	Geothermal	Small hydro	Marine
1	=	US	77.0	1	4	1	1	2	2	6	8
2	=	China	76.9	2	1	3	7	1	16	1	6
3	=	India	71.6	4	21	2	4	3	15	2	23
4	▲	Chile	70.4	6	20	7	3	18	6	4	20
5	▼	Germany	69.0	8	2	19	22*	12	8	22	26
6	▲	Brazil	67.5	3	19	5	10	8	30*	3	22
7	▲	Mexico	67.0	5	24	6	12	26	5	11	16
8	▼	France	66.7	9	9	9	19	10	17	21	5
9	▼	Canada	64.6	7	14	14	22*	20	19	7	4
10	▲	Australia	63.8	10	15	4	8	19	9	14	7

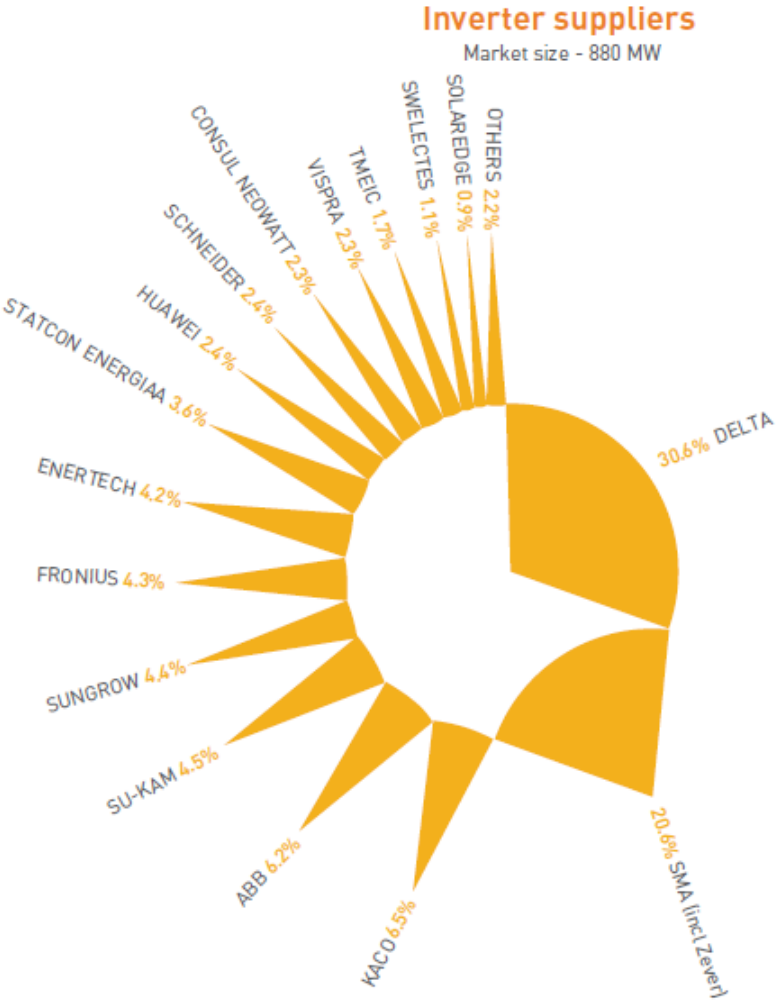
*Joint ranking

¹ Due to the methodology refresh, the previous numeric ranking is not a comparable measurement, therefore an indication of the movement is provided only

Source: [EY, May 2016](#)

Inverter suppliers market share rooftop

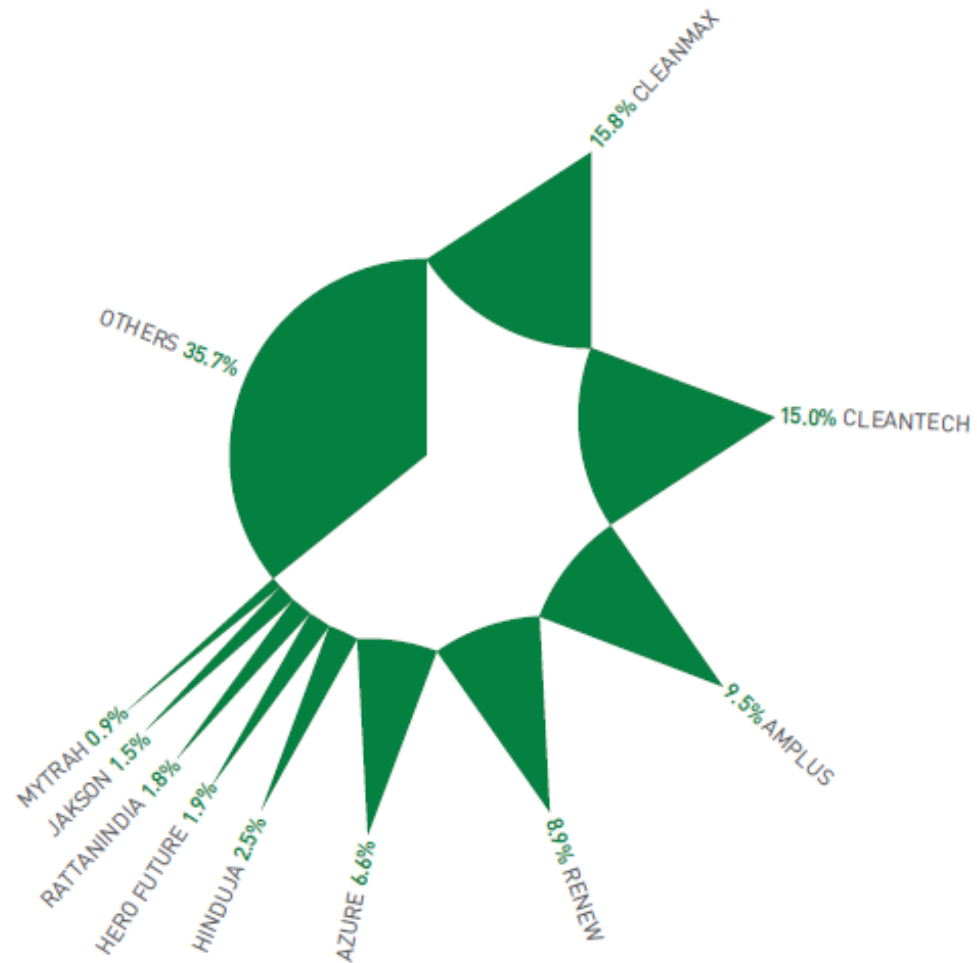
880 MW total in 2017



Source: <http://www.bridgetoindia.com/our-reports/india-solar-map/>

Project developers rooftop

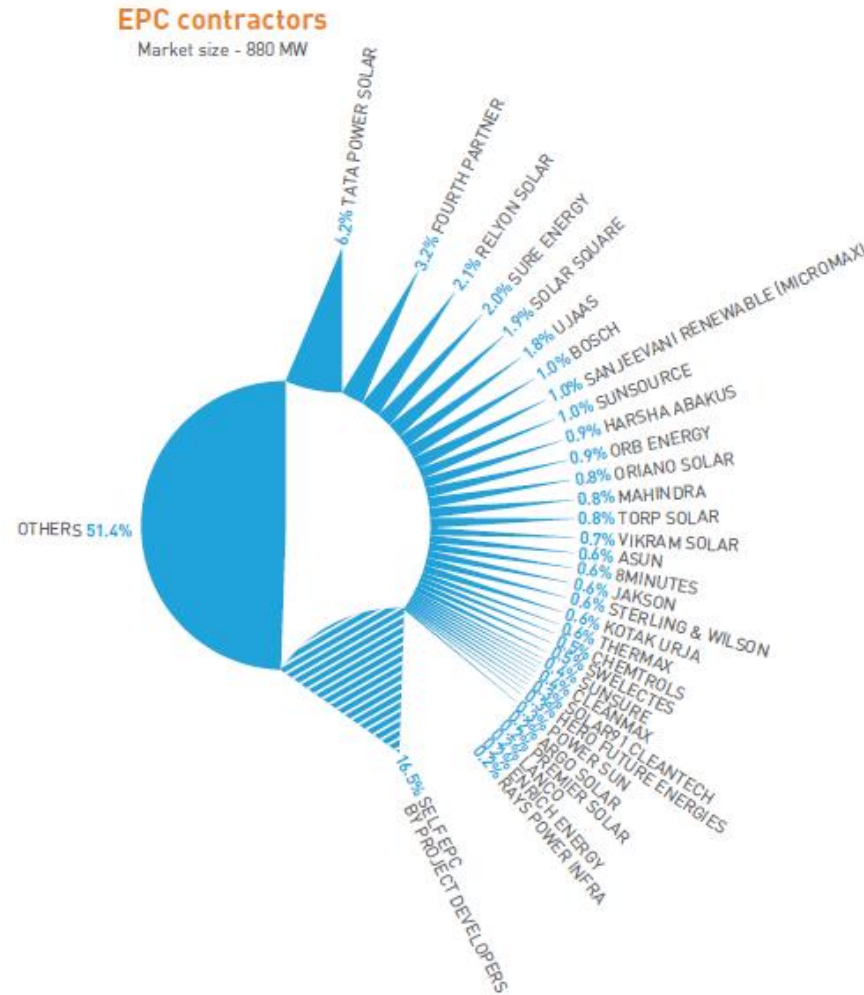
Basis 228 MW total in 2017



Source: <http://www.bridgetoindia.com/our-reports/india-solar-map/>

EPC rooftop market shares

Basis 880 MW total in 2016



Source: <http://www.bridgetoindia.com/our-reports/india-solar-map/>