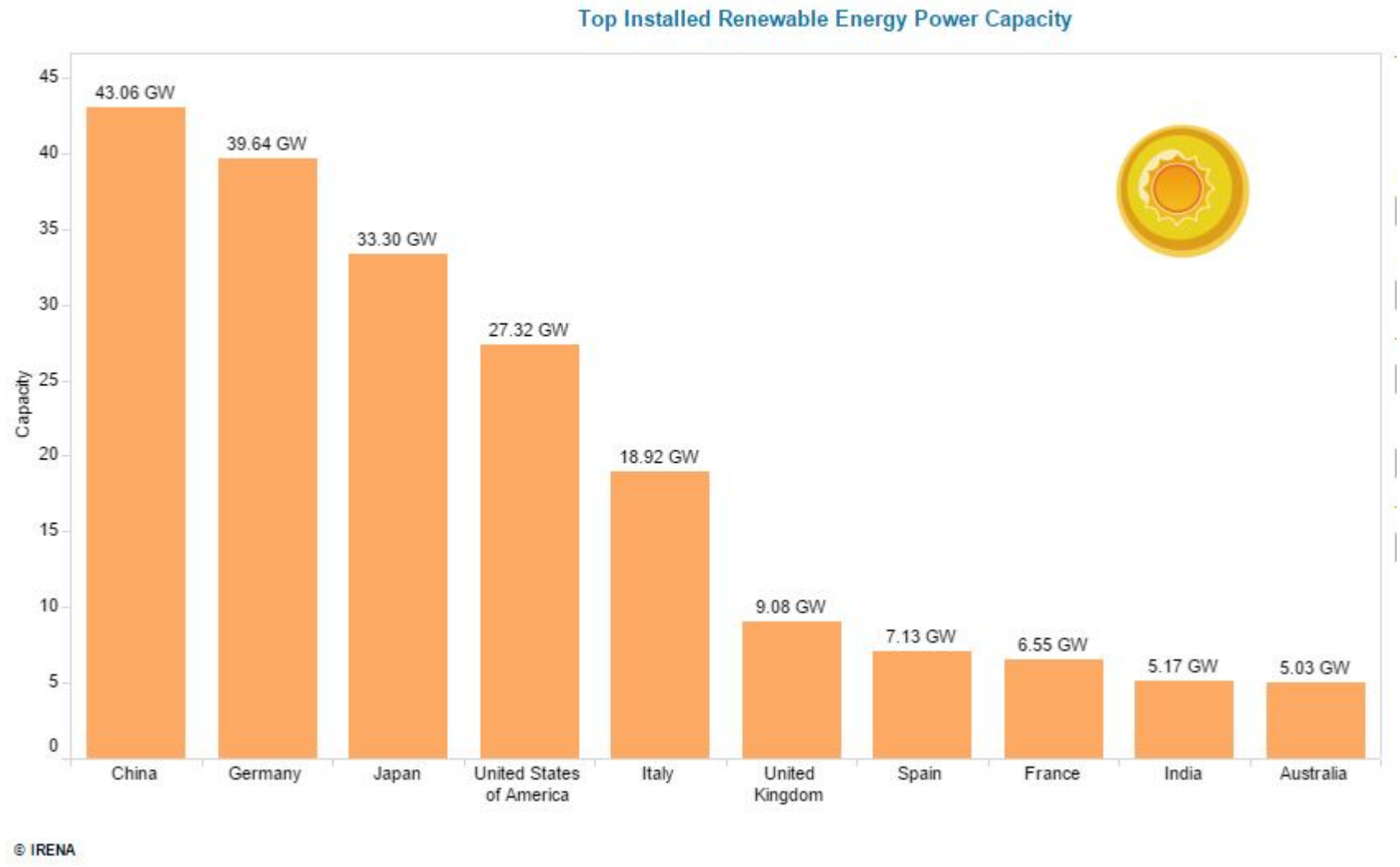
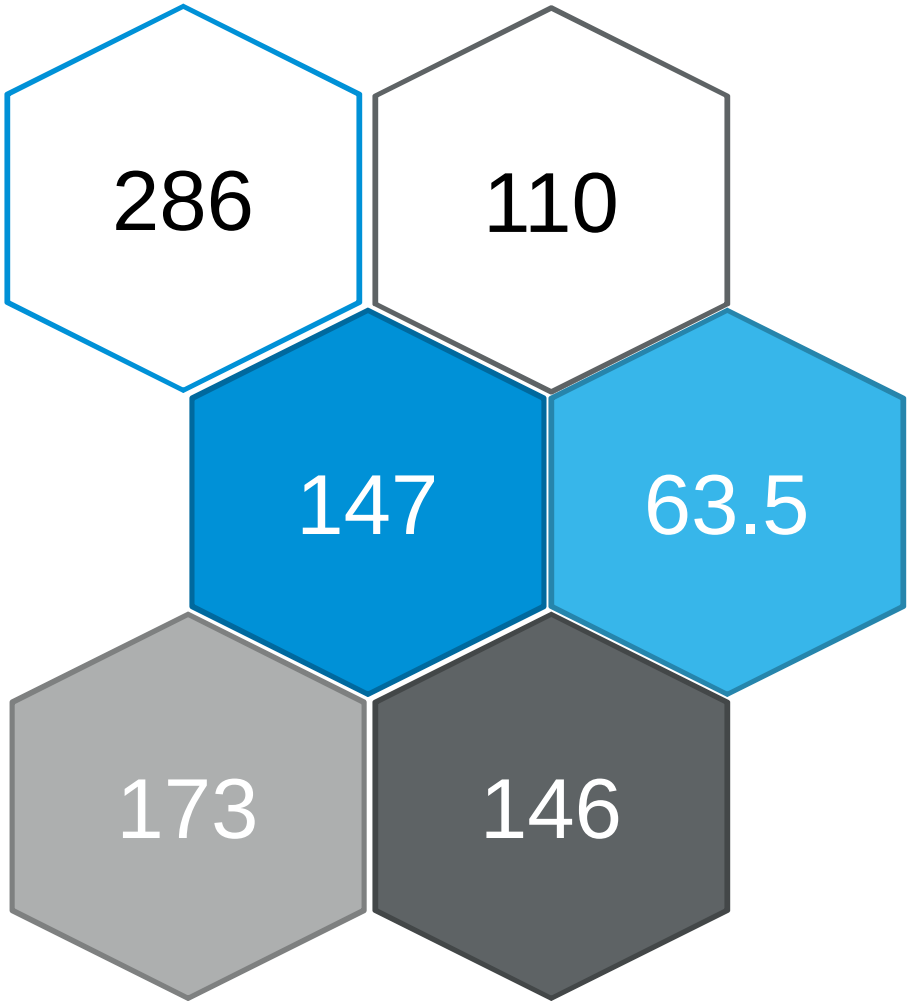
# Wind Energy Overview

**Amar Variawa**
**Director - Marketing & Public Affairs**
**Vestas India and SE**
**16th June 2016**

# Wind in a nutshell



# 2015 was a record year for RE…!

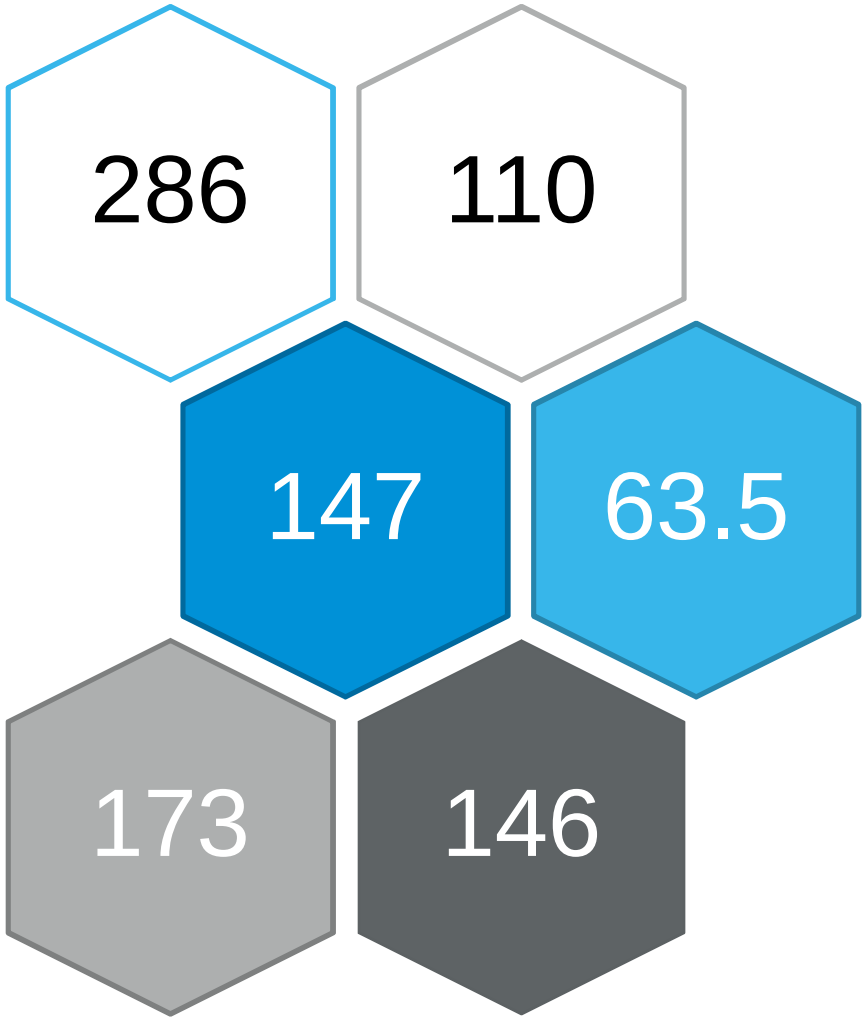



Source : http://resourceirena.irena.org/gateway/dashboard/?topic=6&subTopic=11



**Wind.** It means the world to us.™

# 2015 was a record year for RE…!




Source : http://resourceirena.irena.org/gateway/dashboard/?topic=6&subTopic=11



**Wind.** It means the world to us.™

# 2015 was a record year for RE…!

147

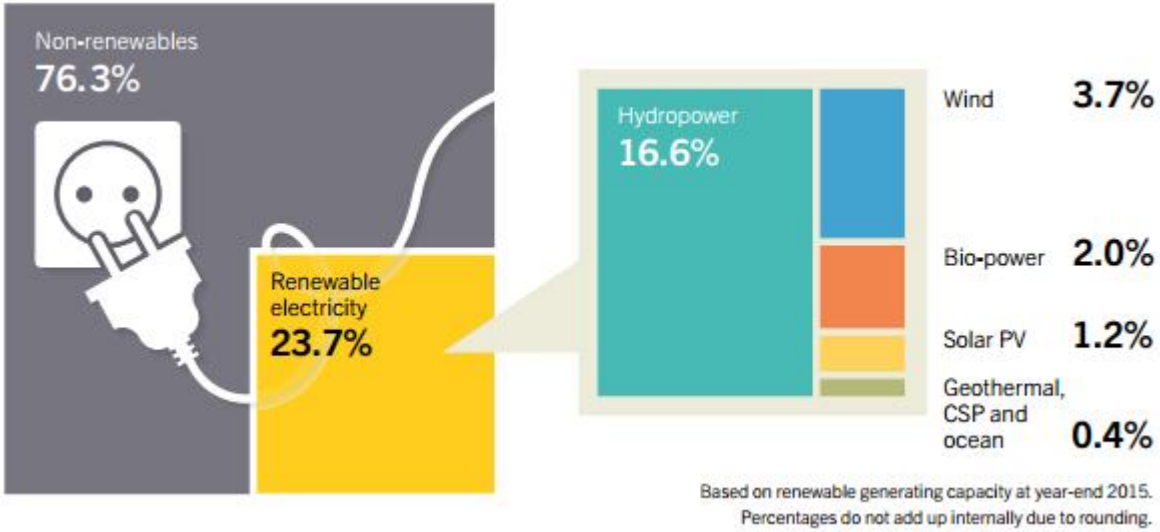
63.5

286

109.64

173

146



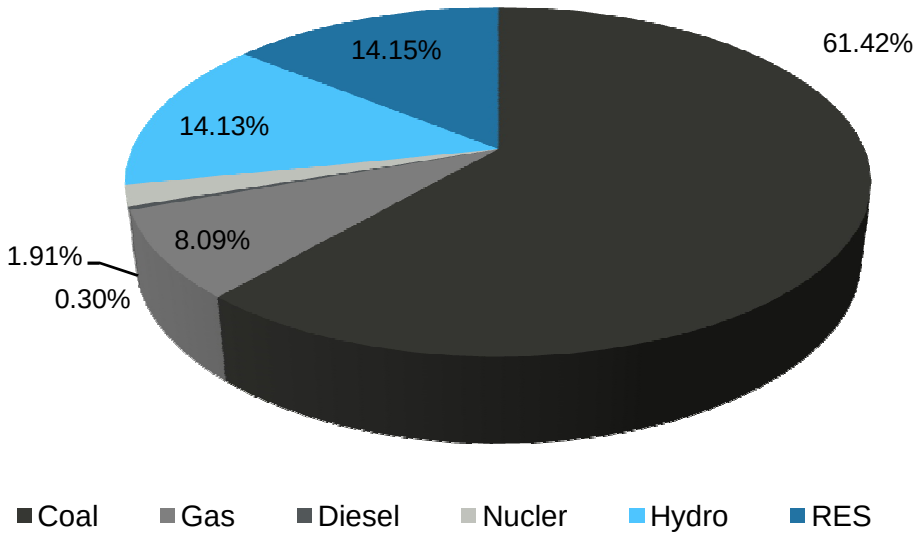



Source : http://resourceirena.irena.org/gateway/dashboard/?topic=6&subTopic=11

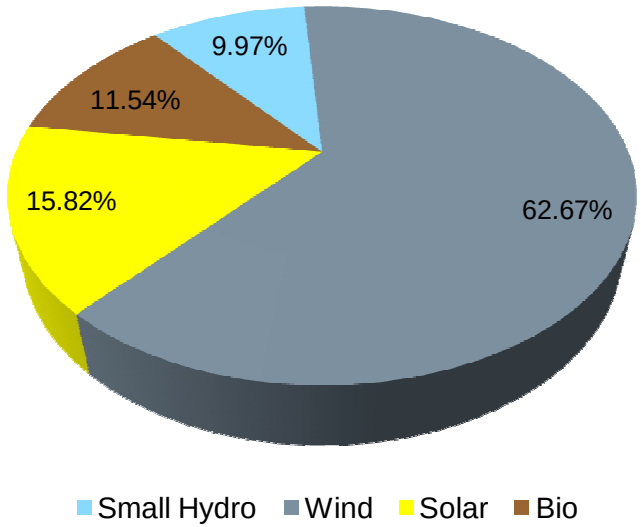
**Wind.** It means the world to us.™

# India Power mix

**Total 302GW**



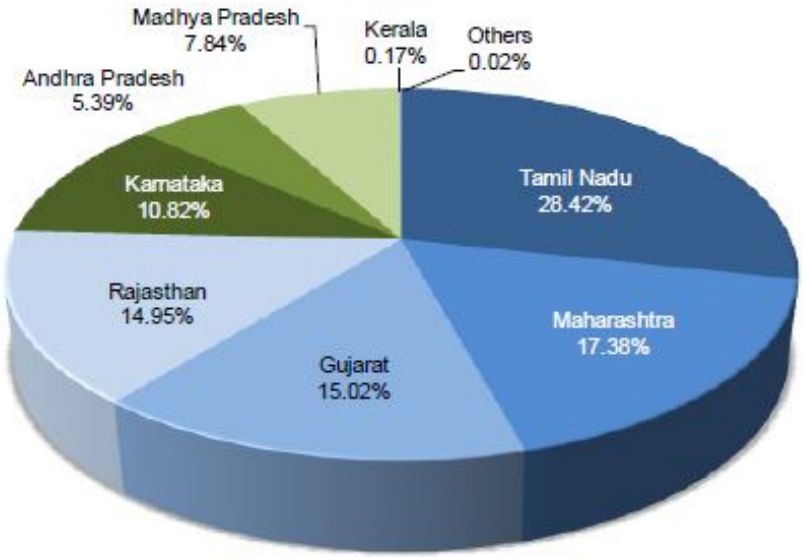

**Total ~42.8GW**



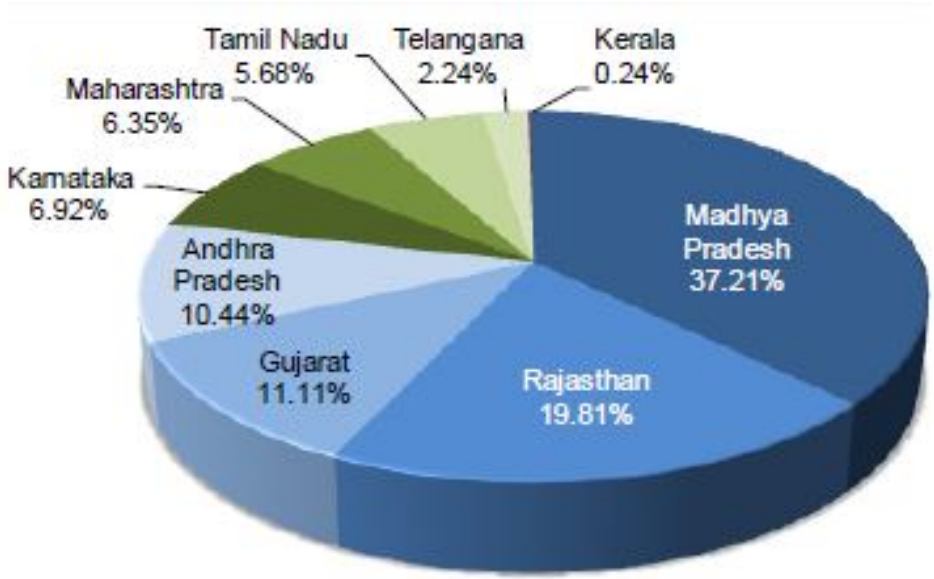

- Renewables is the second biggest source of Power in India after Thermal contributing over 14% of installed base leaving behind Large Hydro Power Plants
- Wind has an installed capacity of over 26.800 MW contributing 62.5% of renewables, while Solar has over 6700MW contributing towards 15.82% of renewables
- **Government of India aspiration is to add 60GW Wind by 2022 leading to an anticipated annual capacity addition of 5.5GW.**
- Target for Solar is 100 GW by 2022 from the current level of 6700MW in 2016

# Green Energy takes shine off coal…

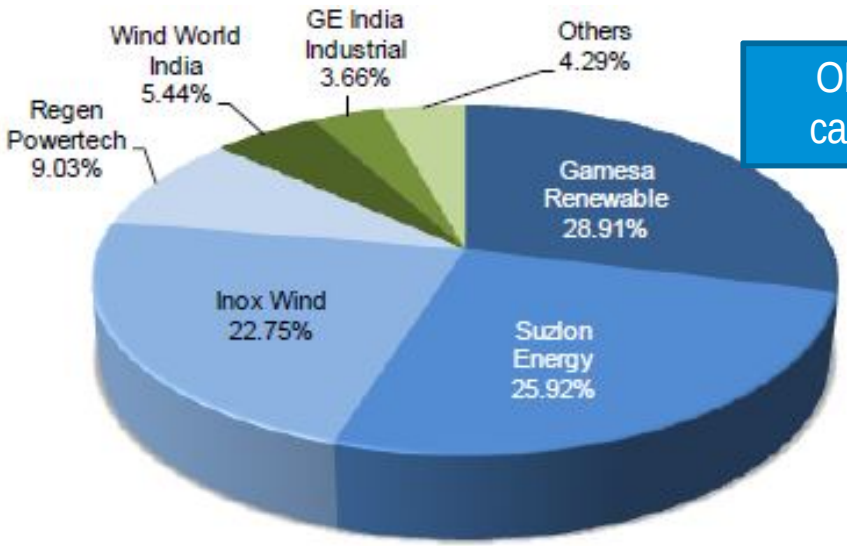
State-wise share in installed wind capacity as of Mar 2016(%)




State-wise share of wind power capacity addition in 2015-16 (%)



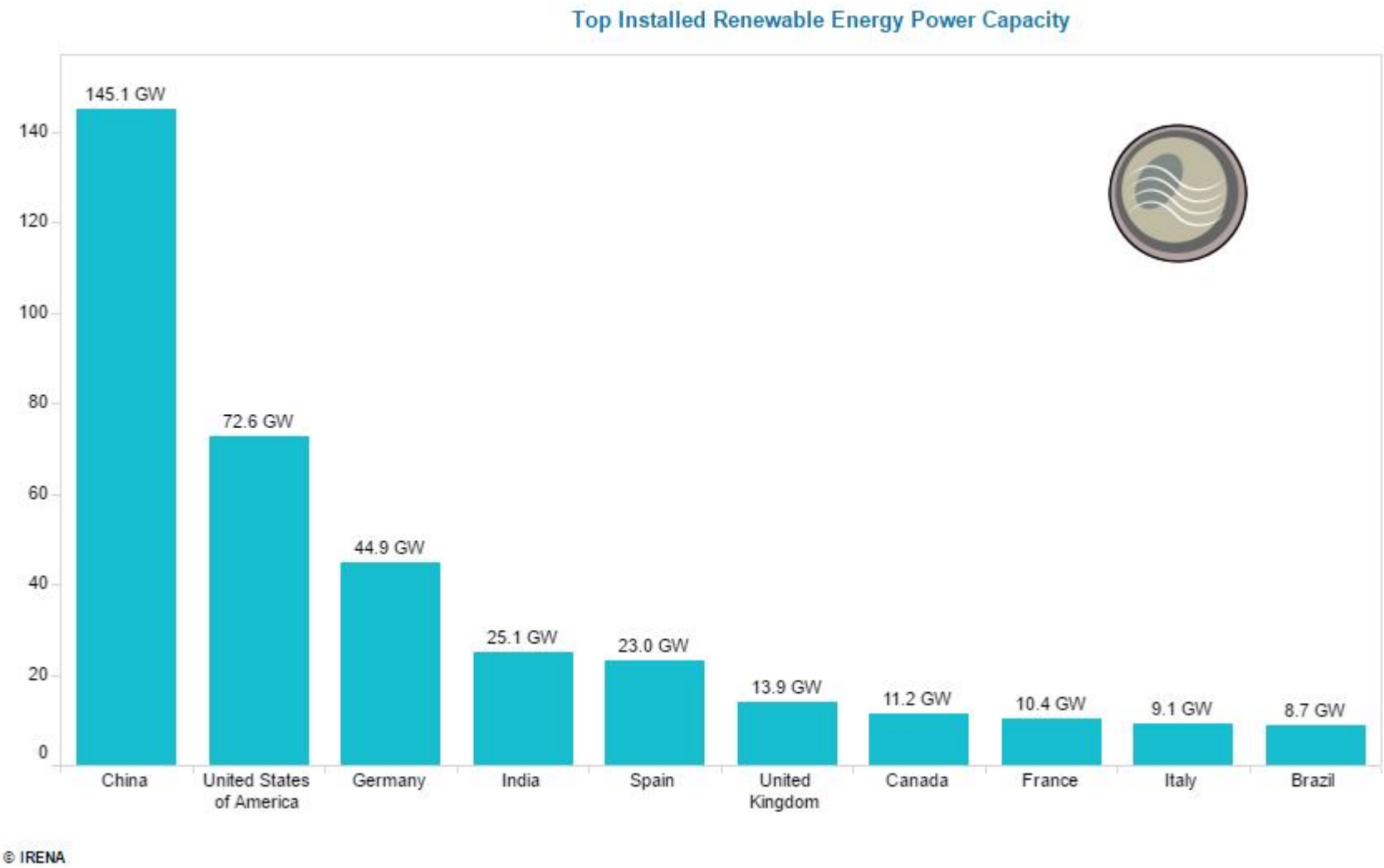

OEM-wise share of wind power capacity addition in 2015-16 (%)






**Wind.** It means the world to us.™

# Wind in a nutshell



# Green Energy takes shine off coal…

- Wind Energy is not electricity alone but it is a package of Health and environment
- INDC : By 2030 India plans to meet 40% of its energy needs with renewables, and thus create more jobs, increase exports and reduce its energy dependency on fossil fuels
- India is now looking at a commitment of building a total of 350 GW of solar+wind by 2030

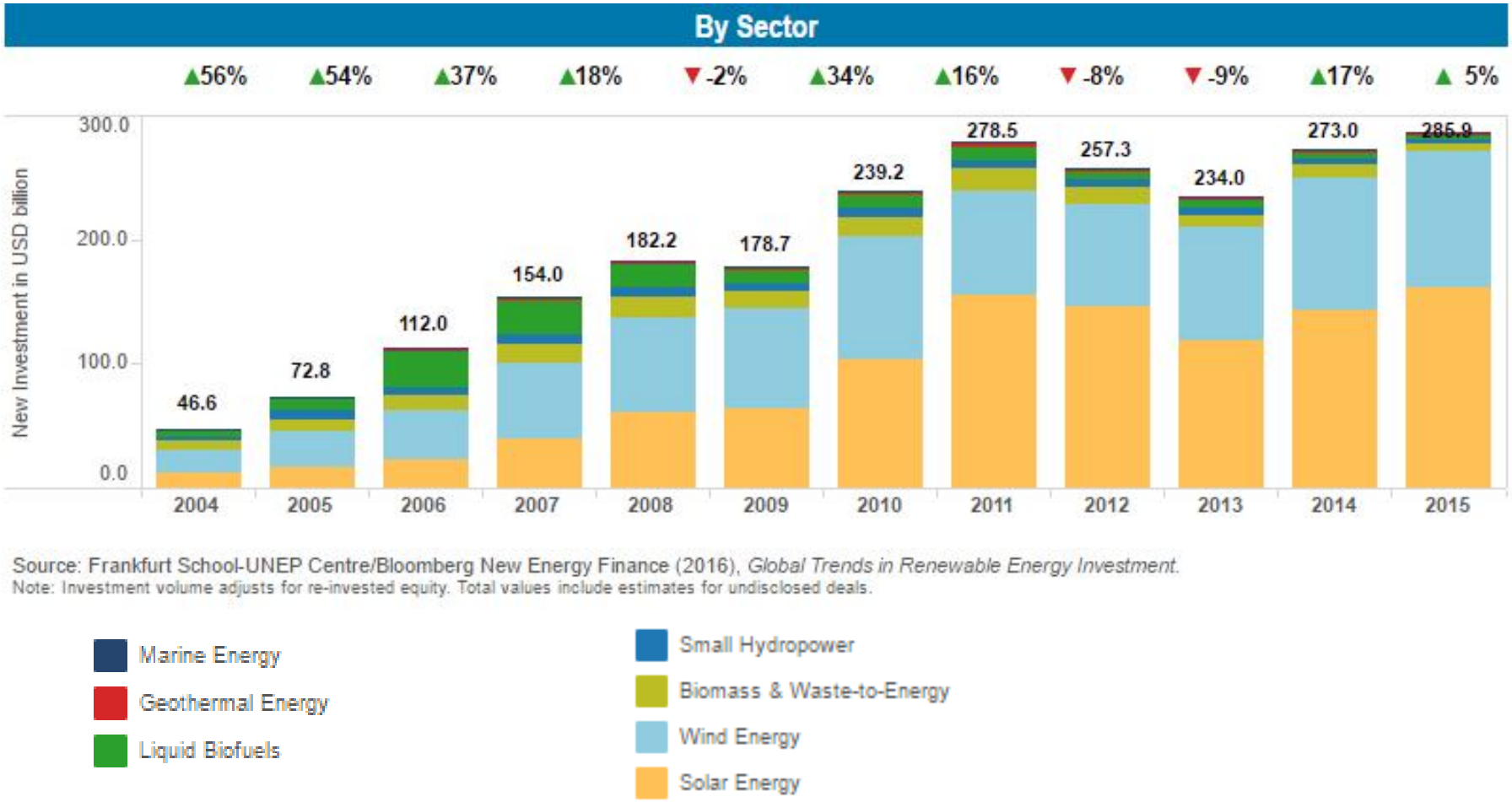


**Wind.** It means the world to us.™

# Wind in a nutshell…Executive Summary

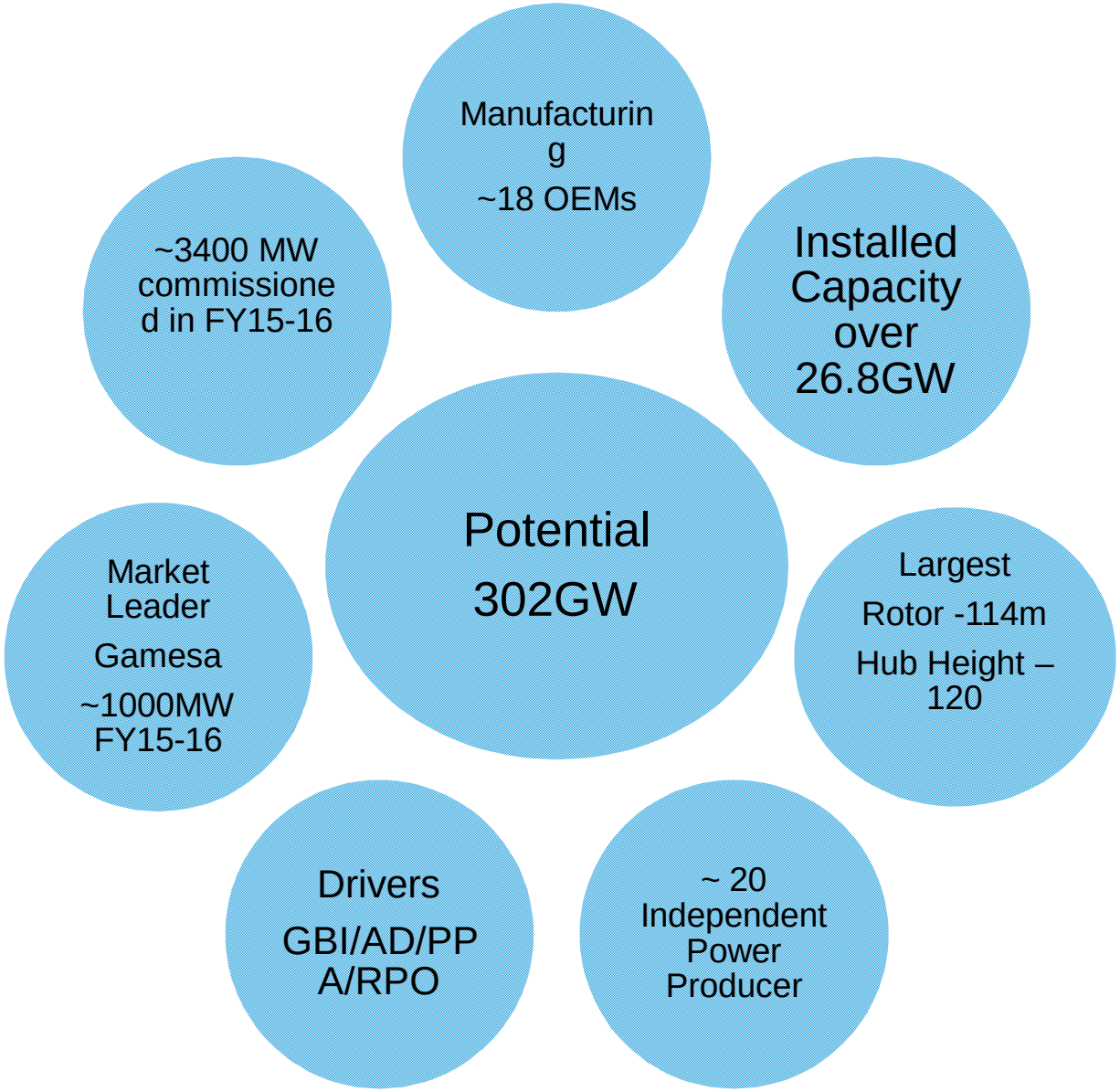
## Size & Growth

- 27 GW of installed wind capacity as of Mar 2016




Source: Frankfurt School-UNEP Centre/Bloomberg New Energy Finance (2016), *Global Trends in Renewable Energy Investment*.
Note: Investment volume adjusts for re-invested equity. Total values include estimates for undisclosed deals.

# Wind in a nutshell






**Wind.** It means the world to us.™

# Wind Energy in India : A Snap shop : Journey till now

Installed base of over 26,800 MW spread across 8 states

- Resource potential : 300 GW + 100 GW (off-shore)

Investor mix till this date : Broad classification

- 40% captive power producers (MSME sector) – Heavy reliance on Accelerated Depreciation (AD)
- 30% mix (PSUs, retail investors)
- 30% IPPs (latest entrant)

Technology evolution over past few years

- SIZE : 250 kW size going to multi-mega watt (viz. up to 2.5 MW) in turbine size
- CLASS: From class II to Class III and IV wind turbines (which produce at lower wind speeds)
- HEIGHT Hub height from 50 meters to now 120 meters

Employment generation : Mostly rural or semi-urban areas

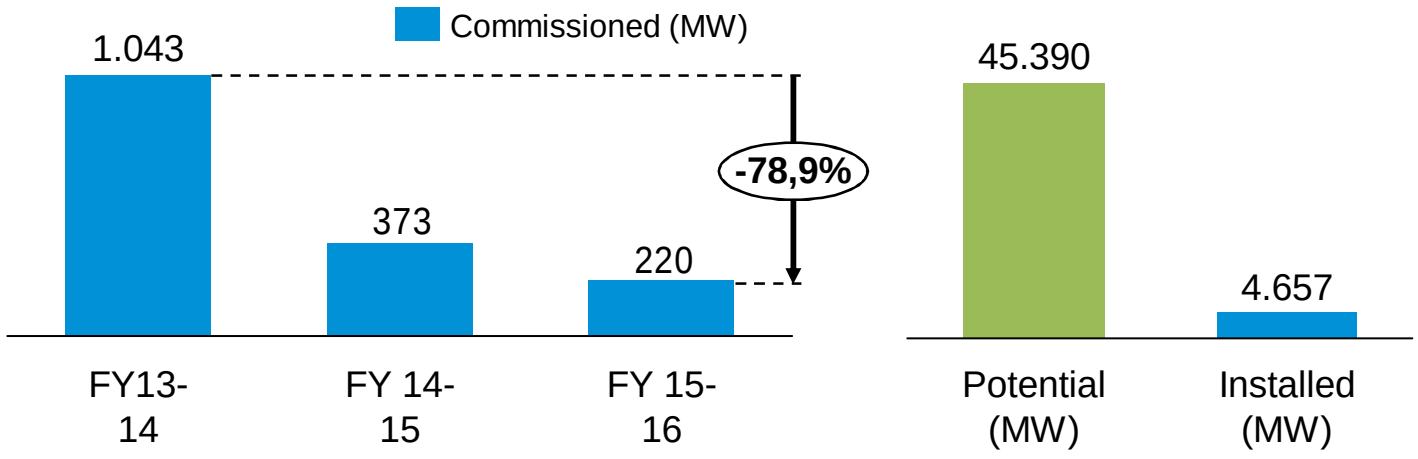
- Direct : 1,00,000
- Indirect : 10,00,000

Export

- Averaging of USD 500 million on an annual basis

After going through a tough time, the sector has now all elements for revival of growth

# Wind Energy : Advantage Maharashtra




The state offers vast wind resource for harnessing wind energy

- 45.39 GW potential at 100m (as per the latest estimates by NIWE)
- Over 4600 MW (commissioned as on 31st March 2016), which is 10% of the states wind potential
- Various OEMs and components suppliers have set up their manufacturing and sales units Vestas, Gamesa, GE, Suzlon, Shrenik Towers, etc

Wind Power Capacity addition has slowed down drastically in the state

- Capacity addition has dropped from over 1000MW in a single year in 2014 to 220MW in year 2016

No / Marginal capacity addition is expected in the state due to lack of Clarity on PPA and Capacity addition targets



**Wind.** It means the world to us.™

# Areas to look into by Government of Maharashtra

- PPA signing of commissioned and fresh projects needs to be fast tracked
  - Tariff @ INR 5.56/kWh is amongst the good tariff regimes in the country. But the state should aid in new capacity additions by easing the regulatory framework
  - Long term Tariff certainty has to be given as Tariff currently is valid only for a single year. This will attract investor confidence
  - Should encourage third Party and Captive sale of power

- Grid and Transmission
  - Intra state grid usage should be made simpler as there are different private and state owned DISCOMS that causes regulatory complications and delays
  - ROW issues have caused delays during EHV lines and during project execution, suitable intervention of Government is anticipated.

# Certain Issues : Need to look into by Government of Maharashtra

- Clearances for Wind projects needs to be eased
  - Difficulty in getting Infrastructure clearance for wind projects
  - No exclusivity is offered for Project developers who set up wind mast for Potential site identification. Wind mast exclusivity should be provided to developers for the project within 10 km radius of mast for period of 2 yrs.

# Certain Issues : Need to look into by Central Government (1/2)

➢To meet the target of 60 GW by 2022

## Green Energy Corridor & inter-state transmission charges

- Transmission bottlenecks leads & high inter-state transmission charges is one of the biggest hurdle
  - ***Plan and execution of multiple green corridors , and socialization of inter-state transmission charges would lead to a huge boost for investments***

## RPO enforcement

- Is a must to support inter-state exchange of energy

## Scheme for indegenisation & infrastructure financing from NCEF

- Scheme on the lines of FINAME (Brasil) for interest subvention for localised product
- Cheaper financing for creating infrastructure (EHV) & logistics

## GST

- Electricity duty is not proposed to be subsumed in GST, while wind energy is exempted from excise today, this will lead to slapping of 18% of GST on the project cost
  - ***RE to be covered under GST and taxed at 'zero'***

# Certain Issues : Need to look into by Central Government (2/2)

## Additional GBI for balancing through storage & funding for ancillary services

- Central government to create a scheme for creating ancillary services by the state government for balancing requirement (viz. pumped hydro)
- Additional GBI for wind-storage options (viz. battery, compressed air)

## Export from India

- *Currently annual exports averages at USD 500 million which has a potential to increase beyond USD 3 Billion*
  - ***Export policy to be established for wind energy sector***
  - ***Low cost working capital required to compete with international players***
  - ***Role of EXIM Bank of India for project financing in overseas geographies***

# Forecasting and Scheduling

Industry offers full cooperation in forecasting & scheduling of wind power to facilitate higher penetration and help SLDC in load dispatch management and grid stability

## Skill Development

- **O&M alone involves 2-3 persons/MW on a continuing basis spread over 25 Years.**
- **Industry Will cooperate with the state government to impart skill development programme at ITI/Diploma level to encourage local employment and avoid migration.**



**Wind.** It means the world to us.™

# Agenda

- Major Milestones Achieved
- What has been agreed?
- External Participation
- External visibility in one year

# Agenda

Thank you for your attention