



NEW AND RENEWABLE ENERGY

**PRESENTATION TO
INDIA-AUSTRALIA ENERGY AND MINERALS FORUM**

07-11 JUNE 2010

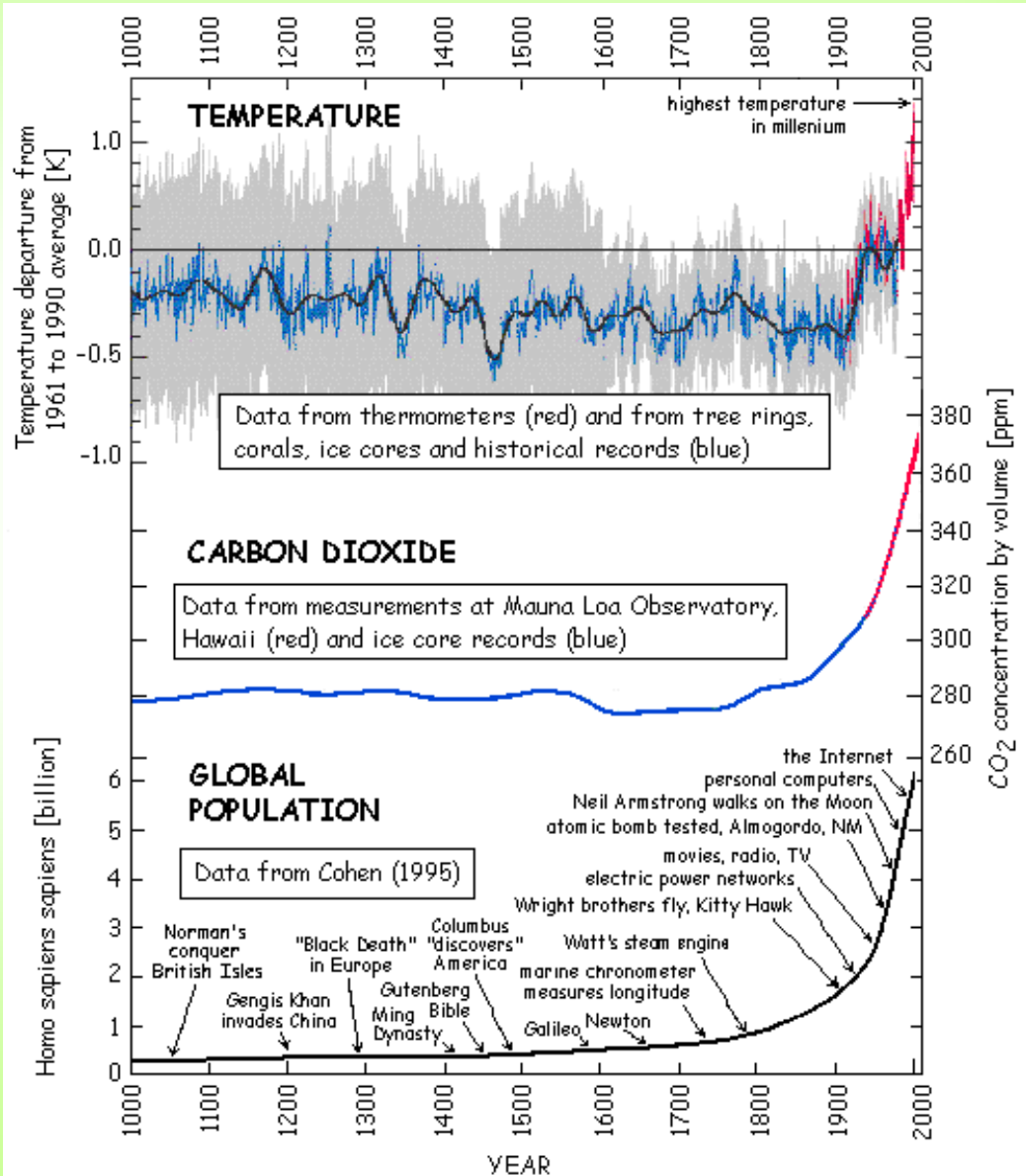
TODAY'S CHALLENGE



Global warming over the past millennium

Over the 20th century, human population quadrupled and energy consumption increased sixteen fold.

Global mean surface temperature is higher today than it's been for at least a millennium.



INITIATIVES

Renewable

Efficiency

Forestation and Agriculture

CO₂ Mitigation

RENEWABLE TO MITIGATE CLIMATE CHANGE INDIA'S INITIATIVES

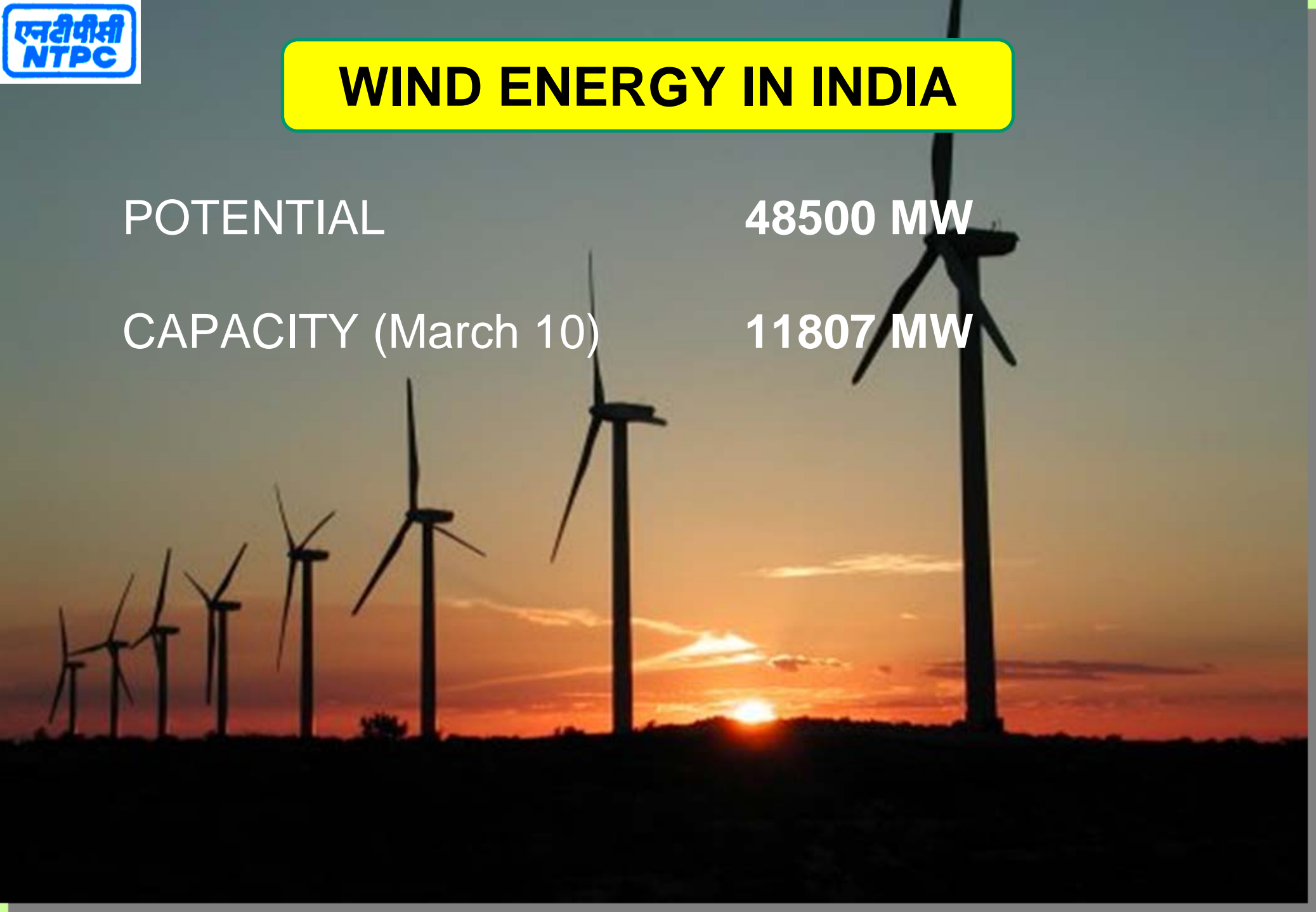
WIND ENERGY IN INDIA

POTENTIAL

48500 MW

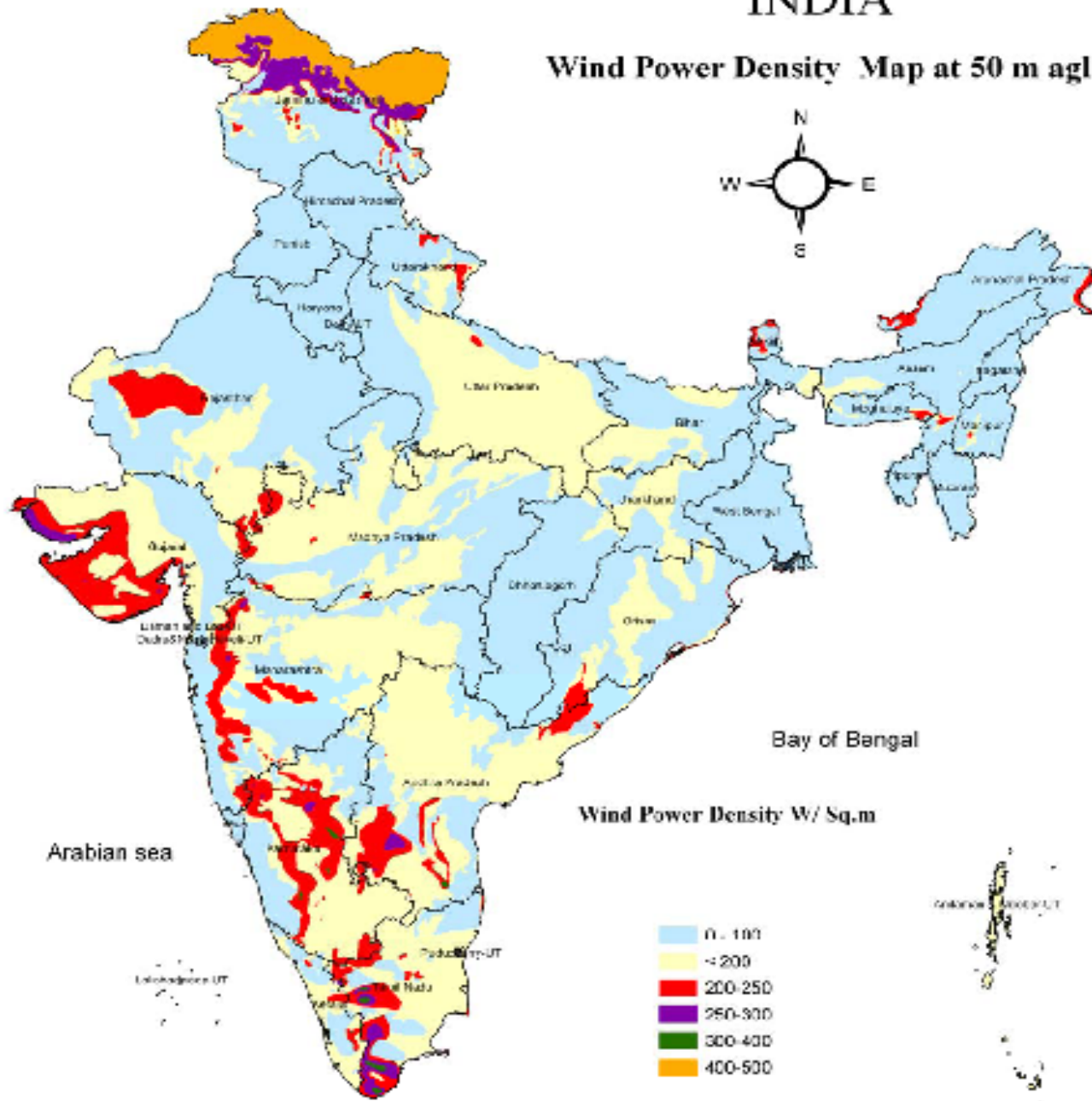
CAPACITY (March 10)

11807 MW



INDIA

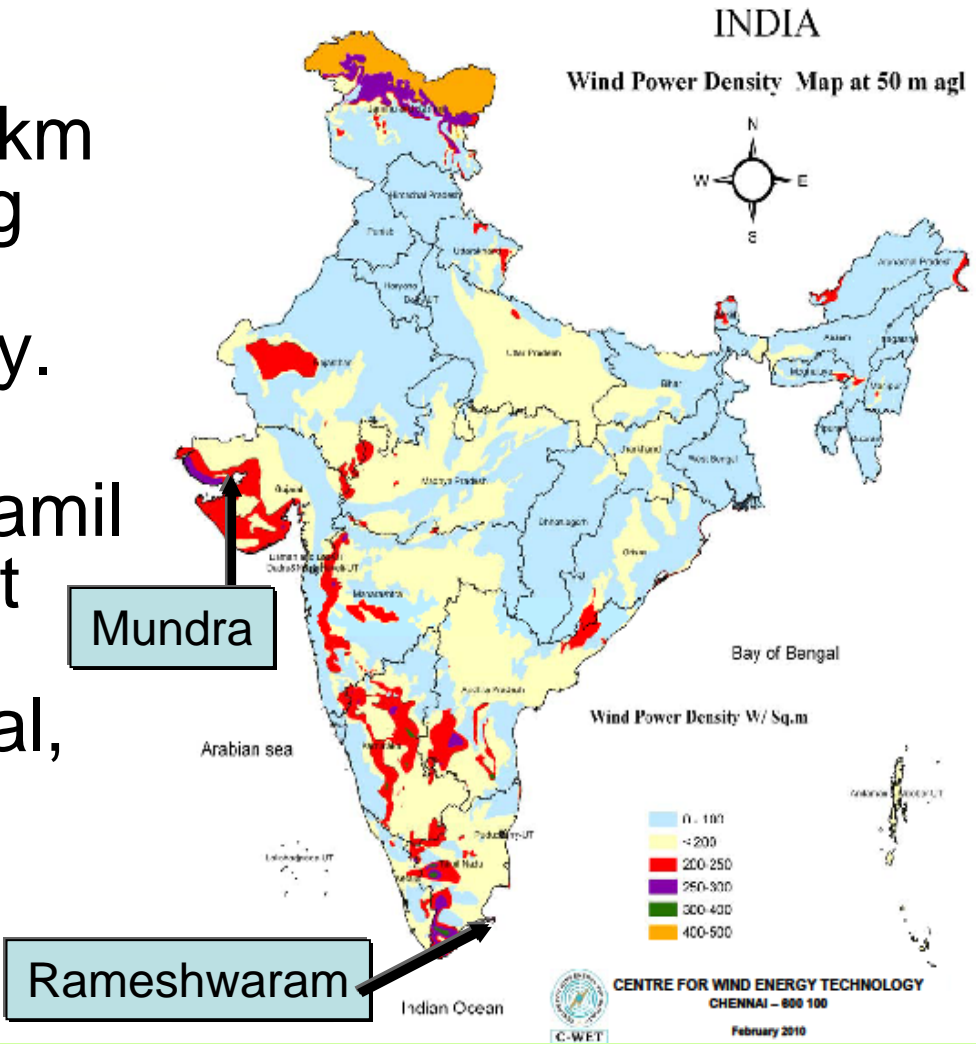
Wind Power Density Map at 50 m agl



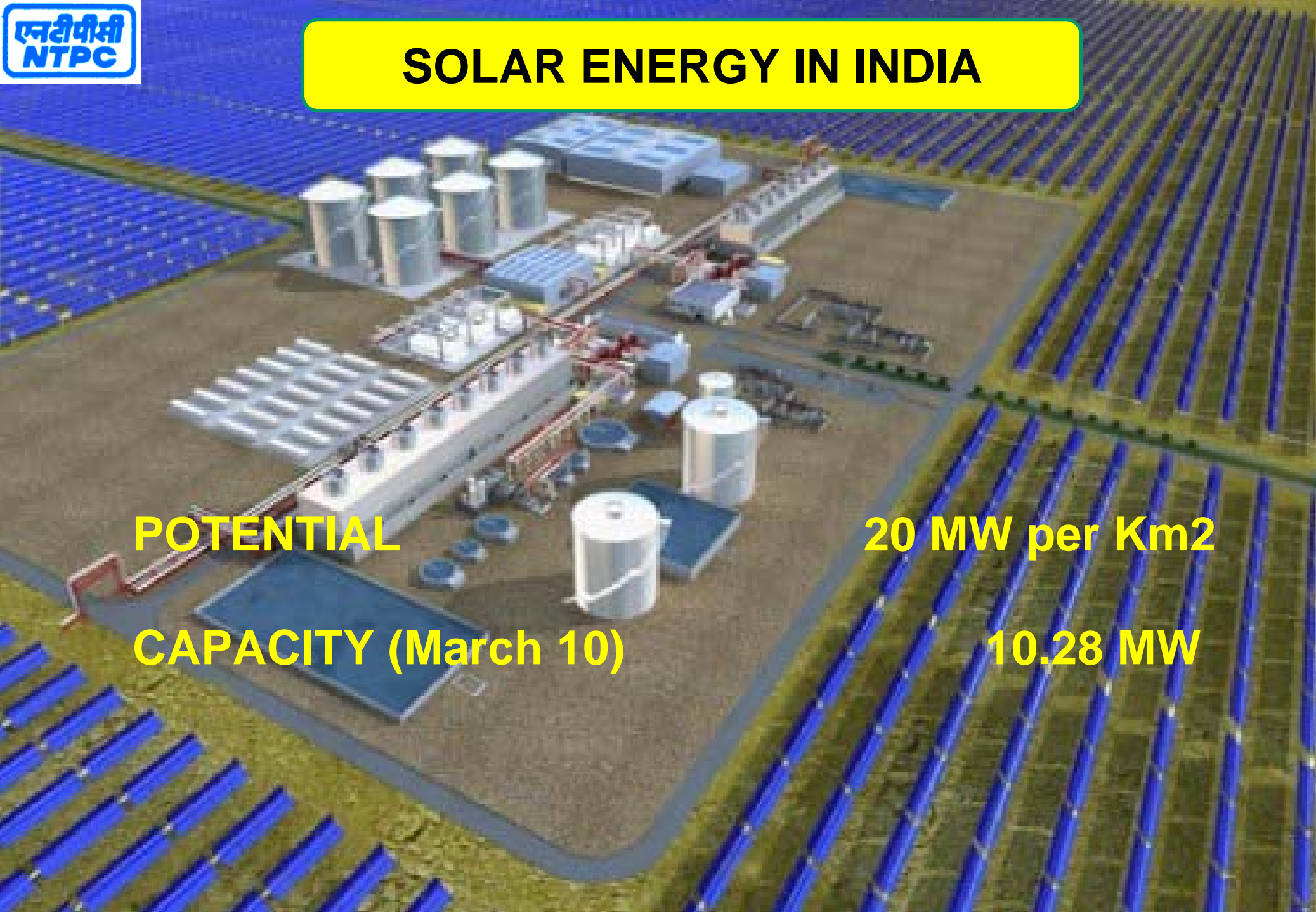
Offshore Wind Power Potential



- India has over 7000km of coastline meaning huge potential for offshore wind energy.
- two locations at Rameshwaram in Tamil Nadu and Mundra at Gulf of Kutch have shown good potential,



SOLAR ENERGY IN INDIA



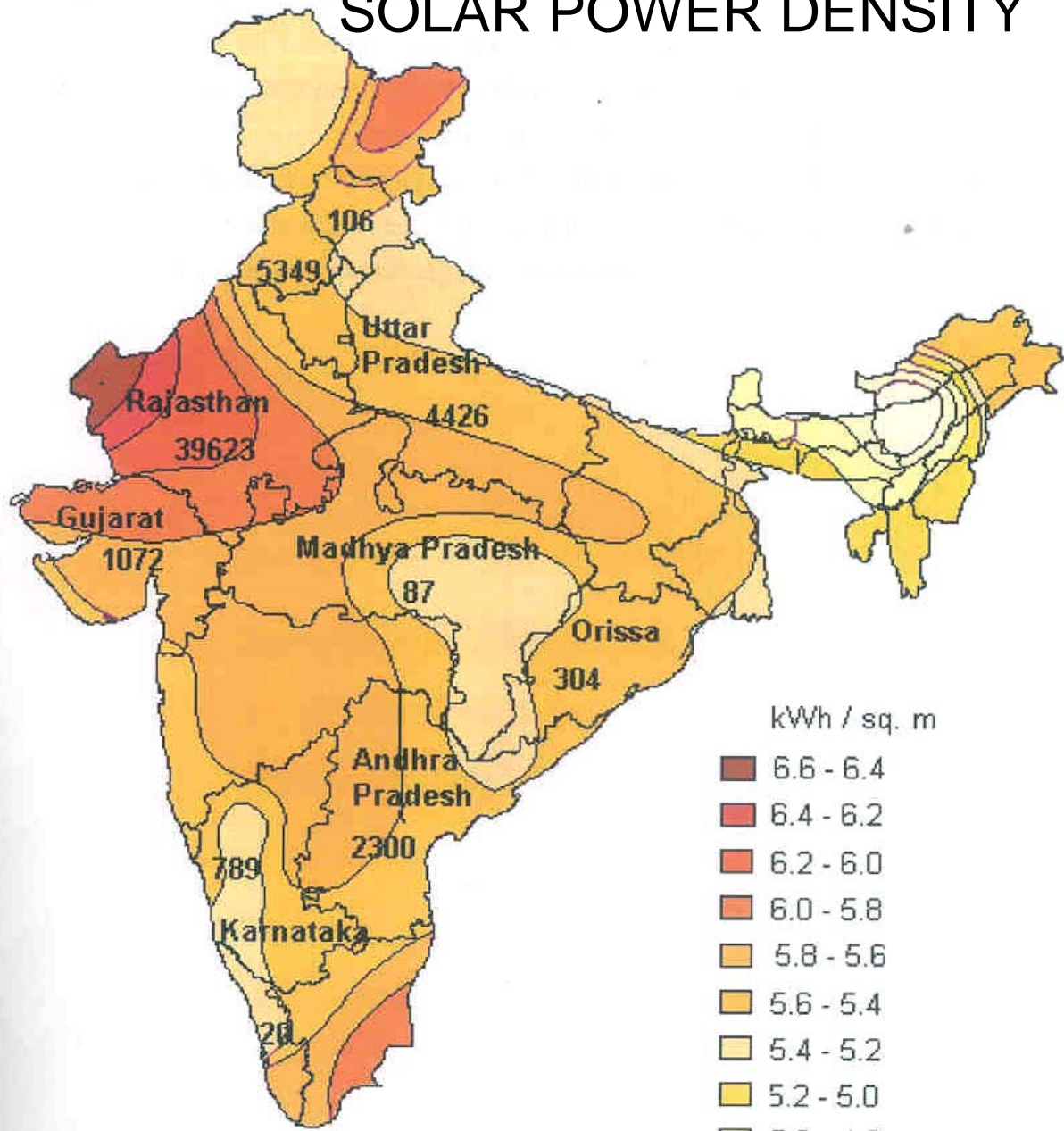
POTENTIAL

20 MW per Km²

CAPACITY (March 10)

10.28 MW

SOLAR POWER DENSITY



Number of habitations having salinity more than 1500 mg/l

- kWh / sq. m
- 6.6 - 6.4
 - 6.4 - 6.2
 - 6.2 - 6.0
 - 6.0 - 5.8
 - 5.8 - 5.6
 - 5.6 - 5.4
 - 5.4 - 5.2
 - 5.2 - 5.0
 - 5.0 - 4.8
 - 4.8 - 4.6
 - 4.6 - 4.4

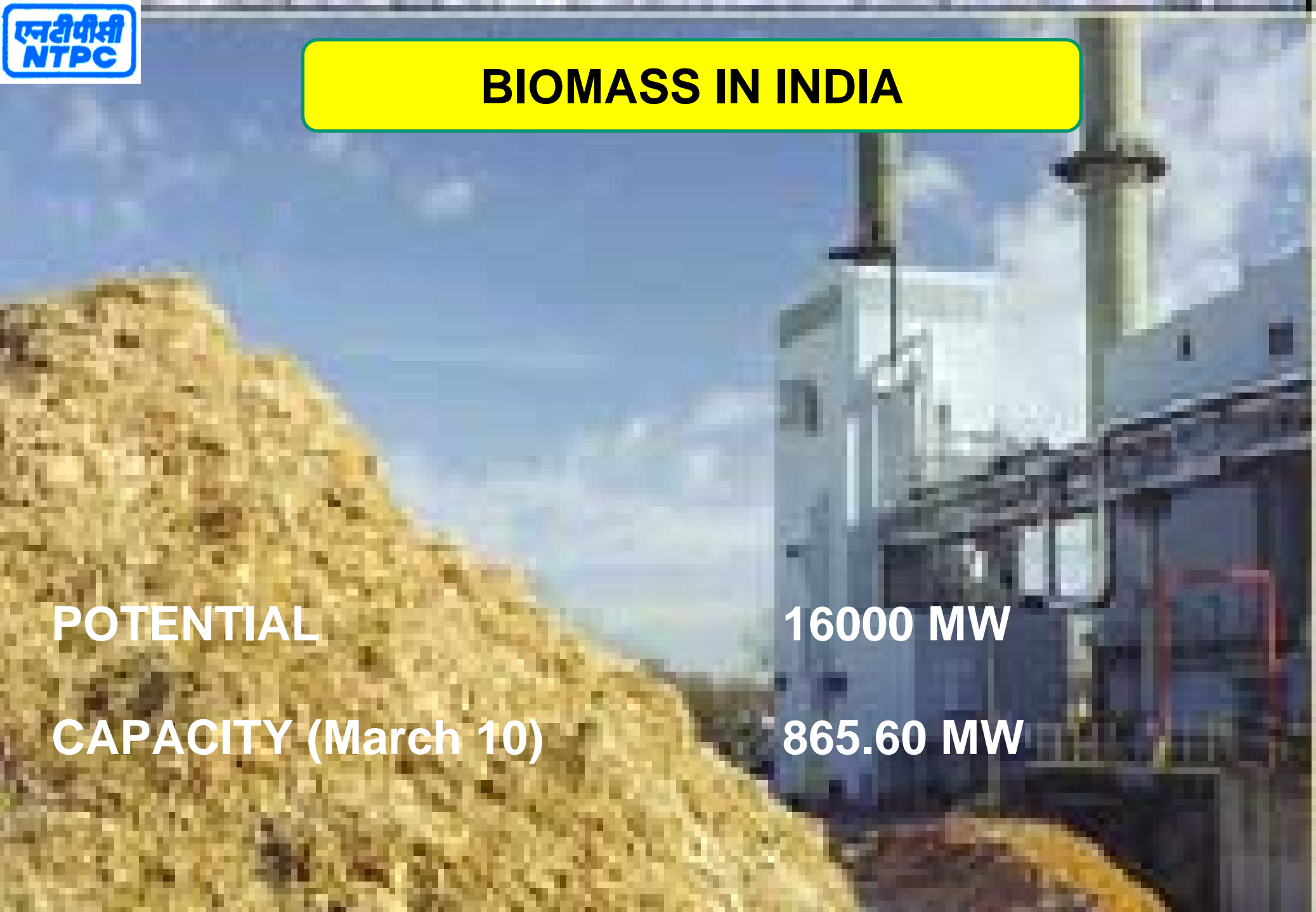
BIOMASS IN INDIA

POTENTIAL

16000 MW

CAPACITY (March 10)

865.60 MW



Small Hydro Power (up to 25 MW) IN INDIA



POTENTIAL

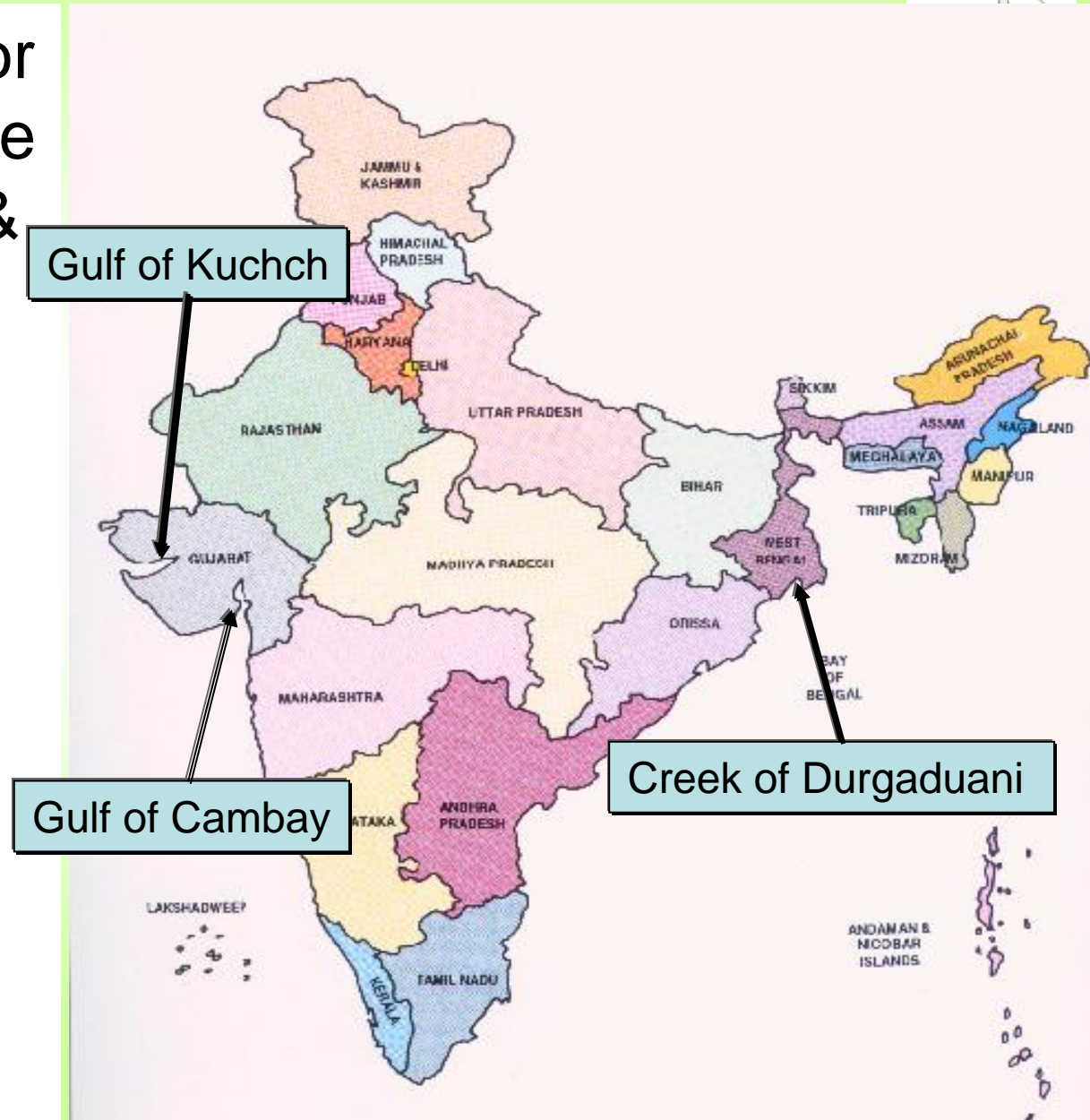
15000 MW

CAPACITY (March 10)

2735.42 MW

Potential Tidal Energy side

- Some potential sites for tapping tidal energy are in the Gulf of Kuchch & Gulf of Cambay in Gujarat and the Delta of the Ganga in the Sunderbans region in West Bengal.



SUMMARY



No.	Sources / Systems	Cumulative Achievements	Potential
1.	Biomass Power (Agro residues)	865.60 MW	16000 MW
2.	Wind Power	11807.00 MW	48500 MW
3.	Small Hydro Power (up to 25 MW)	2735.42 MW	15000 MW
4.	Cogeneration-bagasse	1334.03 MW	5000 MW
5.	Waste to Energy	64.96 MW	1700 MW
6.	Solar Power	10.28 MW	20 MW per Km ²
	Total	16,817.29 MW	

As on 31.03.2010

Source: MNRE

Opportunities



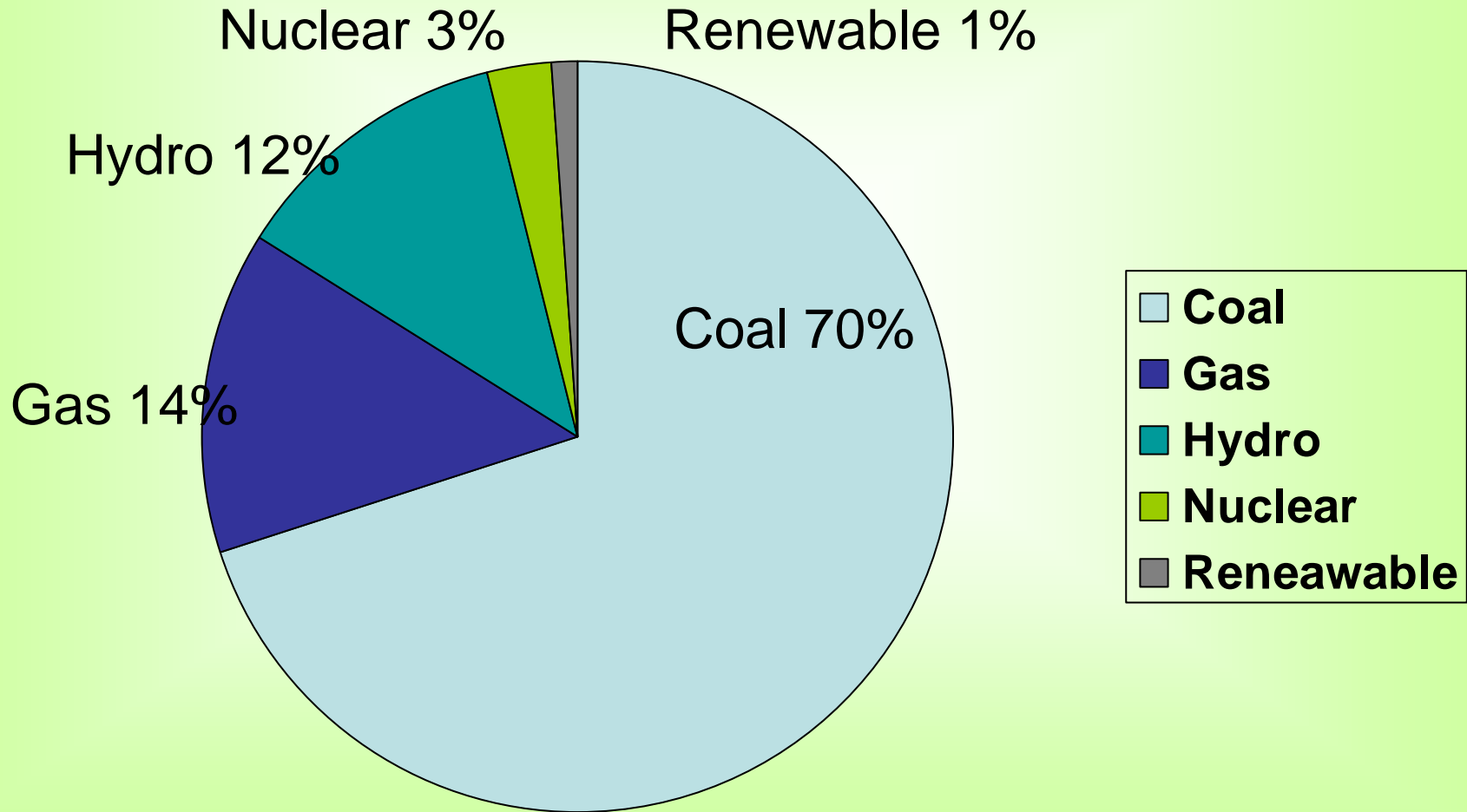
- **India is the fifth largest country in the world in terms of wind energy installed capacity**
- **Over 16,000 MW of renewable based capacity has already been installed**
- **100% FDI allowed in RE sector. No prior approval is required**
- **India has a strong manufacturing and R&D orientation and is emerging as a hub of wind, solar, biomass related manufacturing and exports**



INITIATIVES IN RENEWABLE ENERGY



NTPC Goal (FY 2017 = 75000 MW)



NTPC - PRESENT STATUS



Wind – 650 MW

- 100 MW at various location – Technical Evaluation of Bids under process
- 100 MW in Karnataka – Feasibility Report (FR) Approved
- 400 MW in Karnataka – Site being identified
- 300 MW in Gujarat – Site being identified

Solar – 301 MW

- 50 MW SPV at NTPC Sites – FR under finalisation
- 15 MW Solar Thermal at Anta – FR Approved
- 25 Solar Thermal at Singrauli - FR under finalisation
- 100 MW in Karnataka – Pre FR finalised
- 100 MW in Gujarat – Pre FR finalised
- 100 MW in Rajasthan – Pre FR finalised

NTPC – OTHER INITIATIVES



- NTPC's subsidiary NTPC Vidyut Vyapar Nigam (NVVN) designated as the nodal agency for the purchase and sale of up to 1000 MW of solar power commissioned by FY 2013 under National Solar Mission
- JV agreement in discussion with Kyushu Electric Power Co. Inc. and Asian Development Bank for development of 500 MW of renewable generation capacity

Looking Forward



- Concentrated Solar Power (thermal) project with storage.
- Micro turbine with producer gas.
- Fuel cells
- Offshore wind energy project
- Tidal Energy
- Smart grid & smart city

Thanks for your Attention



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