



Rooftop Solar in India

ASIA SOLAR ENERGY FORUM

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Government of India

India's Commitment on Clean Energy

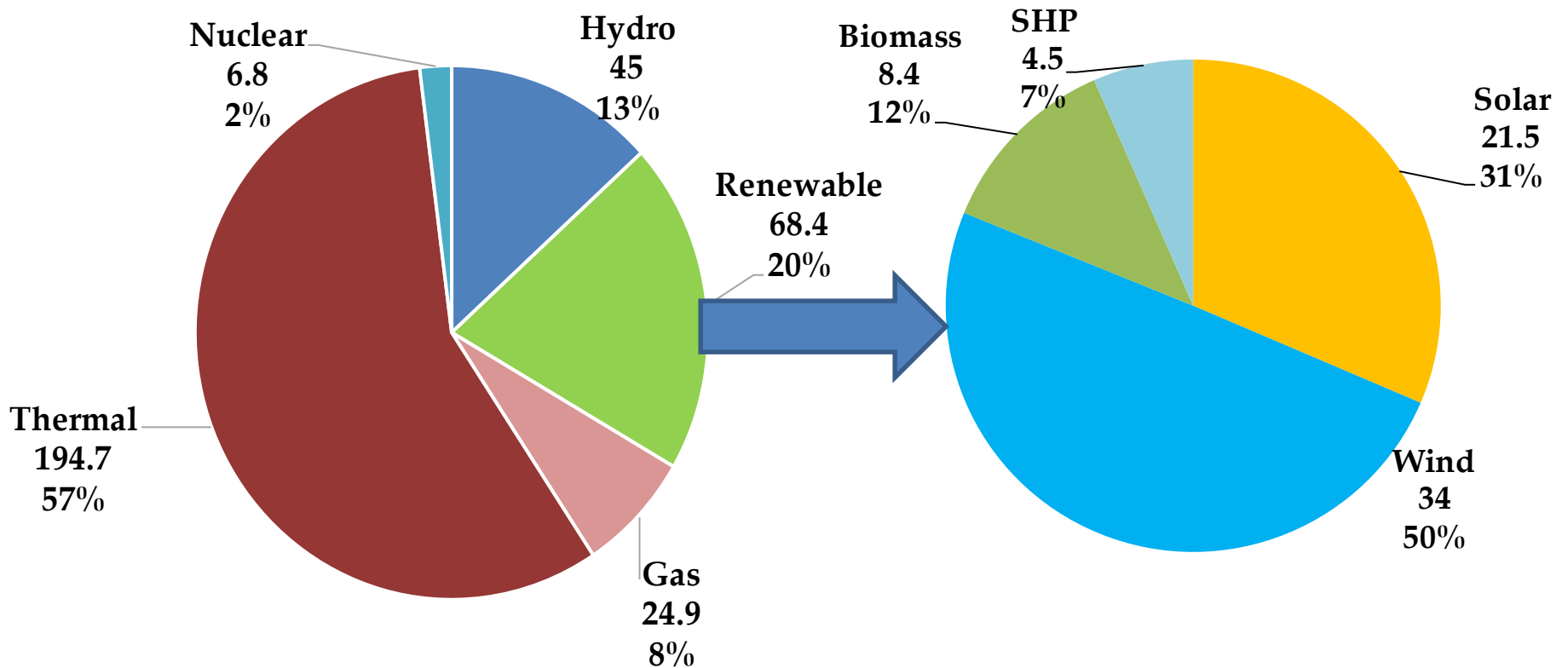
- India amongst lowest per capita CO₂ emitter
 - 1.58 t CO₂ against world average of 4.4 t CO₂
- Declared INDCs
 - Adopt a climate friendly and a cleaner path.
 - Reduce the emissions intensity of GDP by 33 - 35 % by 2030
 - Achieve 40 % electric power capacity from non-fossil fuel based energy resources by 2030.
 - Create additional carbon sink of 2.5 - 3 Bn t of CO₂ equivalent through additional forest and tree cover by 2030.
- Target of reaching 175 GW of RE capacity by 2022
 - 100 GW Solar, 60 GW Wind, 10 GW Biomass and 5 GW SHP

Indian Grid Power

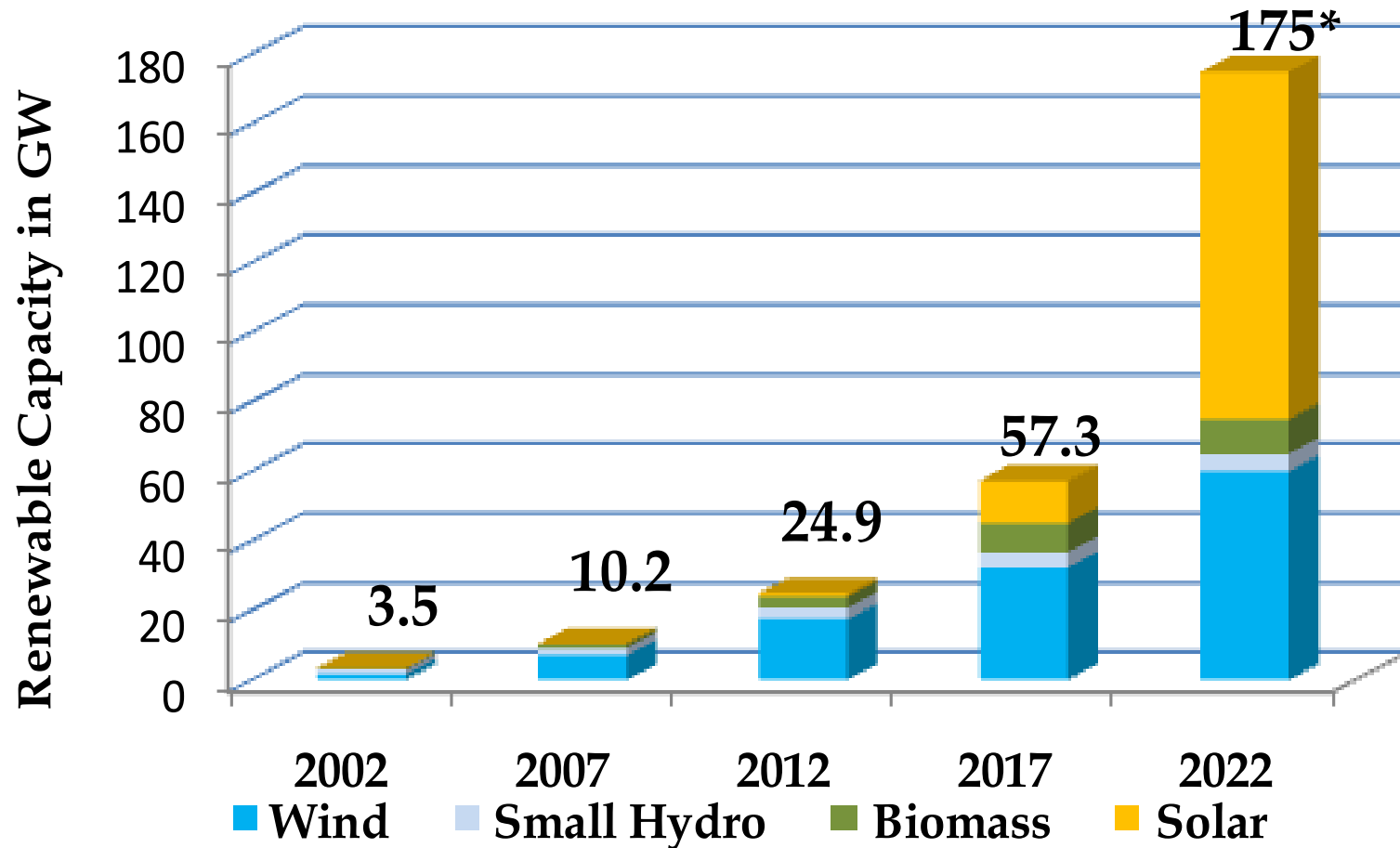
(up to 31.3.2018)

Total Installed Capacity - 339.8 GW

RE Installed Capacity - 68.4 GW



Exponential Growth of Renewable Power



* Target

Every five years the RE capacity is more than doubled

Rooftop Solar PV Systems

- 40 GW is targeted from rooftop solar out of 100 GW to be achieved by 2022
 - Advantages of distributed generation
 - Potential of 128 GW
- Electricity generated
 - used for captive consumption
 - fed into the grid at FiT
 - fed into Grid to be adjusted in the bill
- Models
 - Capex – own investment
 - RESCO – sell power through PPA
 - Utility – pays lease rent for roof



Rooftop Solar – Key Stakeholders

- Policy Makers
- Regulatory Authorities
- Consumers/Prosumers
- Discoms
- Project Developers
- Urban Local Bodies
- Implementing Agencies/State Nodal Agencies
- Financial Institutions
- Skill Development Organisations

Rooftop Solar – Initiatives

- Policy support
 - Fixing of targets
 - Subsidies/incentives for installation
 - Low GST, Accelerated Depreciation, custom duty exemption
 - Availability of loan at concessional rates
- Regulatory support
 - Net/gross metering regulations
 - Model building code
- Implementation support
 - Responsibility of agencies involved
 - Capacity building
 - Technical Standards specified
 - Procedures and documents standardized
 - Innovative financing models

Rooftop Solar – Challenges & Way forward

- Multiple approval process
 - Single Window Portal, Standards of Performance for utilities/approving authorities, grievance redressal mechanism
- Performance warrantee and O&M issues
 - Performance standards, Construction standards, O&M Guidelines, Insurance scheme
- Restrictive regulations
 - Flexible, conducive and uniform regulations
- Lack of awareness
 - Strong communication plan

Rooftop Solar – Challenges & Way forward

- Discom reluctance
 - Incentivizing Discoms, capacity building, technology upgradation for grid integration & management, accounting and data management (MRV)
- Skilled workforce
 - Skill development programme for Discoms, Developers, implementing agencies, financiers
- Low cost finance
 - Soft loans from multilateral/bilateral institutions, green bonds, credit risk funds
- Finance approval
 - Standardization of documents and due diligent process

Educational Institute - Chandigarh



Railway Station - Katra



Chinnasawamy Stadium - Bangaluru



Training of Surya Mitra



Thank You

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