



**TATA POWER-DDL**  
**TATA POWER DELHI DISTRIBUTION LIMITED**  
A Tata Power and Delhi Government Joint Venture

# ‘Targeting Net Zero’

**2<sup>nd</sup> Global DSO Event : Session-1**

Mr. Ganesh Srinivasan  
CEO

Thursday, 27 Jan’ 22



Excellence through TQM...

# India's / Tata Power-Group Commitment towards Net-Zero


## INDIA'S 'PANCHAMRIT' AT COP26 IN GLASGOW

- 1 India will increase its non-fossil energy capacity to 500GW by 2030
- 2 India will meet 50% of its energy requirements from renewable energy by 2030
- 3 India will reduce the total projected carbon emissions by one billion tonnes from now to 2030
- 4 By 2030, India will reduce the carbon intensity of its economy by 45% (from a previous target of 35%)
- 5 By 2070, India will achieve the target of net zero

### WHAT IS NET ZERO?

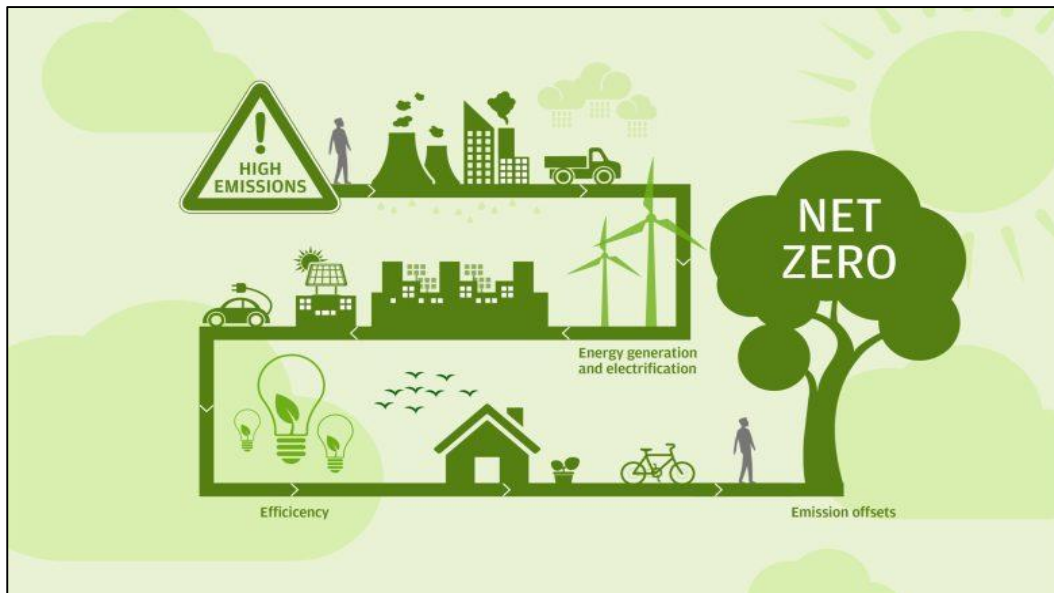
Net zero refers to a balance where emissions of greenhouse gases are offset by the absorption of an equivalent amount from the atmosphere. Experts see net zero targets as a critical measure to successfully tackle climate change and its devastating consequences

### PLEDGES BY TOP THREE EMITTERS

 CHINA: Beijing announced no new pledges on Monday. It previously pledged net zero by 2060.

 UNITED STATES: The US touted domestic legislation to spend \$555bn to boost renewable power and electric vehicles. It has pledged net zero by 2050.

 INDIA: The country's economy will become carbon neutral by the year 2070



Clean & Green Capacity to grow to ~ 60% by 2025 and 80% by 2030



Carbon Neutral by 2050 - reduction in Absolute CO2 emissions



**TATA**  
**TATA POWER**  
Towards  
Net-Zero  
By 2050



100% Zero waste to Landfill- biodegradable waste



100% Sustainable packaging & 100% Ground Water Recharge

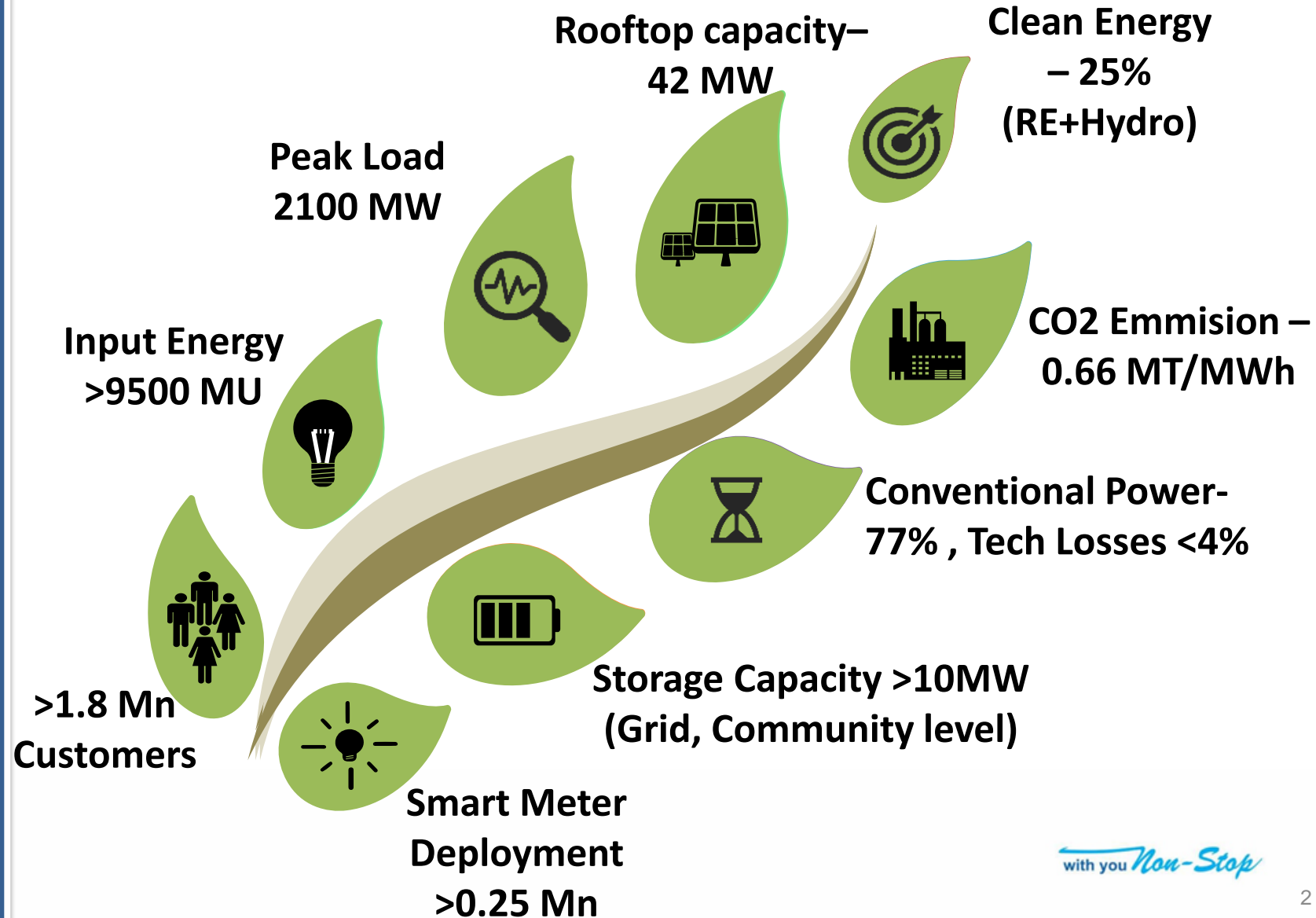
# TATA POWER-DDL



51:49 Joint Venture  
of The Tata Power Company Limited  
(Tata Power)  
and  
the Government of Delhi  
Formed on 1st July 2002  
in



Tata Power-DDL gained position in **Top 20 Utilities** across the  
Globe on the Smart Grid Index benchmarking done by **SP Group**.



# Major Barriers / Uncertainties to achieve Net-Zero – DISCOM Perspective

## BARRIERS

01

### Long Term Thermal PPAs

Long term PPAs with coal based generators (35% of capacity tied up to FY39)

02

### Technical Minimum of Thermal Plants (55% of capacity)

Need for running thermal plants at min. to meet the load when renewables is not available

03

### Deviation Settlement Mechanism - Regulations

Stringent DSM regulation to operate in the desired frequency band

04

### Infirm Nature of Renewables & Forecast

Uncertainty in forecasting of RE generation

## Operational Challenges

Meeting the minimum load capacity in the night hours when there is no PV Gen and with less Hydro (12%) and Nuclear (2%)

05

## Economical Storage Solutions

Price of Li-Ion and other battery chemistries are high

06

## DER Management

influx of EV, PV and Storage on the Grid Network in case of reverse power flow

07

## Regulatory Environment

Flexibility in RE Regulations to operate with the mix of RE power, cost reflective tariff, Storage Obligations & Policies.

08

## UNCERTAINTIES





# Ground Level Technological Interventions – Tata Power-DDL

Solar, Energy Storage, LV automation, Energy Island



EV, Solar, Energy Storage, Planning



Consumers and Prosumers



Customer Engagement & Participation



**IElectrix** – Urban Energy Island



This project has received funding from the European Union's Horizon 2020 research and innovation program

Integration of local PV (180 kW) and Li-ion Battery (200kW) to Island in case of power failure

**PARVATI** –

DER planning tool for optimizing energy demand with effective planning of future RE generation and providing low cost solutions to the grid network.

Collab. Partners involved – Tata Power-DDL, BLP Industry.AI, OPUS One – GE, Ryerson University

**P2P** (Peer to Peer) – local Energy Trading platform based on Block chain Technology in collaboration with ISGF & Power Ledger

**Behavioural Demand Response** – incentive based Customer Engagement program towards efficient usage of Power



# Ground Level Technological Interventions – Tata Power-DDL

MW Scale



**BESS –**  
Battery Energy Storage System (10 MW) – grid scale Li-ion battery system in collaboration with Mitsubishi and AES



kW Scale



**CESS –**  
Community Energy Storage System – integrated with 990 kVA DT & 150 kWh Storage (in partnership with Leclanché)



kW Scale – Pole Level



**Pole Mounted Battery Energy Storage System**  
to manage local peak congestion and CAPEX deferment



Green Mobility



**Electric Vehicle Mobility –**  
empowers consumers to enjoy greener mobility options by managing Network Requirements & Planning





# Collaboration and R&D for sustainable development

## Battery Testing Laboratory



Charge Controller & inverter



PLC Control



Battery management system

## The Smart Grid Lab



'In-House R&D Unit' accredited by Department of Scientific & Industrial Research's (DSIR)

Partners: **175**

Institutes: **36**

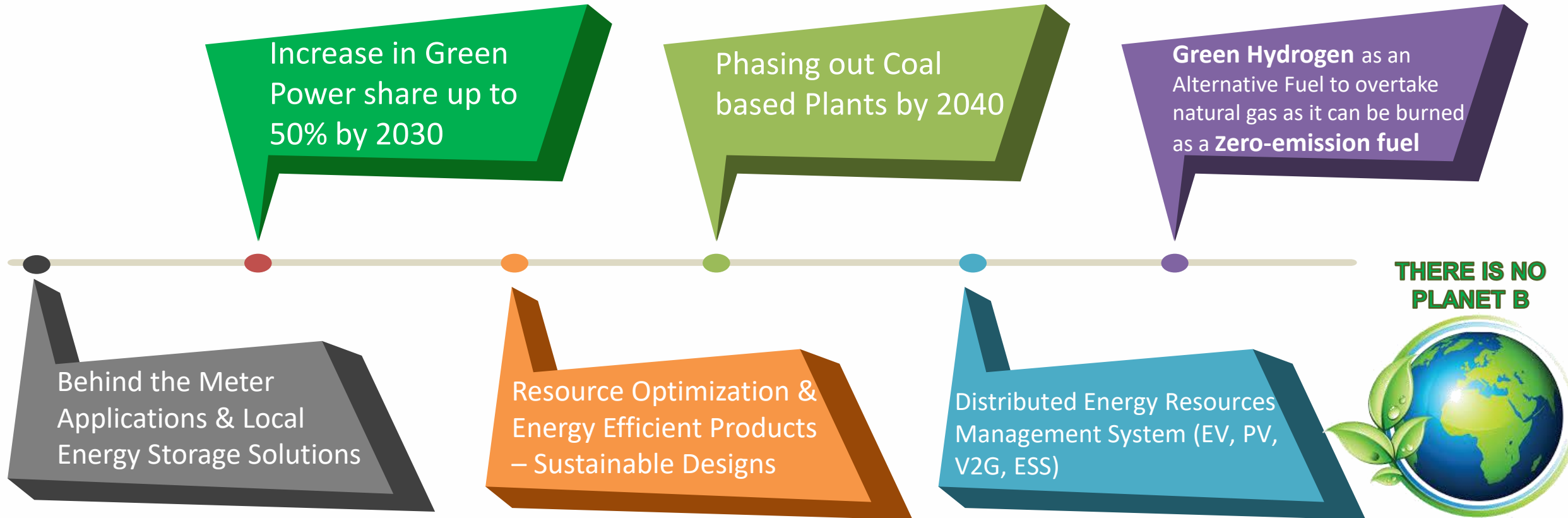


Industry: **139**

Funding Agency: **20**



# Path to Net-Zero



## Renewable Energy Portfolio

- Increasing share of renewable energy / green power
- Leveraging DER, becoming signatory to EV 100

## Sustainable Designs & Technology

- Sustainable Procurement (Life Cycle Cost)
- Smart Metering, Battery Storage, EV Infrastructure

## Consumption Reduction / Recycling

- Resource Optimization (Paper / Water / Energy)
- Demand Response initiatives and Customer Engagement

## Reduction in Carbon Emissions

- SF6 Consumption Rate – Zero Waste to Landfill
- More Production of Green Hydrogen and Storage solutions



# Thank You