



INDIA'S ENERGY TRANSITION OUTLOOK

PFC's Investor meet 2024

Mumbai, 15th May'24





Outline

01. **India's Power Sector**
02. **India's Decarbonization Plan**



01.

India's Power Sector

Indian Power Sector – Growth over last two decades

Indian Power Sector has come a long way in the last 20 years, with exceptional growth in capacity and demand

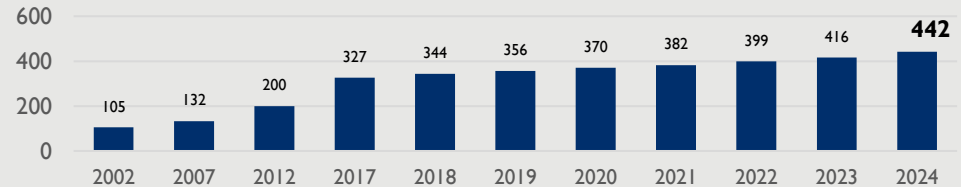
3rd largest producer and consumer of electricity in the world, after China, USA

442 GW installed Generation capacity,
4 X growth

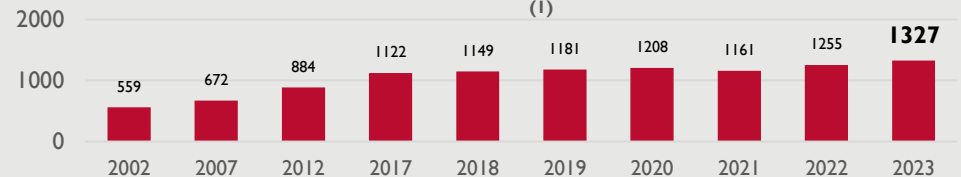
2.37 X increase in per capita electricity consumption

2.41 X increase in network of Transmission and Distribution Lines

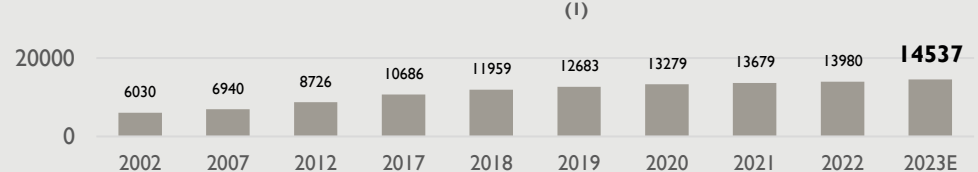
Installed Capacity Trend (GW, 2002-2024) ⁽¹⁾



Per Capita Electricity Consumption Trend (KWh, 2002-2023) ⁽¹⁾



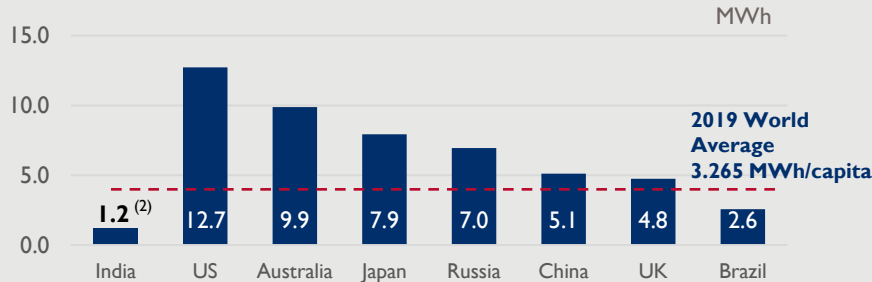
Transmission and Distribution Lines (Ckt. 1000 km, 2002-2023) ⁽¹⁾



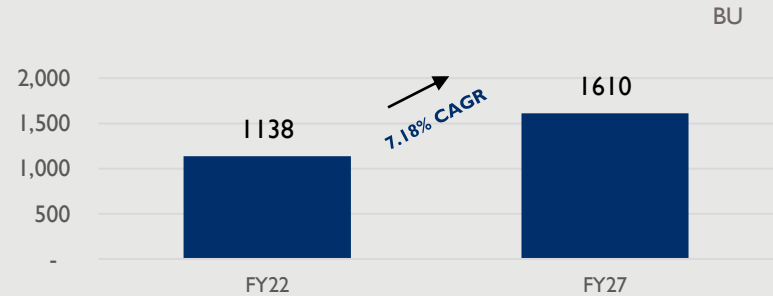
Indian Power Sector is Poised for Strong Business Growth

While India's power sector has seen tremendous growth in recent years, it has a long way to go

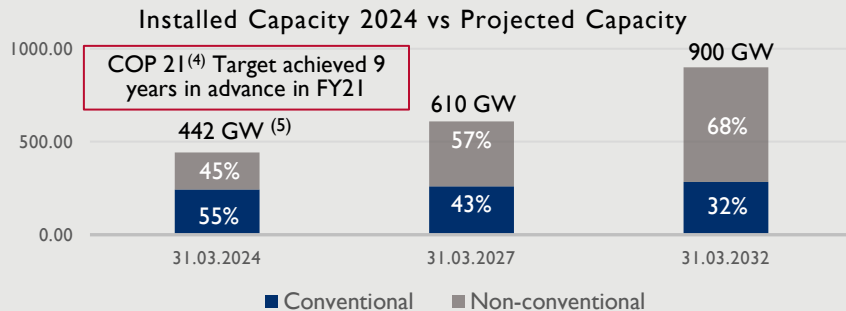
India Lags Behind in Terms of Per Capita Consumption⁽¹⁾



Annual electricity consumption to grow at rate of 7.18%⁽³⁾



458 GW of Capacity Addition in next 10 years⁽³⁾



Growth Drivers





02.

India's Decarbonization Plan

India's Energy Transition Targets

India has set ambitious targets for reducing emissions, combating climate change

Reduction in emissions intensity of the GDP by **45 percent** by 2030, from 2005 levels

Achievement of **50 percent** cumulative electric power installed capacity from non-fossil fuel-based energy resources by 2030

Reaching **500 GW** non-fossil fuel based installed capacity by 2030

Attainment of **net zero** by 2070

Achievements so far

- 198 GW non-fossil fuel installed capacity, 45% of total installed capacity (NPP 06th May 2024)
- 33% reduction in GDP emission intensity between 2005 and 2019 (MOEFCC)

Focus Sectors – Energy Transition

**Renewable Energy
Generation**



**Green Energy
Corridor**



**EV and Charging
Infrastructure**

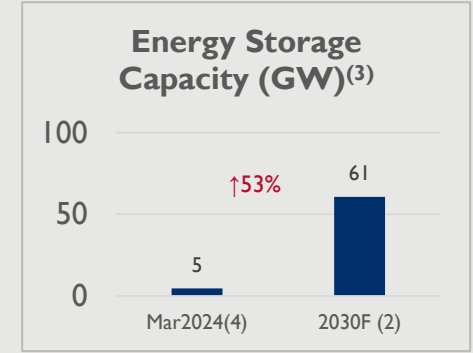
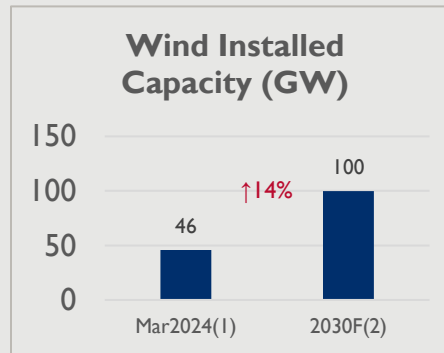
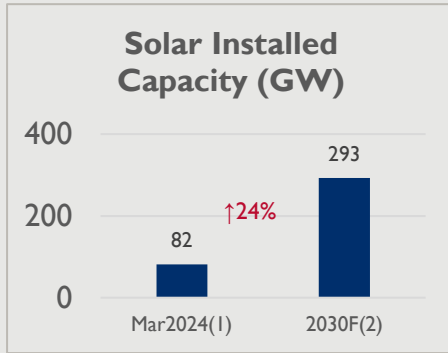


Green Hydrogen



Renewable Energy – 2030 Targets and Policy Measures

Major capacity additions expected across RE sectors as India gears to meet 2030 target



%CAGR

Support from Government of India

Solar PV

- INR 19,500 crore PLI scheme for manufacturing of high-efficiency solar modules
- PM-KUSUM scheme for supporting installation of small solar power plants and solar pumps

Energy Storage

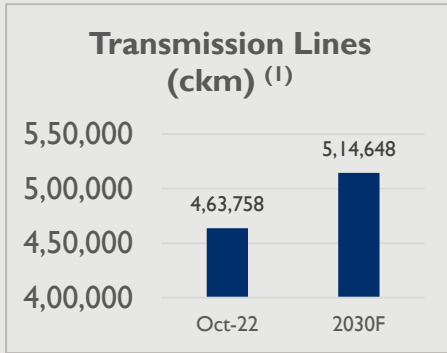
- INR. 9,400 crore VGF scheme for Battery Energy Storage Systems (BESS) for 4000 MWh projects by 2030-31
- INR 18,100 crore PLI scheme for Giga scale ACC and battery manufacturing facilities

Policies

- Renewable Purchase Obligation (RPO) up to the year 2029-30 notified
- National Repowering and Life Extension Policy for Wind Power Projects, 2023

Green Energy Corridor

Upcoming RE capacity is to be supported by transmission systems



- Transmission capacity to be developed in advance for upcoming RE projects
- Renewable Energy Zones identified across 8 Indian States which have to be connected with major load centres

Support from Government of India

Green Energy Corridor Scheme

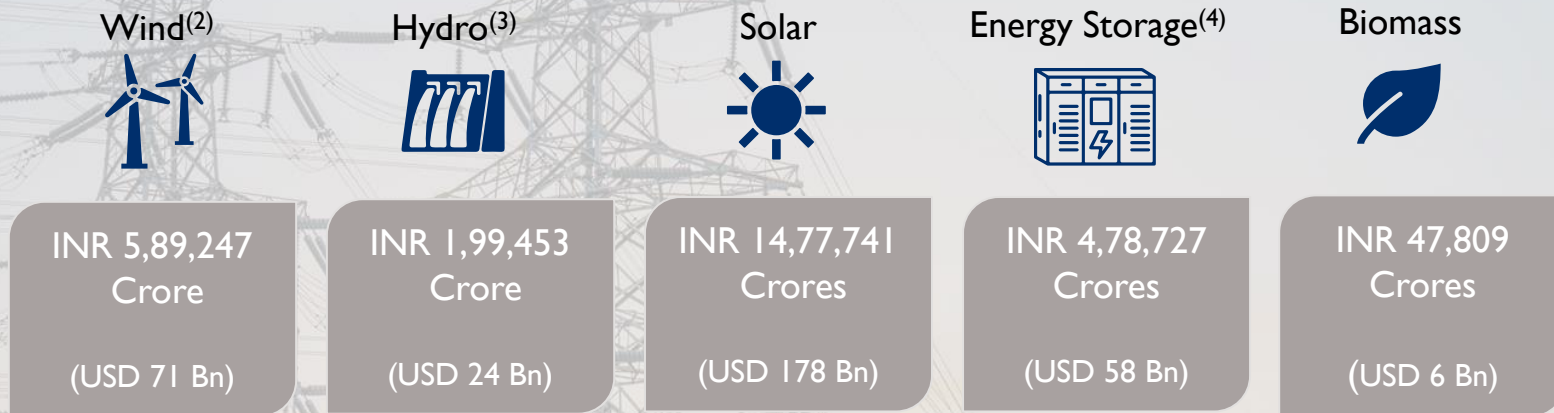
- Setting up of transmission lines and sub-stations under two phases
- Financial assistance from Govt of 33% project cost under Phase II (2) for InSTS projects

Policies

- Green Energy Open Access Rules, 2022 – minimum limit of contracted demand reduced from 1 MW to 100 kW
- Waiver of Inter State Transmission System (ISTS) charges for solar, wind, hydro, green hydrogen, green ammonia projects ⁽³⁾

Investment Potential - RE Generation and Transmission Sector

FY 23- 32 Investment Required in RE Generation ⁽¹⁾



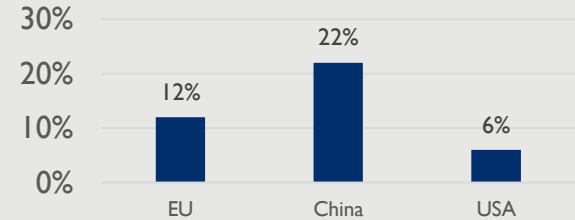
Transmission Systems would require an investment of **Rs 2,44,200 Crore (USD 29 Bn)** by 2030 for supporting upcoming RE generation capacity ⁽⁵⁾

Electric Vehicles and Supporting Infrastructure

India has set ambitious targets for EV adoption

- Projected to reach 30% EV sales share by 2030 (EV30@30)⁽¹⁾
- EV sales at 6.4% of total automobile sales in CY2023⁽²⁾
- 1.53 million EVs sold in CY2023, up 50% from CY2022⁽²⁾
- 16348 public charging stations now⁽³⁾ 1.32 million charging stations required by 2030⁽⁴⁾

2022 EV Sales Share % ⁽⁹⁾



EV investment opportunity, 2021-2030⁽¹⁰⁾

USD 177 Bn



Vehicle production

USD 12.3 Bn



Battery manufacturing

USD 2.9 Bn



Charging infrastructure

Support from Government of India

FAME II⁽⁵⁾

- Demand incentives for EVs, development of charging infrastructure
- Electric Mobility Promotion scheme (EMPS) for INR 500 Crs launched after FAME II.

E-bus Procurement

- Deployment of 50,000 electric buses through NEBP⁽⁶⁾
- Payment Security Mechanism (PSM) Fund under approval – GOI (\$240 Mn), USG and others (\$150 Mn)⁽⁷⁾

E-Vehicle Policy⁽⁸⁾

- Incentives for setting up 4W EV manufacturing facilities with investment above INR 4,150 crore
- CBU* import at reduced customs duty of 15% for eligible investments

*Completely Built Up

Green Hydrogen

Green H2 has a great potential to support India's energy decarbonization in hard to abate sectors

National Green Hydrogen Mission (NGHM) 2023

- 5MMT domestic capacity target by 2030
- Incentives for manufacturing of electrolyzers and production of green hydrogen, tranche I of capacity awarded
- Support for pilot projects - low carbon steel (INR 455 crore), mobility (INR 496 crore), shipping (INR 115 crore), schemes issued
- Green Hydrogen Standards issued in Aug 2023

Capacity awarded under NGHM ⁽²⁾

- Electrolyzer production – **1500 MW/year**
- Green Hydrogen production – **412000 MT/year**

Industry	H2 Demand	Investments for NGHM 2030 Target ⁽¹⁾
Oil Refining	1.8 MMT	USD 32.5 Billion
Natural Gas Blending	0.54 MMT	USD 9.7 Billion
Fertilizer	1.32 MMT	USD 28.5 Billion
Exports	1.25 MMT	USD 26.9 Billion
Others	0.1 MMT	USD 1.7 Billion
TOTAL	5 MMT	USD 99.4 Billion

Use Cases of Green Hydrogen

- Chemical Manufacturing
- Petroleum Industry
- Marine Fuel
- Energy Storage
- Reducing agent in Steel production

Cumulative investment requirements till FY2032

India is in the initial phases of its energy transition, and is a large market with a huge investment potential



USD 656 Billion

USD 336 Billion

RE
Generation

USD 29 Billion

Transmission
Systems for
RE

USD 99 Billion

Green
Hydrogen

USD 192 Billion

E-mobility

Transition Challenges and Opportunities



Faster RE capacity additions needed to meet 2030 targets



Development of adequate energy storage to support RE capacity



Low-cost funds for emerging technologies in Energy Storage, Green Hydrogen, Green Ammonia

Why Invest in India's Energy Transition Story

Enabling
Policy
Environment

Ambitious
NDCs and
Net Zero
targets

Strong
Domestic
Demand

Export
Competitive-
ness

Developed
Support
Infrastructure

PFC – Financing Energy Transition

PFC is at the forefront of India's power sector and is well placed to support energy transition ambitions

Large infra financing expertise

- 3+ decades' experience in power sector, now foraying into other infra sectors as well

Long tenure loans

- To effectively support long gestation projects

Leading RE lender

- Supported ~ 25% of India's RE installed capacity

Presence in multiple sectors

- RE generation, E-mobility, energy efficiency



Thank You



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