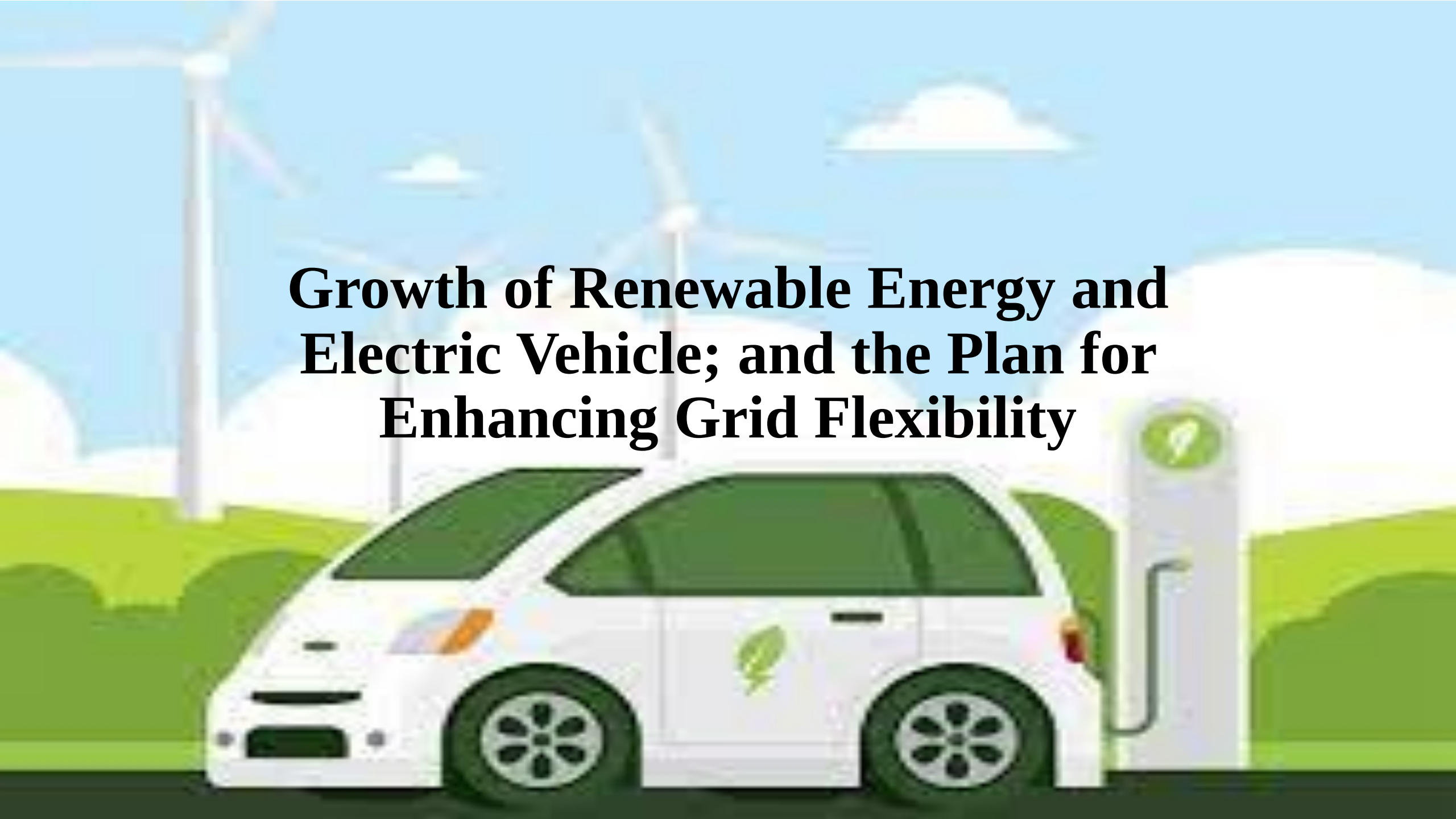
Growth of Renewable Energy and Electric Vehicle; and the Plan for Enhancing Grid Flexibility



Slide-2

Need for the growth of Renewable Energy

1. As per the CEA's 20th Electric Power Survey (EPS) report, the peak electricity demand and electrical energy requirement of India is estimated to rise to 335 GW and 2280 BU respectively by FY 2029-30.

2. India's energy demand is bound to grow exponentially in the coming years due to various factors viz. rise in electrification, changes in the mobility sector, higher economic activities etc.

3. As per the updated nationally determined contributions (NDCs) submitted to the United Nations Framework Convention on Climate Change (UNFCCC) in 2022, India now stands committed to reduce Emissions Intensity of its GDP by 45 percent by 2030, from 2005 level and achieve 50 percent cumulative electric power installed capacity from non-fossil fuel-based energy resources by 2030.

Slide-3

Present Installed Capacity

As on 30th September, 2023, the installed capacity of the power plants in India are as under:

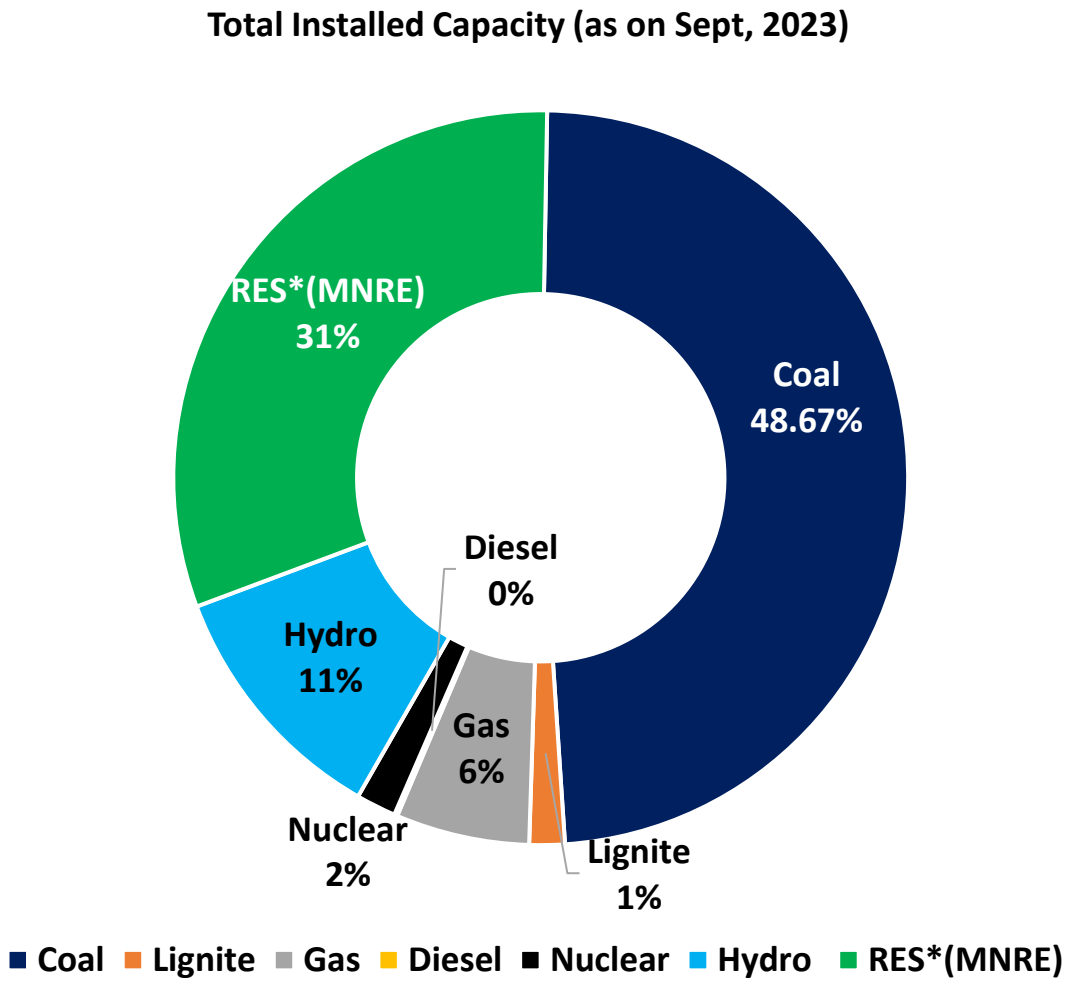
Resources	Capacity (GW)	Share (%)
Coal	207	49%
Lignite	7	2%
Gas	25	6%
Nuclear	7	2%
Sub-total-1	**246**	**59%**
Hydro	47	11%
Small Hydro Power	5	1%
Wind Power	44	10%
Biomass Power/Cogeneration	10	2%
Waste to Energy	1	0.10%
Solar Power	72	17%
Sub-total-2	**179**	**41%**
Total	**425**	**100.00%**

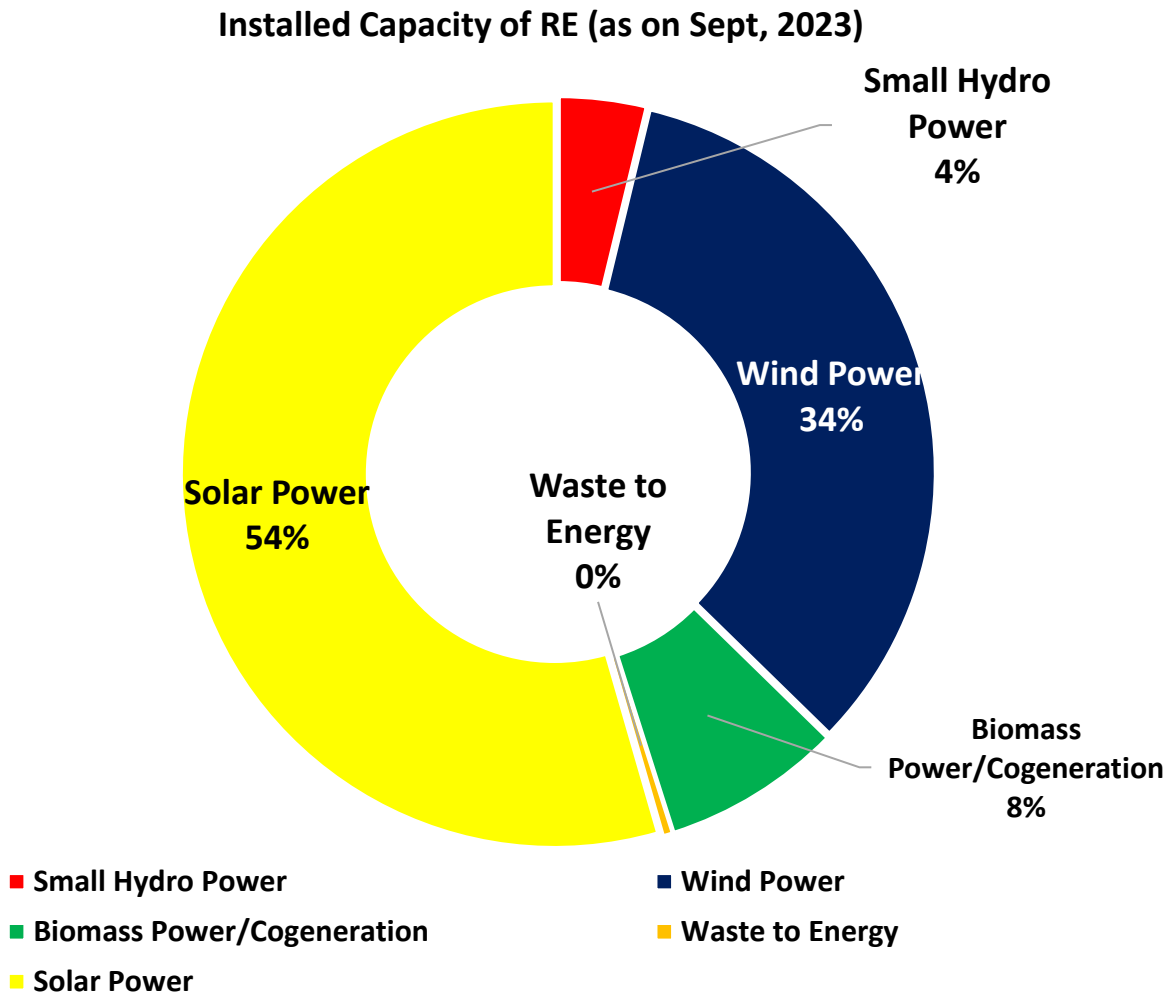
Source: https://cea.nic.in/installed-capacity-report/?lang=en

Slide-4

Share of Present Installed Capacity

As on 30th September, 2023, the installed capacity of the power plants in India are as under:





Source: https://cea.nic.in/installed-capacity-report/?lang=en

Slide-5

Estimated Installed Capacity by FY 2029-30

The likely installed capacity by the end of FY 2029-30 are as under:

Resources	Capacity (GW) (in FY 2029-30)	Share (%)	Growth (%)
Hydro	54	7%	15%
Small Hydro	5	1%	7%
PSP	19	2%	
Solar PV	293	38%	308%
Wind	100	13%	126%
Biomass	15	2%	34%
Nuclear	15	2%	107%
Coal+ Lignite	252	32%	17%
Gas	25	3%	N/A
Total	**778**	**100%**	82.68%

Shows the growth of RE

Source: https://cea.nic.in/wp-content/uploads/irp/2023/05/Optimal_mix_report__2029_30_Version_2.0__For_Uploading.pdf

Growth of EVs in India:

There has been a significant increase in the number of registered battery operated vehicles in India from FY 2017-18 to FY 2023-24. The details are as under:

Financial Year	No. of Vehicles registered in the year	No. of BOV	Share of EV (%)
2017-18	230.41	0.96	0.41%
2018-19	242.76	1.46	0.60%
2019-20	236.43	1.71	0.73%
2020-21	166.09	1.41	0.85%
2021-22	175.39	4.56	2.60%
2022-23	212.71	11.74	5.52%
2023-24 (upto 22.10.2023)	118.06	8.27	7.00%

Note:

1. Numbers are in lacs.
2. BOV stands for Battery Operated Vehicle

Source: https://vahan.parivahan.gov.in/vahan4dashboard/vahan/view/reportview.xhtml

Plan for Grid Flexibility:

1. The Central Government on 05.04.2018 has issued the mechanism for flexibility in generation & scheduling of thermal power stations. Thermal Power Plants can supply power from RE sources under existing contractual agreement.
   Source:https://www.mahadiscom.in/consumer/wp-content/uploads/2018/12/05.04.2018-Flexibility_in_Generation_and_Scheduling_of_Thermal_Power_Stations_to_reduce_emissions.pdf

2. The Ministry of Power has issued the Scheme for Flexibility in Generation and scheduling in Thermal/hydro plant on 15.11.2021. Further, the revised scheme for flexibility in generation and scheduling of Thermal/Hydro power station through bundling with Renewable Energy and storage power was issued on 12.04.2022.
   Source:https://powermin.gov.in/sites/default/files/Scheme_for_Flexibility_in_Generation_and_Scheduling_of_Thermal_Hyd ro_Power_Stations_through_bundling_with_Renewable_Energy_and_Storage_Power.pdf

3. Hydropower brings a strong contribution to flexibility in the power system by filling the gap between supply and demand that has been induced by the non-dispatchable variability of RES. Accordingly, the Government has mandated Hydro Power Obligation from 0.35% in FY 2022-23 to 2.82% in FY 2029-30.

Thank You