History, Evolution and Institutional Structure of the Indian Power Sector : Pre & Post Reform era

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PRESENTATION OUTLINE

- HISTORY AND EVOLUTION OF THE INDIAN POWER SECTOR
- INSTITUTIONAL STRUCTURE
- DEVELOPMENTS IN THE ELECTRICITY SECTOR VALUE CHAIN
- TRANSITION FROM VERTICALLY INTEGRATED TO COMPETITIVE POWER MARKET
- GROWTH OF RENEWABLE ENERGY

HISTORY AND EVOLUTION OF THE INDIAN POWER SECTOR

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1910 - Electricity Act 1910 enacted to regulate supply by licensees to consumers

1948 - Electricity (Supply) Act 1948 (ES Act) - Formation of State Electricity Boards with full powers to control generation, distribution and utilization of electricity within their respective states and Central Electricity Authority for planning and development of power system

1964 - Five Regional Electricity Boards (REBs) were formed by the Government of India with the concurrence of State Governments with a view to ensure integrated grid operation and regional cooperation on power

1975 - Creation of Central Generating Companies for development of super thermal power stations at coal pit heads and large hydroelectric stations leading to creation of NTPC, NHPC, & NEEPCO

1991 - ES Act 1948 amended to pave the way for the formation of private Generating companies. CEA empowered to fix the norms for determining the tariff of all generating companies. RBI allows 100% foreign investment in power sector

HISTORY AND EVOLUTION OF THE INDIAN POWER SECTOR (CONTD.)

1992 - First Gazette Notifications on the criteria for fixing the tariff for sale of electricity by the Generating companies to SEBs or any other agency

1998 - Electricity Regulatory Commission Act 1998 enacted paving the way for the formation of Central Electricity Regulatory Commission (CERC) and State Electricity Regulatory Commissions (SERC). Regulatory power of the State governments transferred to SERC. Consequently, Tariff regulatory function of CEA transferred to CERC

1998 - Act amended to provide for Central Transmission Utility (CTU) and State Transmission Utilities (STU)

1999 - Privatisation of distribution in Odisha

2000 - Indian Electricty Grid Code (IEGC)

2002 - Privatisation of distribution in Delhi

HISTORY AND EVOLUTION OF THE INDIAN POWER SECTOR (CONTD.)

2002 - Availability Based Tariff

2003 - Electricity Act 2003 enacted by the Parliament. This Act repeals the IE Act 1910, ES Act 1948, ERC Act 1998

2004 - Open Access Regulations

2006 - Tariff Policy, Competitive bidding for procurement of power, Ultra Mega Power Projects

2007, 08 - Power Exchange guidelines and establishment

2008 - Allotment of Coal Blocks to power generators for captive mining

2011 - Competitive bidding for ownership and establishment of inter-State transmission schemes

2015 - Auction of Coal Blocks to power generators for captive mining

INSTITUTIONAL STRUCTURE

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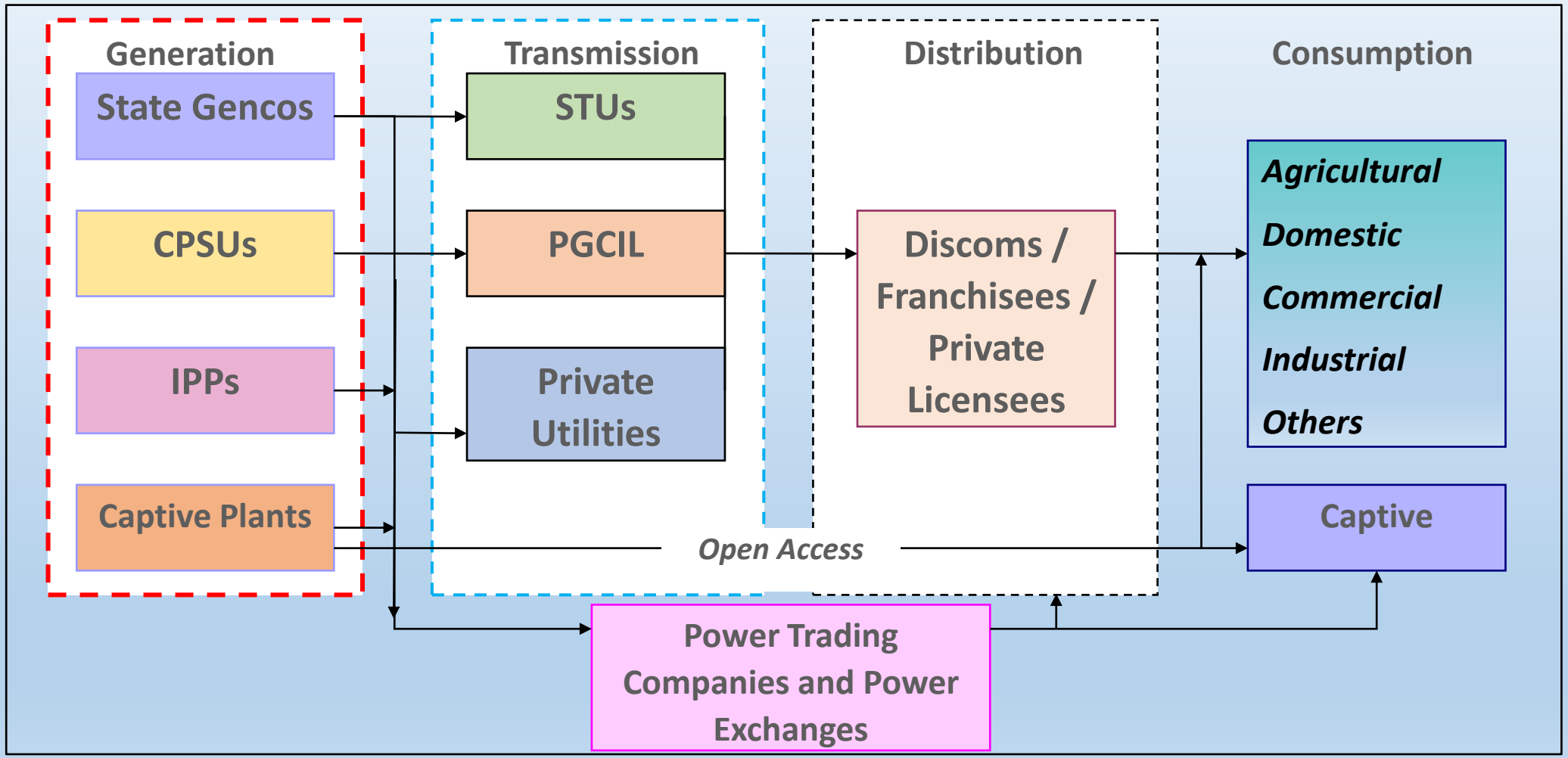
- Federal Structure
- ‘Power’ is in the Concurrent List of the Indian Constitution
- Regional Load Despatch Centres RLDCs (Regional system operator) : Apex bodies in regional grid operation; Supervise and control operation of inter-regional and inter-state transmission systems
- RLDCs can give directions to intra-state utilities for security of the grid
- State Load Despatch Centres SLDCs (State-level system operator) : To supervise and control State power transmission systems

INSTITUTIONAL STRUCTURE (CONTD.)



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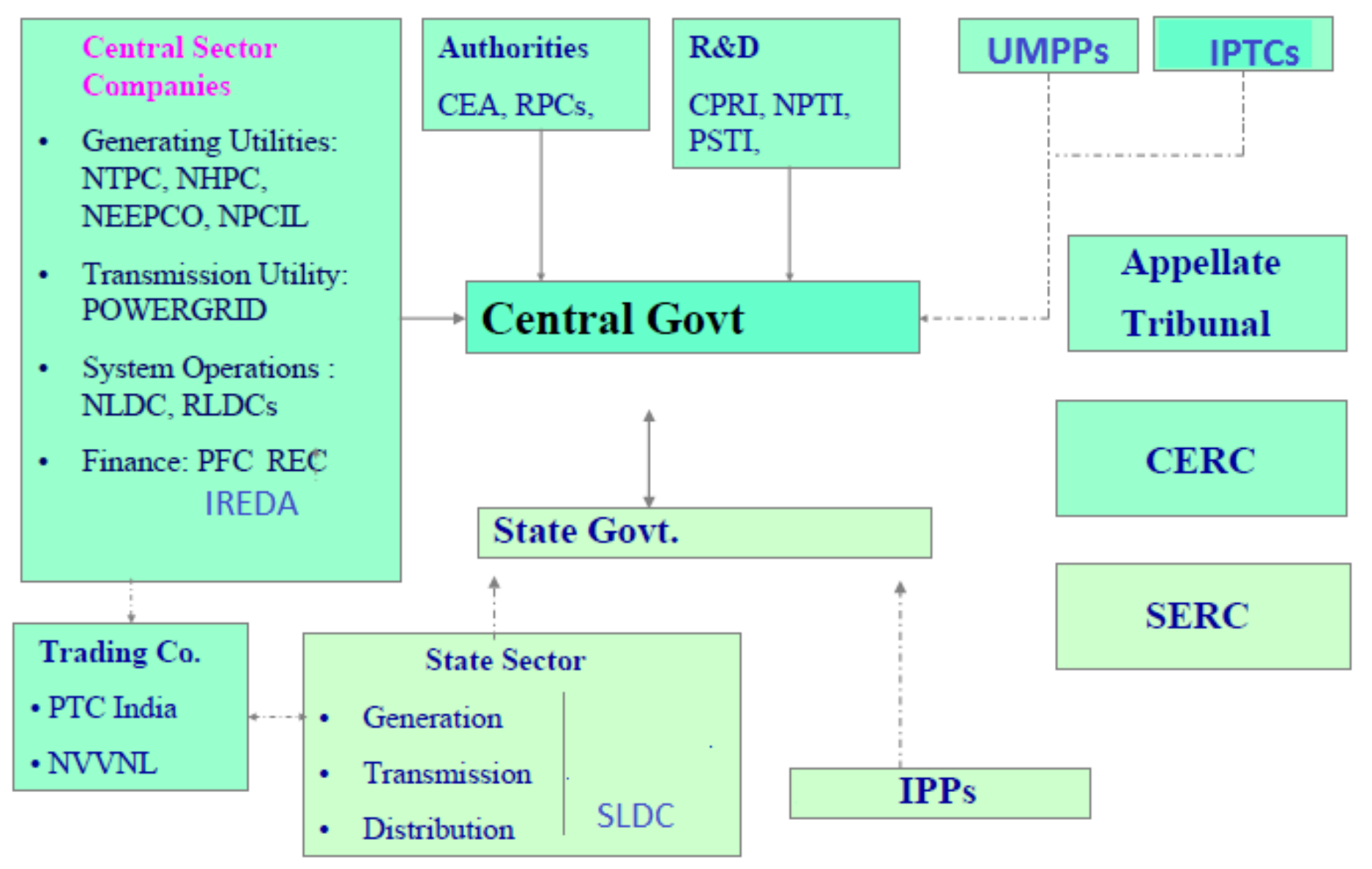

DEVELOPMENTS IN THE ELECTRICITY SECTOR VALUE CHAIN

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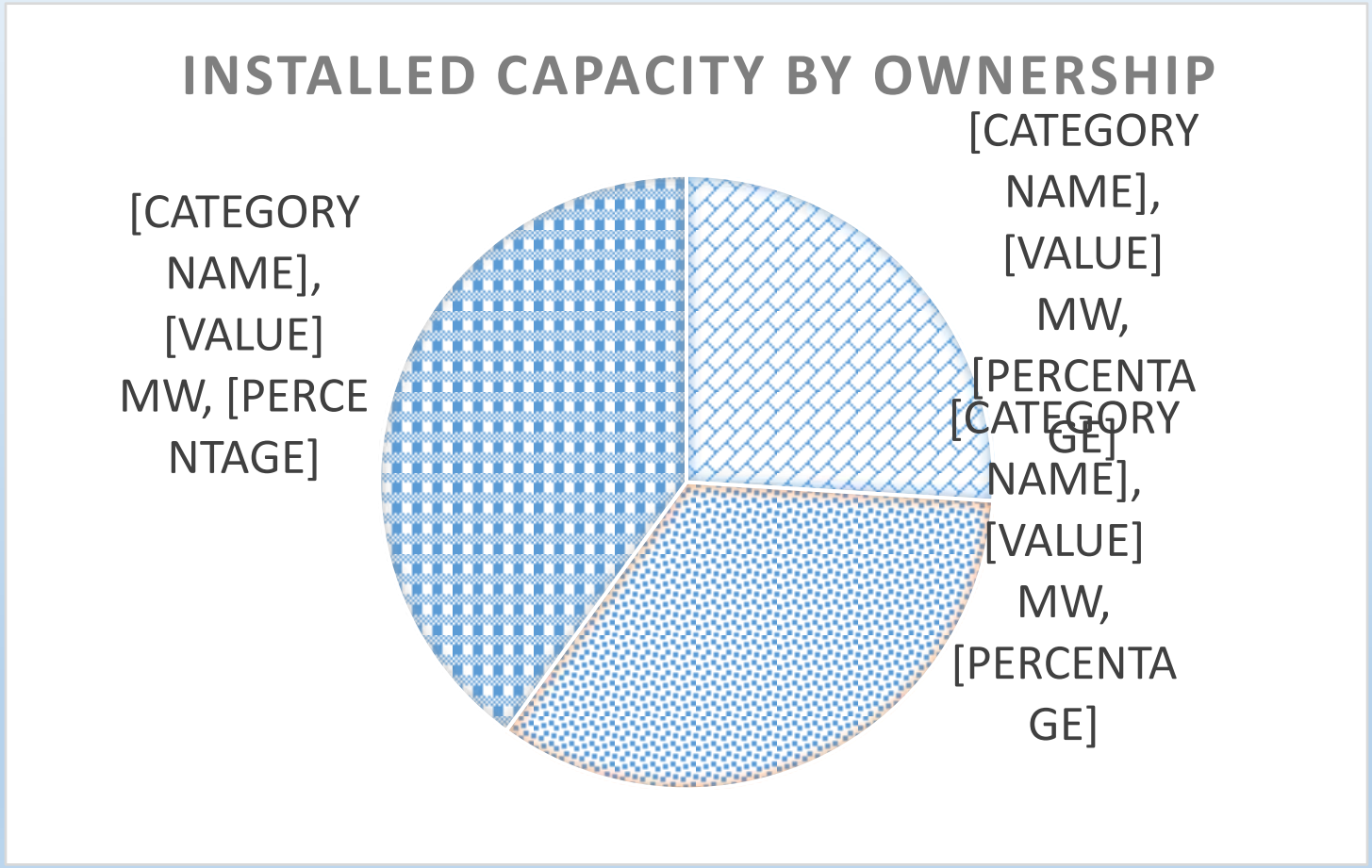

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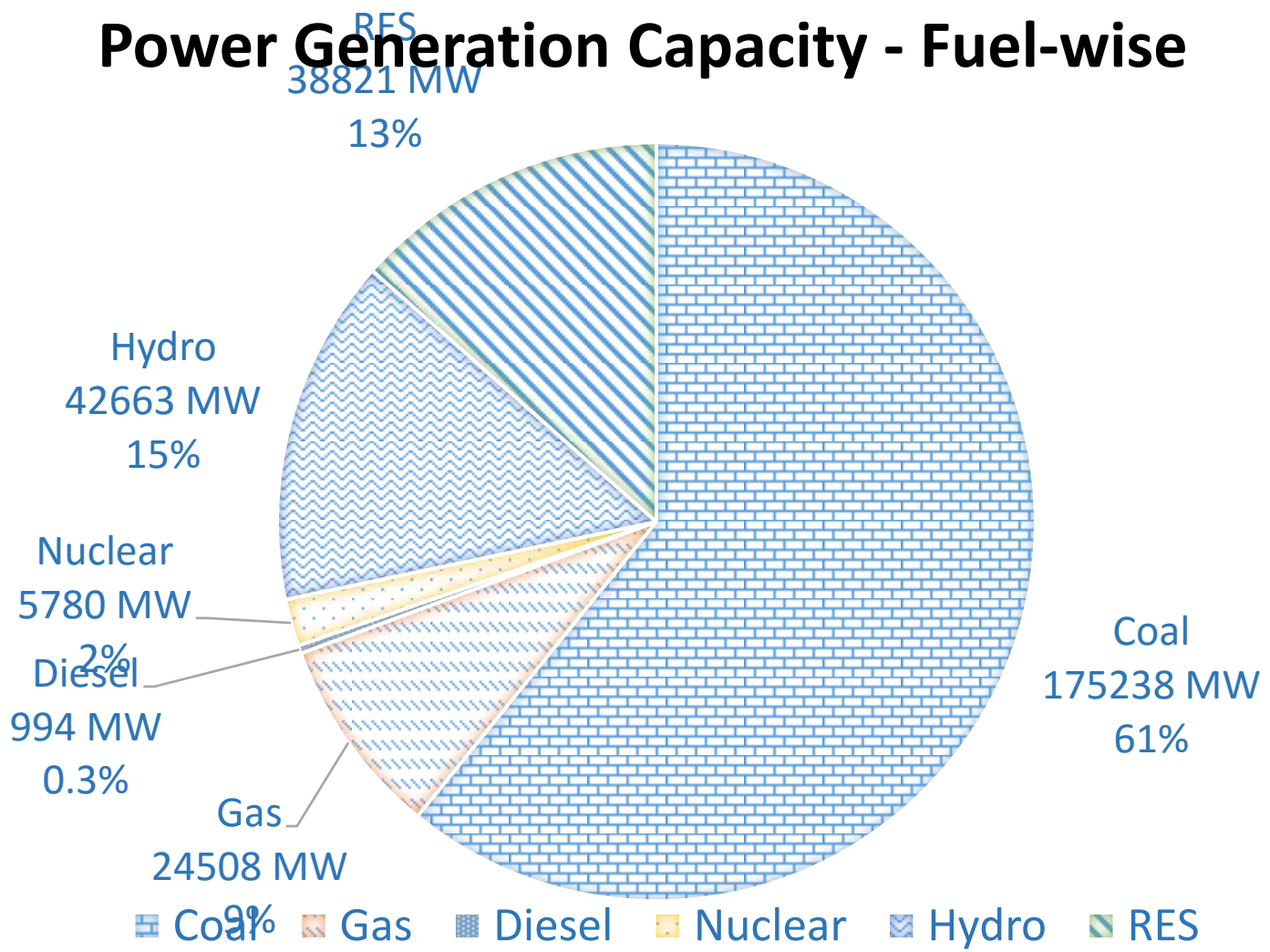

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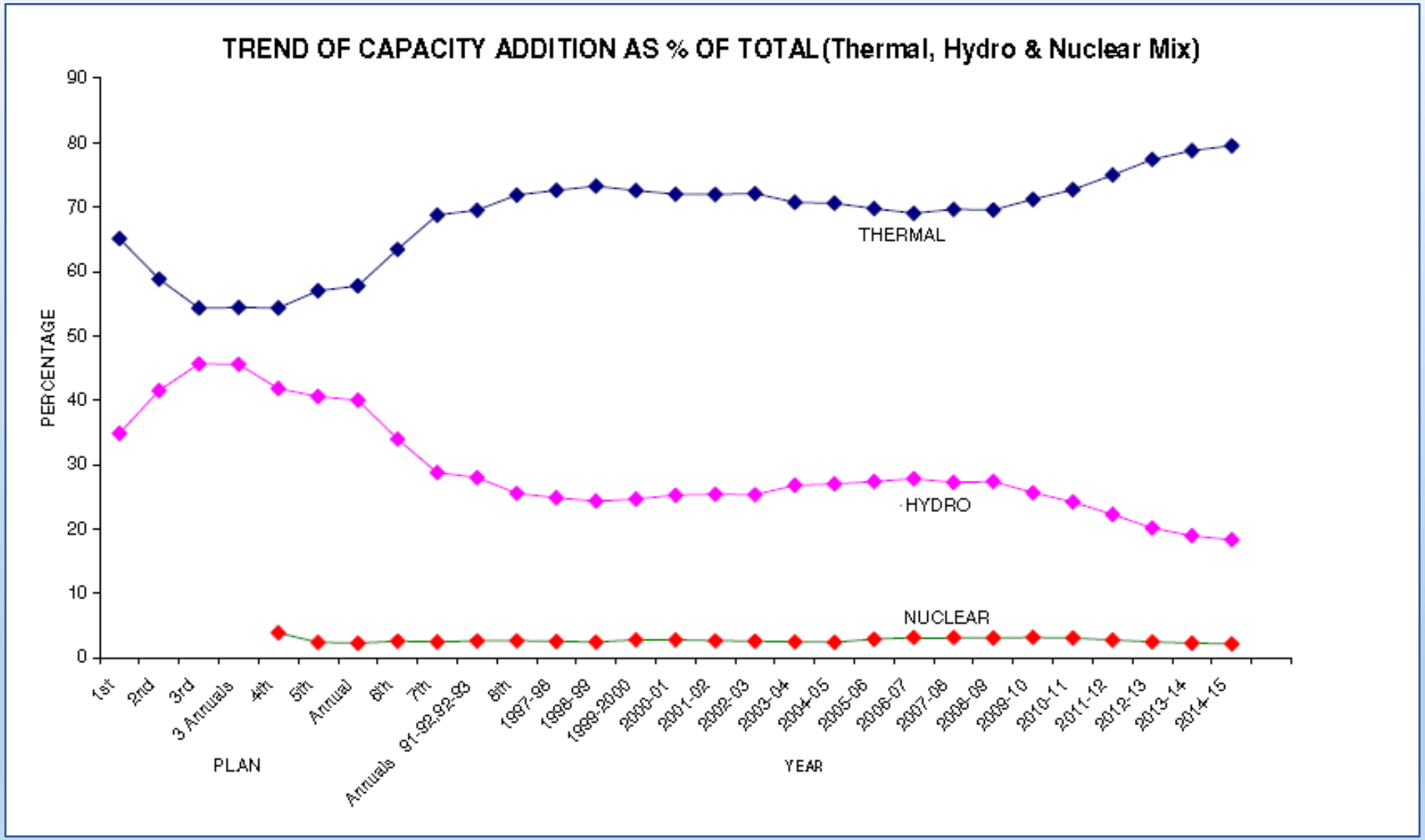

Dropping share of Hydro capacity in India

DEVELOPMENTS IN THE VALUE CHAIN (CONTD.)

Volume of Short-term Transactions with respect to Total Electricity Generation

Year	Total Volume of Short-term Transactions of Electricity	Total Electricity Generation (BU)	Total volume of Short-term Transactions of Electricity as % of Total Electricity Generation
2009-10	65.90	764.03	9%
2010-11	81.56	809.45	10%
2011-12	94.51	874.17	11%
2012-13	98.94	907.49	11%
2013-14	104.64	962.90	11%
2014-15	98.99	1045.0	9%

TRANSITION FROM VERTICALLY INTEGRATED TO COMPETITIVE POWER MARKET

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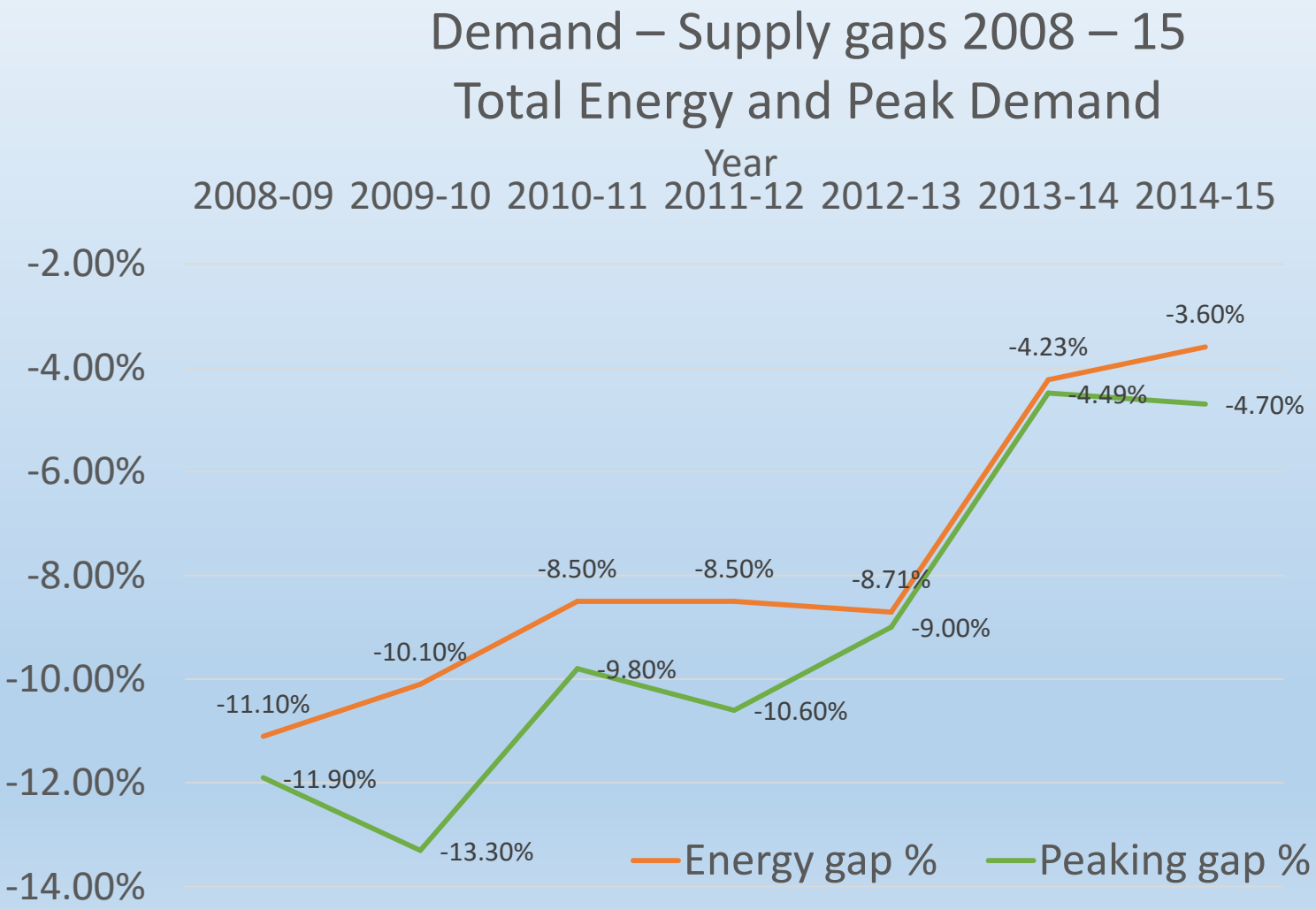
Increasing Private Sector contribution in Installed Capacity addition (in MW)

Period	Sector	Coal	Gas	Hydro	Nuclear	Total
2012 - 2015	Central	10461	767	2424	1000	14562
	State	12560	2009	672	0	15241
	Private	42464	1583	595	0	44642
	Total	65485	4359	3691	1000	74535
2007 - 2012	Central	12050	740	1550	880	15220
	State	12145	1885	2702	0	16732
	Private	19189	2531	1292	0	23012
	Total	43384	5156	5544	880	54964

TRANSITION TO COMPETITIVE POWER MARKET (CONTD.)



GROWTH OF RENEWABLE ENERGY

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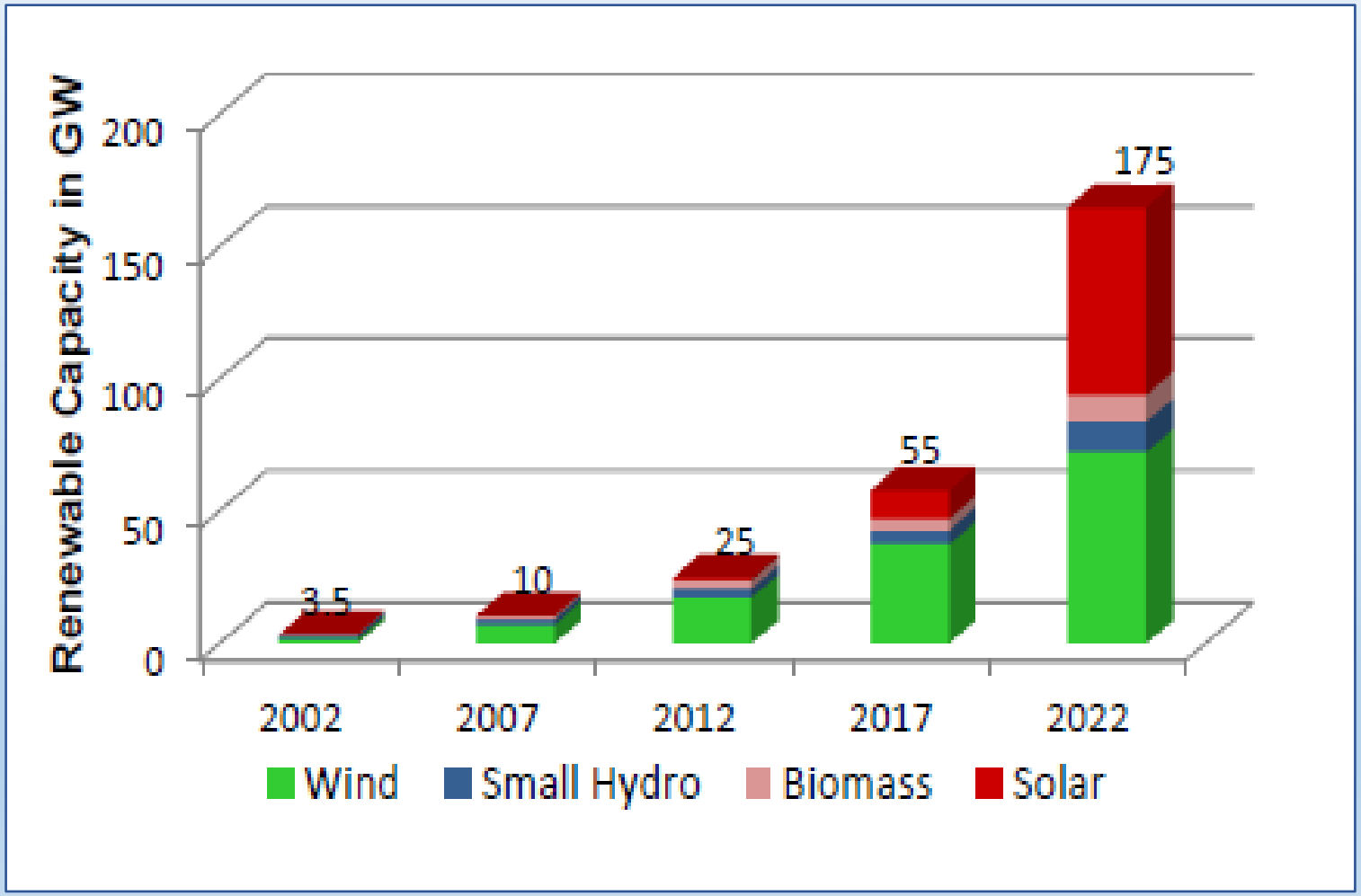

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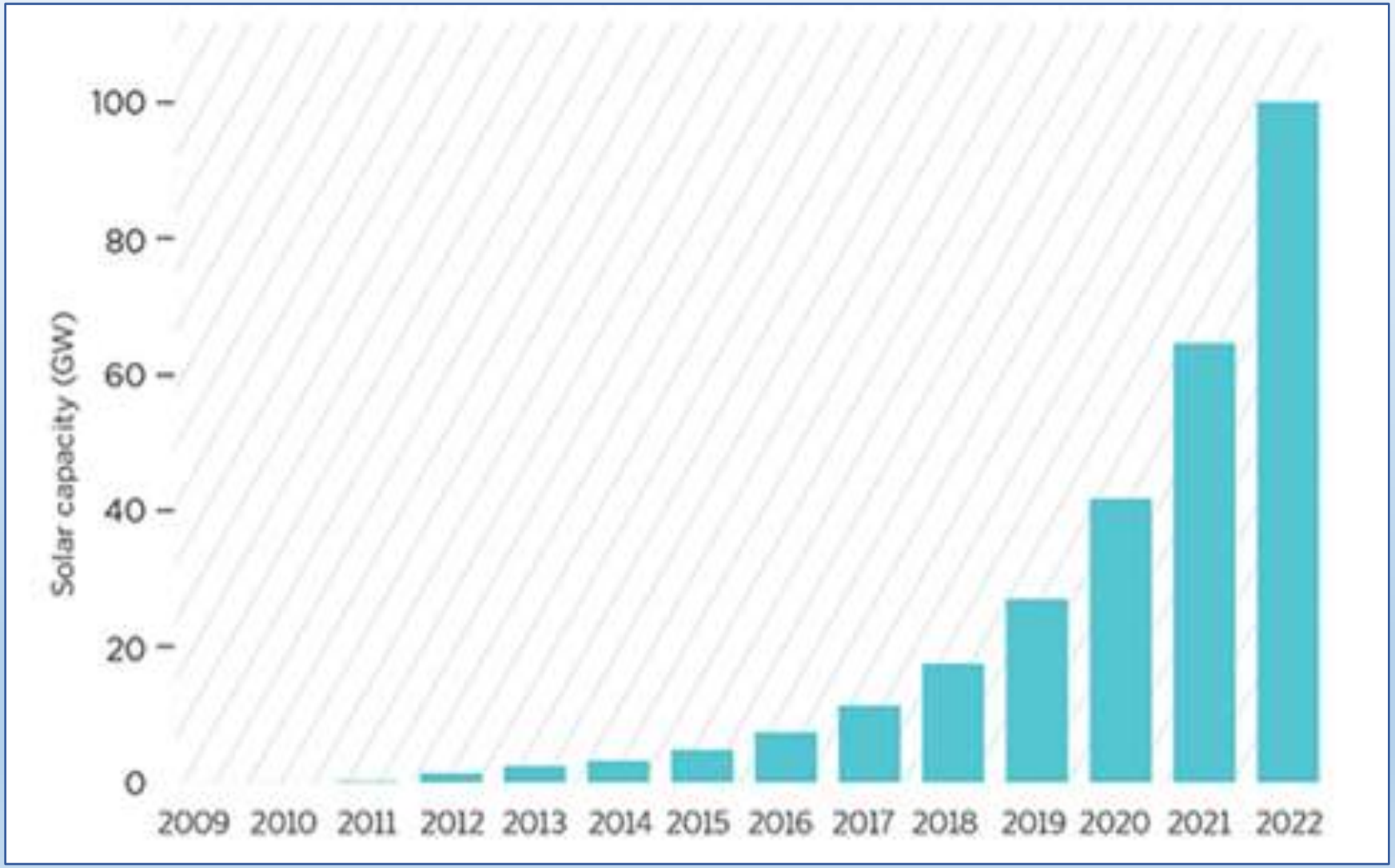


India – Solar capacity addition path

GROWTH OF RENEWABLE ENERGY (CONTD.)

Year	Rooftop	Ground Mounted Solar Power Projects	Total (in MW)
2015-16	200	1,800	2,000
2016-17	4,800	7,200	12,000
2017-18	5,000	10,000	15,000
2018-19	6,000	10,000	16,000
2019-20	7,000	10,000	17000
2020-21	8,000	9,500	17,500
2021-22	9,000	8,500	17,500
Total	40,000	57,000	97,000 *

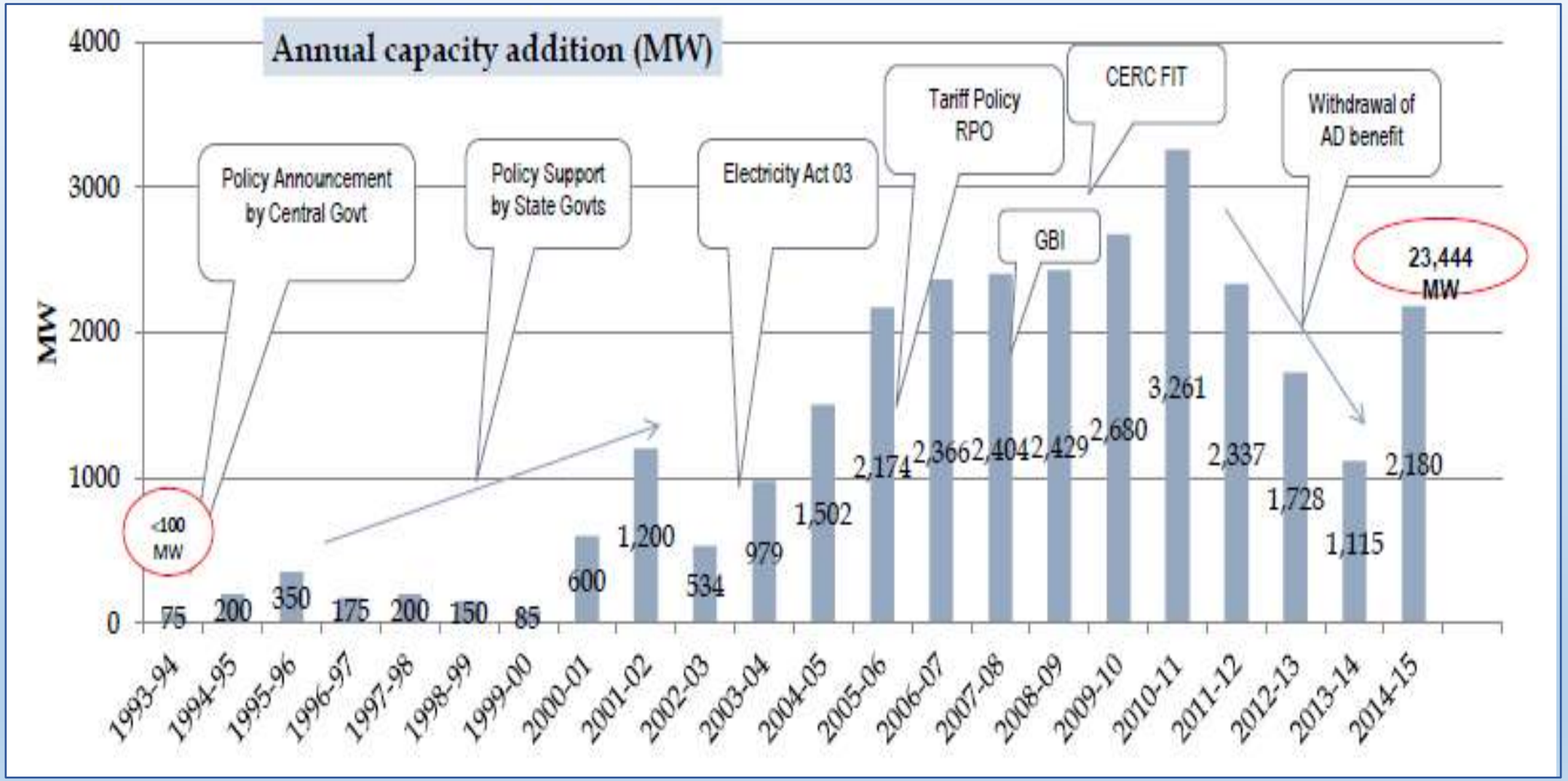
*3,743 MW commissioned upto 31.03.2015

Solar capacity addition programme

GROWTH OF RENEWABLE ENERGY (CONTD.)

Falling prices of Solar power in India

GROWTH OF RENEWABLE ENERGY (CONTD.)



Progress of wind power in India

THANK YOU