



भारत के विद्युत क्षेत्र का 1947 से 2019 तक का संवर्धन
GROWTH OF ELECTRICITY SECTOR IN INDIA FROM 1947-2019

भारत सरकार
GOVERNMENT OF INDIA
विद्युत मंत्रालय
MINISTRY OF POWER
केन्द्रीय विद्युत प्राधिकरण
CENTRAL ELECTRICITY AUTHORITY
नई दिल्ली
NEW DELHI
मई, 2019
May, 2019



प्रकाश मस्के
अध्यक्ष
केन्द्रीय विद्युत प्राधिकरण
भारत सरकार



प्राक्कथन

केन्द्रीय विद्युत प्राधिकरण द्वारा वार्षिक रूप से प्रकाशित पुस्तिका "भारत में विद्युत क्षेत्र की संवृद्धि" विभिन्न वर्षों में भारतीय विद्युत क्षेत्र की संवृद्धि का विस्तृत परिदृश्य उपलब्ध कराती है। प्रासंगिक सूचना और सांख्यिकी आलेखों, पाई-चार्ट, मानचित्रों और सारणियों के रूप में प्रस्तुत की गई हैं। पंचवर्षीय योजनावार विकास के आरंभ होने के बाद से भारतीय विद्युत क्षेत्र ने बहुत प्रगति की है। यह प्रकाशन महत्वपूर्ण विकास संकेतकों जैसे स्थापित विद्युत उत्पादक क्षमता, विद्युत ऊर्जा उत्पादन, पारेषण और संवितरण नेटवर्क, कैप्टिव विद्युत संयंत्रों और विद्युत खपत के पैटर्न आदि की संवृद्धि के विवरण उपलब्ध कराता है।

इस प्रकाशन के लिए आंकड़े देश में विद्युत क्षेत्र के विभिन्न संगठनों से प्राप्त किए गए हैं। प्रति व्यक्ति विद्युत खपत, खपत की विभिन्न श्रेणियों का प्रतिशतांक हिस्सा, पारेषण और संवितरण हानि आदि जैसी महत्वपूर्ण सांख्यिकी की कुछ विकसित और विकासशील राष्ट्रों के आंकड़ों के साथ तुलना की गई है। आशा है कि यह पुस्तिका भारतीय विद्युत क्षेत्र पर संक्षिप्त और लाभदायक सूचना उपलब्ध कराने में बहुत उपयोगी सिद्ध होगी।

मई, 2019

प्रकाश मस्के
(प्रकाश मस्के)



Prakash Mhaske
Chairperson
Central Electricity Authority
Govt. of India



FOREWORD

The booklet “Growth of Electricity Sector in India” published annually by Central Electricity Authority provides panoramic view of growth of the Indian Power Sector over the years. The relevant information and statistics have been presented in the form of graphs, pie-charts, maps and tables. The Indian Electricity sector has come a long way ever since 5 year plan wise development was initiated. This publication provides details of the growth of vital development indicators like installed electricity generating capacity, electrical energy generation, transmission and distribution network, captive power plants and pattern of electricity consumption etc.

The data for this publication has been sourced from various power sector entities in the country. The important statistics like per capita electricity consumption, percentage share of different categories of consumption, transmission and distribution losses etc., have been compared with the data of some of the developed and developing nations. I hope that this booklet will be very helpful in providing concise & useful information on the Indian Electricity Sector.

May, 2019


(Prakash Mhaske)



सन्देश कुमार शर्मा

सदस्य (योजना)

केंद्रीय विद्युत प्राधिकरण

भारत सरकार



प्रस्तावना

स्वतंत्रता के पश्चात से भारत में विद्युत क्षेत्र में स्थापित विद्युत उत्पादन क्षमता और पारेषण व वितरण (टी एंड डी) प्रणाली दोनों में उल्लेखनीय वृद्धि हुई है। कुल विद्युत उत्पादन क्षमता (यूटिलिटी और गैर-यूटिलिटी की) 1947 में मात्र 1362 मेगावाट से बढ़कर मार्च अंत, 2019 में लगभग 414.10 गीगा वाट हो गई। प्रतिव्यक्ति बिजली की खपत जो 1947 में केवल 16.3 यूनिट थी, 2018-19 में बढ़कर 1181 यूनिट हो गई है। पिछले 3 वर्षों में, विद्युत कमी काफी कम हो गई है और वास्तव में, वर्तमान में, हमारे पास अप्रयुक्त उत्पादन क्षमता है। यह मुख्य रूप से कुछ राज्यों के उप-पारेषण एवं वितरण प्रणाली में बाध्यताओं तथा उनकी प्रतिकूल वित्तीय स्थिति के कारण है। इसको ध्यान में रखते हुए भारत सरकार ने राज्य विद्युत वितरण यूटिलिटी के वित्तीय टर्नअराउंड के लिए उज्ज्वल डिस्कॉम एश्योरेंस योजना (उदय) का शुभारम्भ किया है, जहाँ वित्तीय घाटे को कम करने के लिए राज्य सरकारें जिम्मेवार होंगी। कुछ लक्ष्य निर्धारित किए गए हैं जिनके पूर्ण होने पर राज्य सरकारें भविष्य में केंद्र सरकार से लाभ के लिए हकदार होंगी। भारत सरकार ने टी एंड डी हानि में कमी तथा संसाधनों के इष्टतम उपयोग के लिए मांग पक्ष प्रबंधन पर विशेष बल दिया है। सभी के लिए विद्युत उपलब्ध करवाने के लिए टैरिफ आधारित बोली पर विद्युत परियोजनाओं का विकास, पारेषण क्षेत्र में निजी क्षेत्र की भागीदारी, ऊर्जा दक्षता बढ़ाने पर राष्ट्रीय अभियान, नवीकरणीय ऊर्जा स्रोतों (आर. ई. एस.) और सबसे सस्ते स्रोत से विद्युत उत्पादन के लिए कोयले के उपयोग में लचीलापन जैसी योजनाओं के माध्यम से संयुक्त प्रयास जारी है।

के.वि.प्रा. ने इस संबंध में अग्रणी भूमिका निभाई है तथा विद्युत क्षेत्र के विभिन्न विशिष्ट क्षेत्रों में जैसे कि नई प्रौद्योगिकियों को आरंभ करना, परियोजनाओं को तकनीकी-आर्थिक स्वीकृति प्रदान करने (पहले) हाईड्रो योजनाओं पर सहमति (बाद में), हरित ऊर्जा कॉरीडोर सहित उत्पादन और पारेषण योजना तथा परियोजनाओं के प्रचालन और निर्माण की मॉनिटरिंग करना, डिजाइन तथा इंजीनियरिंग एवं डाटा व सूचना का प्रसार द्वारा विकास के राष्ट्रीय प्रयास में अत्यधिक योगदान दिया है।

के.वि.प्रा. द्वारा प्रकाशित वर्तमान पुस्तिका एक नियमित प्रस्तुति है जिसमें ग्राफ, पाई-चार्ट, नक्शों और सारणियों के रूप में महत्वपूर्ण सूचना अंतर्निहित है। सूचना में विभिन्न महत्वपूर्ण संकेतकों जैसे संस्थापित विद्युत उत्पादक क्षमता, जल विद्युत क्षमता, देश की बिजली की मांग की राज्यवार पूर्वानुमान, बिजली ऊर्जा उत्पादन पारेषण व संवितरण नेटवर्क, विद्युत आपूर्ति की स्थिति, कैप्टिव पॉवर प्लांट्स, देश की बिजली की खपत तथा प्रति व्यक्ति उपभोग पैटर्न के लिए निष्पादित वृद्धि का पंच वर्षीय योजनावार (पहले योजना अवधि कहलाता था) पैटर्न शामिल है। पुस्तिका में राज्यवार स्थापित विद्युत उत्पादन क्षमता को दर्शाने वाले नक्शे भी सम्मिलित हैं, इस प्रकार यह हमारे देश का एक विशाल परिदृश्य प्रस्तुत करती है।

आशा है कि यह लघु पुस्तिका सभी हितधारकों के लिए उपयोगी सिद्ध होगी।

मई, 2019

सन्देश कुमार शर्मा

(सन्देश कुमार शर्मा)



Sandesh Kumar Sharma
Member(Planning)
Central Electricity Authority
Govt. of India



PREFACE

Power Sector in India has grown significantly since independence, both in the Installed Capacity and Transmission & Distribution (T&D) system. The total Power Generating Capacity of (utilities & non utilities) has increased from a meagre 1362 MW in 1947 to about 414.10 GW at the end of March, 2019. The Per Capita Electricity Consumption which was a mere 16.3 units in 1947, has increased to 1181 units in 2018-19. In the last 3 years, the shortages have reduced substantially and, in fact, at present we have unutilized generating capacity. This is mainly because of constraints in the sub-transmission and distribution system in some of the States, as well as adverse financial position of many of the States. Taking this into account, the Government of India has launched the Ujwal Discom Assurance Yojna (UDAY) Scheme for financial turnaround of the State Distribution Utilities, where the State Government has been made responsible for reduction of financial losses. Certain targets have been set, which, if achieved, would entitle the State Government to further benefits from the Central Government. Government of India lays special emphasis on reduction of T&D losses and demand side management to optimally utilize the resources. Concerted efforts are going on to make power available to all through policy initiatives, such as Development of Power Projects through Tariff based bidding, Private Sector Participation in Transmission sector, National Mission on Enhanced Energy Efficiency, Focus on development of Renewable Energy Sources (RES) and flexible use of coal for generating power from cheapest source of generation.

CEA has taken a lead and immensely contributed in the national endeavour of development of power sector in various specific areas such as introduction of new technologies, techno-economic clearance of projects earlier and later concurrence of hydro projects, generation & transmission planning including green energy corridors and operation & construction monitoring of projects, design & engineering and dissemination of data & information.

The present booklet brought out by CEA is a regular feature, which contains vital information in the form of graphs, pie charts, maps and tables. The information covers 5 yearly (earlier called Plan period) pattern of growth accomplished for various important indicators like Installed Capacity, Hydroelectric Potential, state wise forecast of Electricity Demand of the country, Electrical Energy Generation, Transmission & Distribution network, Power Supply Position, Captive Power Plants, pattern of Electricity Consumption of the country as well as Per Capita Consumption. The booklet also contains maps showing state wise Installed Electricity Generating Capacity, thus affording a panoramic view of our country.

I am hopeful that this handy booklet would prove to be useful to all stakeholders.

Sandesh Kumar Sharma

(Sandesh Kumar Sharma)

May, 2019

CONTENTS

S. No.	Table No.	TITLE	Pg. No.
1.	Table : 1	Plan wise Growth of Electricity Sector in India (Utilities)	1
2.	Chart : 1	Plan wise Growth of Installed Capacity in the Country (Utilities)	2
3.	Chart : 2A	Plan wise Growth of Transmission Lines in the Country 66 kV and above	3
4.	Chart : 2B	Plan wise Growth of Transmission Lines in the Country below 66 kV	4
5.	Chart : 3	Plan wise Growth of Number of Villages Electrified in the Country	5
6.	Chart : 4	Plan wise Growth of Per Capita Consumption of Electricity in the Country	6
7.	Chart : 5	Per Capita Electricity Consumption in Various Countries in 2015 & 2016.	7
8.	Table : 2	Plan wise Growth of Installed Capacity in India - Mode wise (Utilities)	8
9.	Chart : 6	Plan wise Growth of Installed Capacity in India Hydro Electric Power Stations	9
10.	Chart : 6A	Basin wise Status of Hydro Electric Potential Development in terms of Installed Capacity above 25 MW % wise (As on 31.03.2019)	10
11.	Chart : 6B	Region wise Status of Hydro Electric Potential Development in terms of Installed Capacity above 25 MW % wise (As on 31.03.2019)	11
12.	Chart : 7A	Plan wise Growth of Installed Capacity in India Coal/ Lignite based Plants	12
13.	Chart : 7B	Plan wise Growth of Installed Capacity in India Gas/ Liquid based Plants	13
14.	Chart : 7C	Plan wise Growth of Installed Capacity in India Diesel based Plants	14
15.	Chart : 8	Plan wise Growth of Installed Capacity in India Nuclear based Plants	15
16.	Chart : 8A	Sector wise Growth of Installed Capacity (MW) 2000-01 to 2018-19	16
17.	Chart : 8B	Mode wise/Year wise Growth of Installed Capacity of RES during last 10 years	17
18.	Pie Chart : 9	All India Installed Capacity - (Utilities) (As on 31.03.2019)	18
19.	Pie Chart : 9A	All India Installed Capacity - End of 12 th Plan (Utilities) (As on 31.03.2018)	19
20.	Table : 3	Plan wise Growth of Gross Electricity Generation in India - Mode wise (Utilities)	20

CONTENTS

S. No.	Table No.	TITLE	Pg. No.
21.	Chart : 10	Specific Generation by All India Power Stations - Mode wise (Utilities) (1994-95 to 2018-19)	21
22.	Chart : 11	Plan wise Growth of Electricity Generation in India Hydro Electric Power Stations	22
23.	Chart : 12A	Plan wise Growth of Electricity Generation in India Coal/ Lignite based Power Plants	23
24.	Chart : 12B	Plan wise Growth of Electricity Generation in India Gas/ Liquid Fuel based Power Plants	24
25.	Chart : 12C	Plan wise Growth of Electricity Generation in India Diesel based Power Plants	25
26.	Chart : 13	All India PLF (%) of Thermal Power Stations (Coal and Lignite Based)	26
27.	Chart : 14	Plan wise Growth of Electricity Generation in India Nuclear Power Plants	27
28.	Chart : 15	Plan wise Growth of All India Electricity Generation (Utilities)	28
29.	Chart : 15A	Sector wise Growth of Energy Generation (GWh) (2002-03 to 2018-19)	29
30.	Pie Chart : 16	Gross Electricity Generation in India Mode wise - (Utilities) 2018-19*	30
31.	Pie Chart : 16A	Gross Electricity Generation in India Mode wise - (Utilities) 2017-18	31
32.	Chart : 17	Gross Electricity Generation in various Countries Mode wise in 2016	32
33.	Chart : 18	Mode wise % Share in Electricity Generation in various countries in 2016	33
34.	Table 4	Plan wise/ Category wise Growth of Electricity Consumption in India (Utilities & Non-Utilities)	34
35.	Chart : 19	Plan wise Growth of Electricity Consumption in India - Domestic Sector	35
36.	Chart : 20	Plan wise Growth of Electricity Consumption in India - Commercial Sector	36
37.	Chart : 21	Plan wise Growth of Electricity Consumption in India - Industrial Sector	37
38.	Chart : 22	Plan wise Growth of Electricity Consumption in India - Traction Sector	38
39.	Chart : 23	Plan wise Growth of Electricity Consumption in India - Agriculture Sector	39
40.	Chart : 24	Plan wise Growth of Electricity Consumption in India - Miscellaneous Sector	40

CONTENTS

S. No.	Table No.	TITLE	Pg. No.
41.	Chart : 25	Plan wise Growth of All India Total Electricity Consumption (Utilities & Non-Utilities)	41
42.	Chart : 25A	Trend of Category wise Energy Consumption 2000-01 to 2018-19	42
43.	Pie Chart : 26	All India Electricity Consumption Sector wise - (Utilities & Non-Utilities) 2018-19@	43
44.	Pie Chart : 26A	All India Electricity Consumption Sector wise - (Utilities & Non-Utilities) 2017-18	44
45.	Chart : 27	Category wise Electricity Consumption in various Countries - 2016	45
46.	Chart : 28	Category wise % Shares in Electricity Consumption in various Countries - 2016	46
47.	Table : 5	Per Capita Electricity Consumption and T&D Losses of various countries in 2015 & 2016	47
48.	Chart : 29	All India Transmission and Distribution Losses (%)	48
49.	Chart : 30	T & D Losses of various Countries in 2015 & 2016 (%)	49
50.	Table : 6	Plan wise Growth of Installed Generating Capacity of Captive Power Plants in Industries having Demand of 1MW & Above - Mode wise	50
51.	Pie Chart : 31	Installed Generating Capacity of Captive Power Plants in Industries having Demand of 1MW & Above - Mode wise - (As on 31.03.2019)@	51
52.	Pie Chart : 31A	Installed Generating Capacity of Captive Power Plants in Industries having Demand of 1MW & Above - Mode wise - (As on 31.03.2018)	52
53.	Chart : 32	Plan wise Growth of All India Installed Generating Capacity of Captive Power Plants in Industries having Demand of 1MW & Above	53
54.	Table : 7	Plan wise Growth of Energy Generated by Captive Power Plants in Industries having Demand of 1MW & Above - Mode wise	54
55.	Pie Chart:33	All India Electrical Energy Generated by Captive Power Plants in Industries having Demand of 1MW & Above - Mode wise 2018-19@	55
56.	Pie Chart:33A	All India Electrical Energy Generated by Captive Power Plants in Industries having Demand of 1MW & Above - Mode wise - 2017-18	56
57.	Chart : 34	Plan wise Growth of Energy Generated by Captive Power Plants in Industries having Demand of 1MW & Above	57
58.	Chart : 35	Capacity Addition Programme during 2019-20	58
59.	Chart : 36	Forecast of All India Peak Electricity Demand (Utilities) (As per 18 th & 19 th Electric Power Survey) in MW	59
60.	Chart : 37	Forecast of All India Electrical Energy Requirement (Utilities) (As per 18 th & 19 th Electric Power Survey) in GWh	60

CONTENTS

S. No.	Table No.	TITLE	Pg. No.
61.	Chart : 37A	18 th Electric Power Survey of India (Volume –II) - Annual Electric Peak Load (in MW) of Mega Cities at Power Station Bus Bar (For the Year 2011-12, 2018-19 & 2021-22)	61
62.	Chart : 37B	18 th Electric Power Survey of India (Volume –II) - Electrical Energy Requirement (in MU) of Mega Cities (For the Year 2011-12, 2018-19 & 2021-22)	62
63.	Chart : 37C	18 th Electric Power Survey of India (Volume –II) - Electrical Energy Consumption (in MU) of Mega Cities (For the Year 2011-12, 2018-19 & 2021-22)	63
64	Table : 8	All India Power Supply Position Energy wise & Peak wise (Utilities) (1984-85 to 2018-19)	64-65
65.	Chart : 38	All India Peak & Energy Deficit (Utilities) (1984-85 to 2018-19)	66
66.	Table : 8A	Region wise Summary of Electrical Energy Requirement (MU) & Peak Electricity Demand (MW) projections for the Year 2019-20 and 2021-22 As per 19 th EPS (Volume-I)	67
67.	Table : 8B	Category wise Forecast of Electrical Energy Consumption For the Year 2019-20 and 2021-22 As per 19 th EPS (Volume-I)	68
68.	Table : 8C	Forecast of Electrical Energy Requirement (in MU) of NCR For the Year 2019-20 and 2021-22 As per 18 th EPS (Volume-III)	69
69.	Chart : 39	Forecast of Electrical Energy Requirement (in MU) of NCR For the Year 2019-20 and 2021-22	70
70.	Table: 8D	Forecast of Electrical Energy Consumption (in MU) of NCR For the Year 2019-20 and 2021-22 As per 18 th EPS (Volume-III)	71
71.	Chart : 40	Forecast of Electrical Energy Consumption (in MU) of NCR For the Year 2019-20 and 2021-22	72
72.	Map : 1	Map of India showing Installed Generating Capacity State wise/ Mode wise as on 31.03.2019	73
73.	Map : 2	Map of India showing Installed Generating Capacity State wise as on 31.03.2019	74

Table 1
Plan wise Growth of Electricity Sector in India
Utilities

Sl. No.	As on / during financial year ending with	Installed Capacity (MW)	No. of villages electrified	Length of T & D Lines (Ckt. kms.)(#)	Per Capita Consumption (\$) (kWh)
1	31.12.1947	1362	N.A.	23238	16
2	31.12.1950	1713	3061	29271	18
3	31.03.1956(End of the 1st Plan)	2886	7294	85427	31
4	31.03.1961(End of the 2nd Plan)	4653	21754	157887	46
5	31.03.1966 (End of the 3rd Plan)	9027	45148	541704	74
6	31.03.1969(End of the 3 Annual Plans)	12957	73739	886301	98
7	31.03.1974(End of the 4th Plan)	16664	156729	1546097	126
8	31.03.1979(End of the 5th Plan)	26680	232770	2145919	172
9	31.03.1980(End of the 2 Annual Plans)	28448	249799	2351609	172
10	31.03.1985(End of the 6th Plan)	42585	370332	3211956	229
11	31.03.1990(End of the 7th Plan)	63636	470838	4407501	329
12	31.03.1992(End of the 2 Annual Plans)	69065	487170	4574200	348
13	31.03.1997(End of the 8th Plan)	85795	498836	5141413	465
14	31.03.2002(End of the 9th Plan)	105046	512153	6030148	559
15	31.03.2007 (End of 10th Plan)	132329	482864	6939894	672
16	31.03.2012 (End of 11th Plan)	199877	556633	8726092	884
17	31.03.2017 (End of 12th Plan)	326833	592972	10686448	1122
18	31.03.2018	344002	597121	11958511	1149
19	31.03.2019	356100	597464	12436852@	1181

N.A. Not Available.

(@) Estimated.

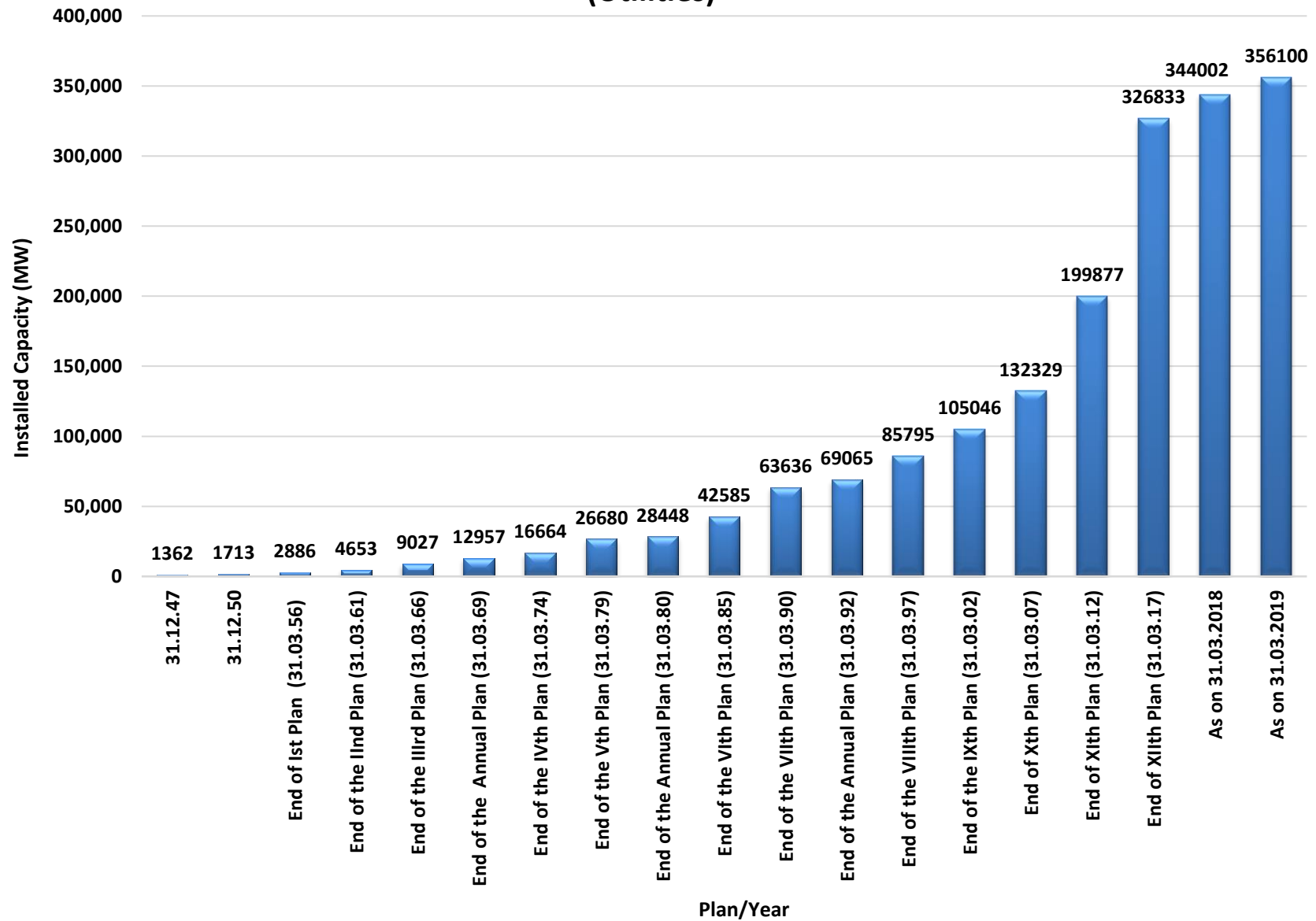
Rural electrification is based on revised definition of village electrification and 2011 Census.

(\$) Per Capita Consumption=Gross Electrical Energy availability/Mid year Population

(#) Includes 440 Volts Distribution Lines.

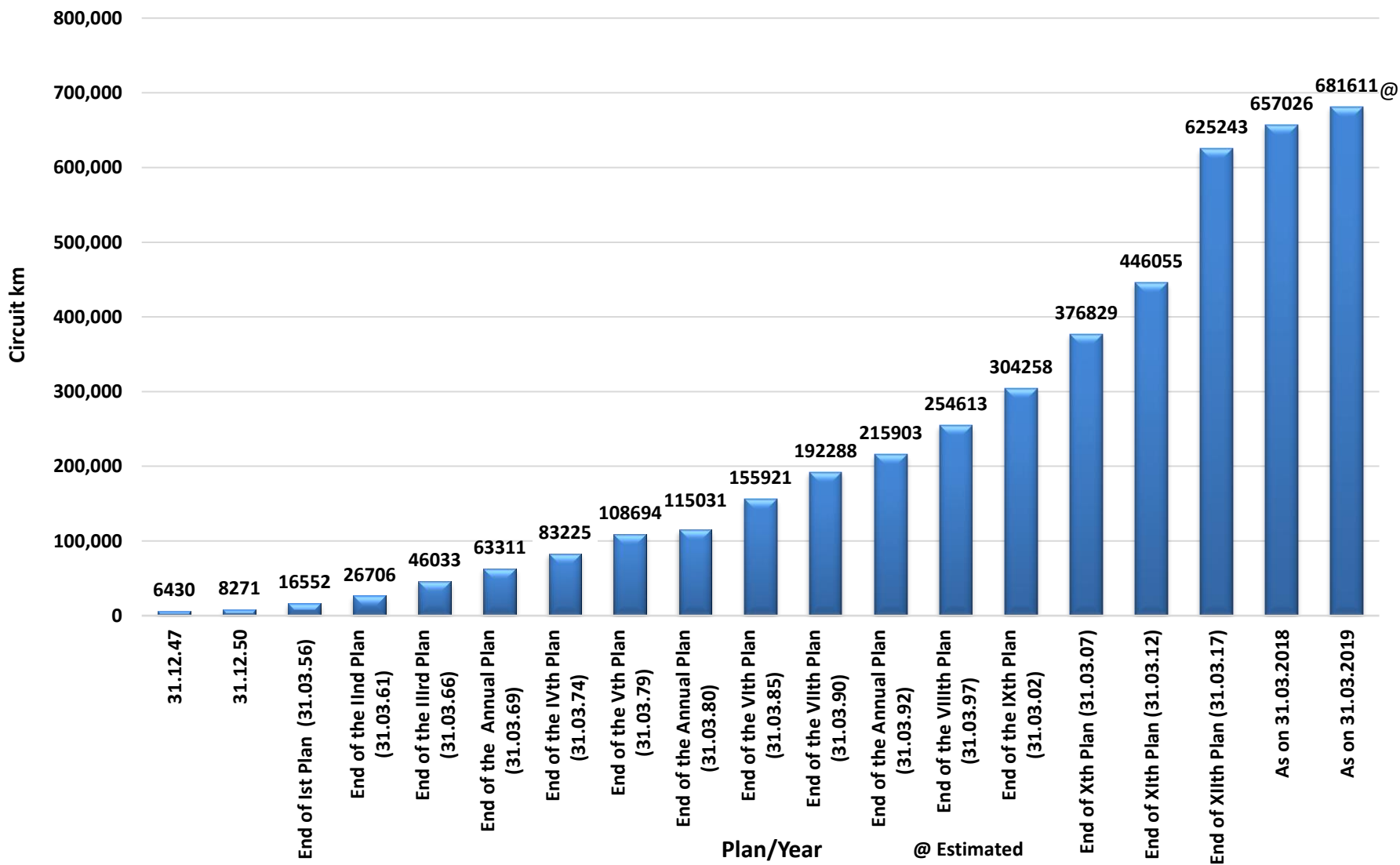
Planwise Growth of Installed Capacity in the Country (Utilities)

Chart : 1

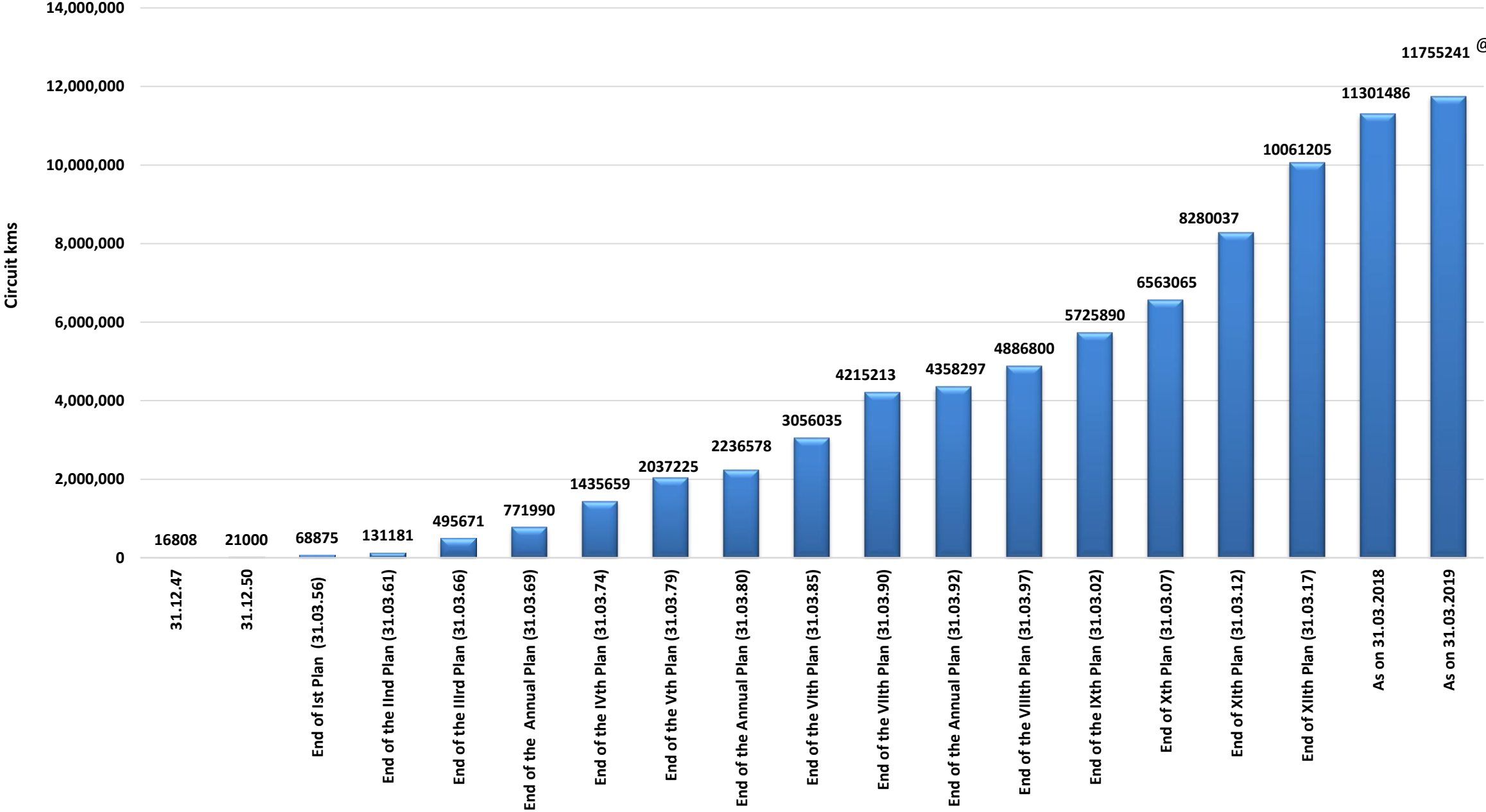


Planwise Growth of Transmission Lines in the Country 66 kV and above

Chart : 2A



Planwise Growth of Transmission Lines in the Country below 66 kV



Plan/Year

@ Estimated

Chart : 3

Planwise Growth of Number of Villages Electrified in the Country

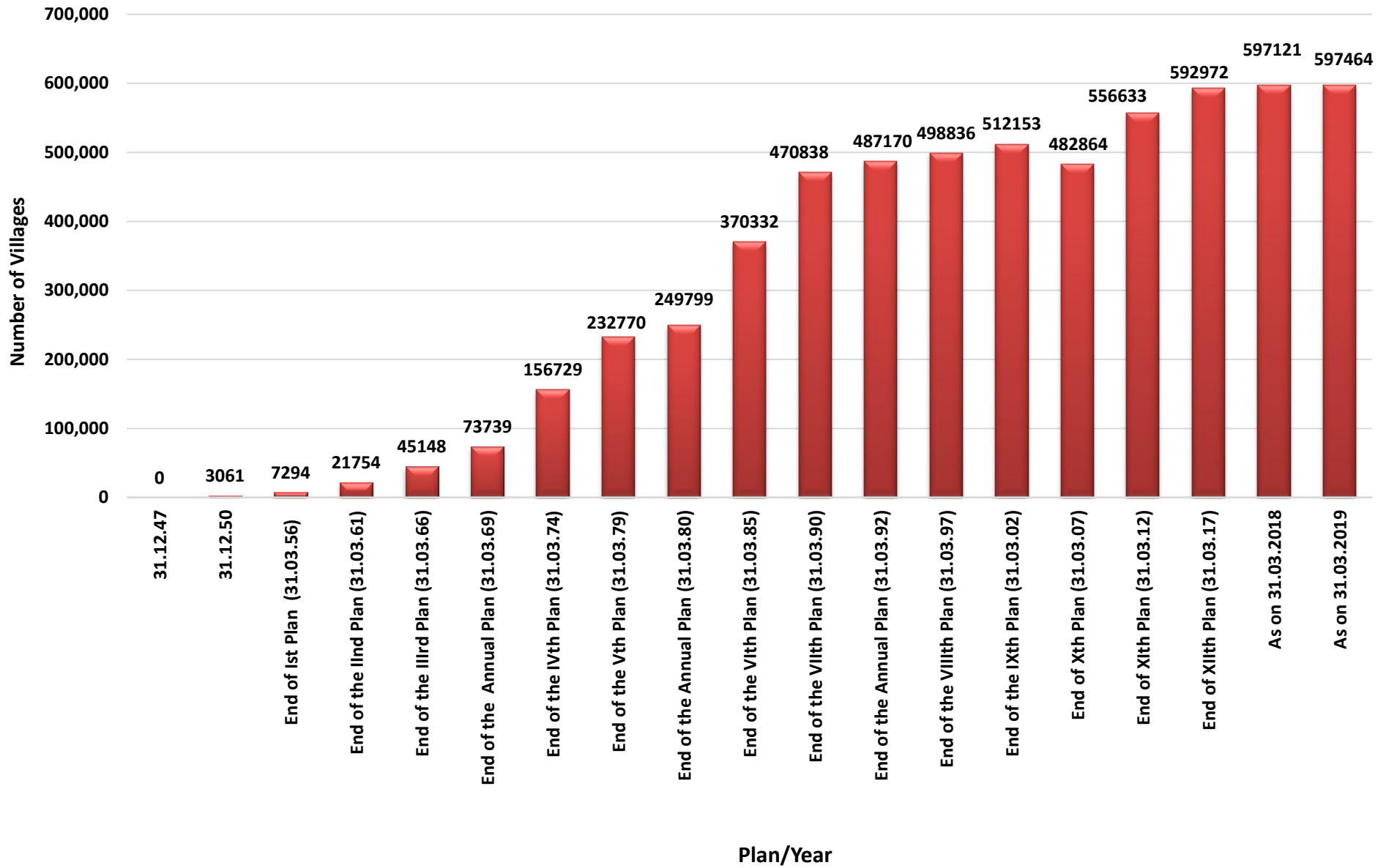


Chart : 4

Planwise Growth of Per Capita Consumption of Electricity in the Country

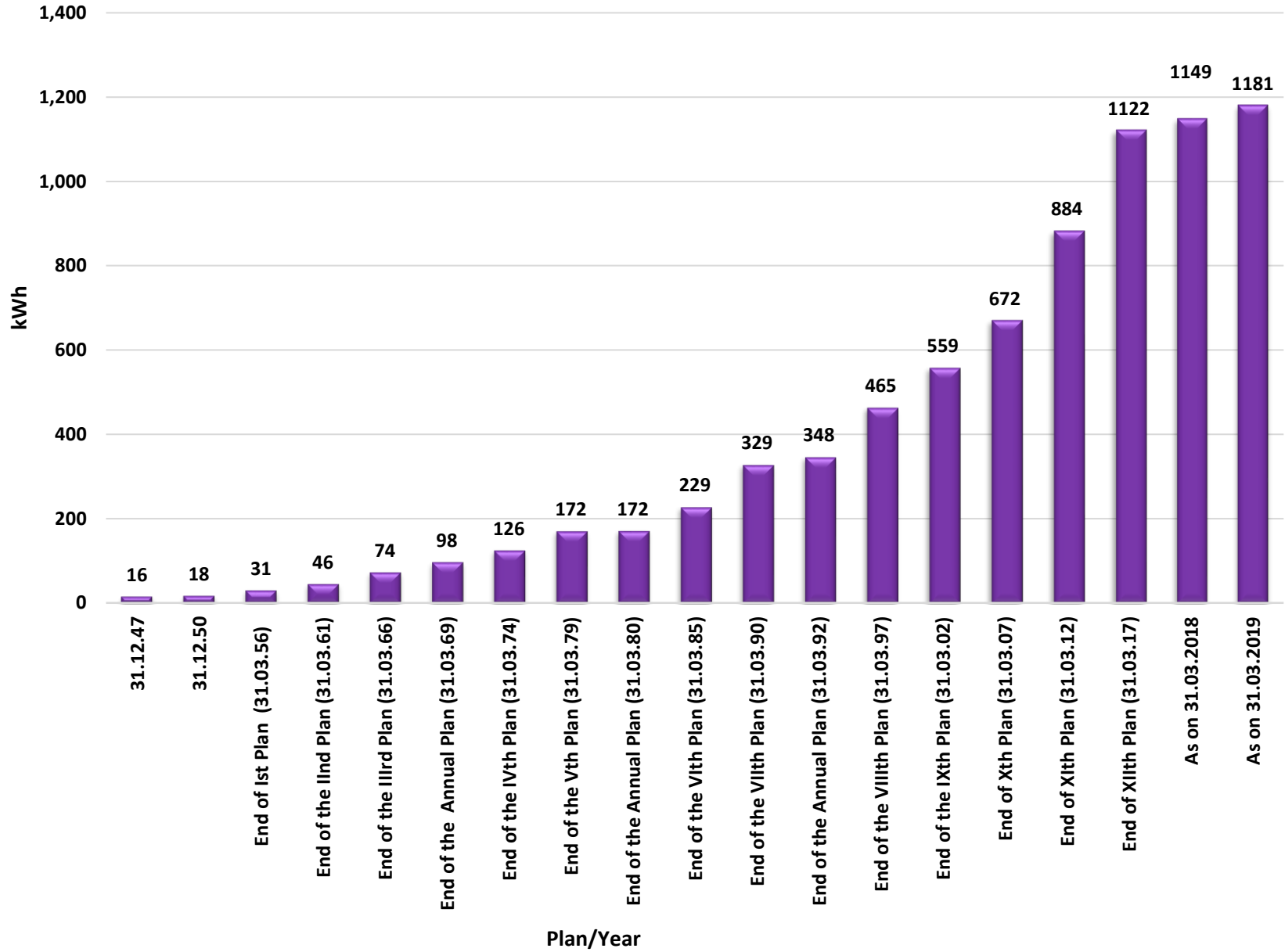
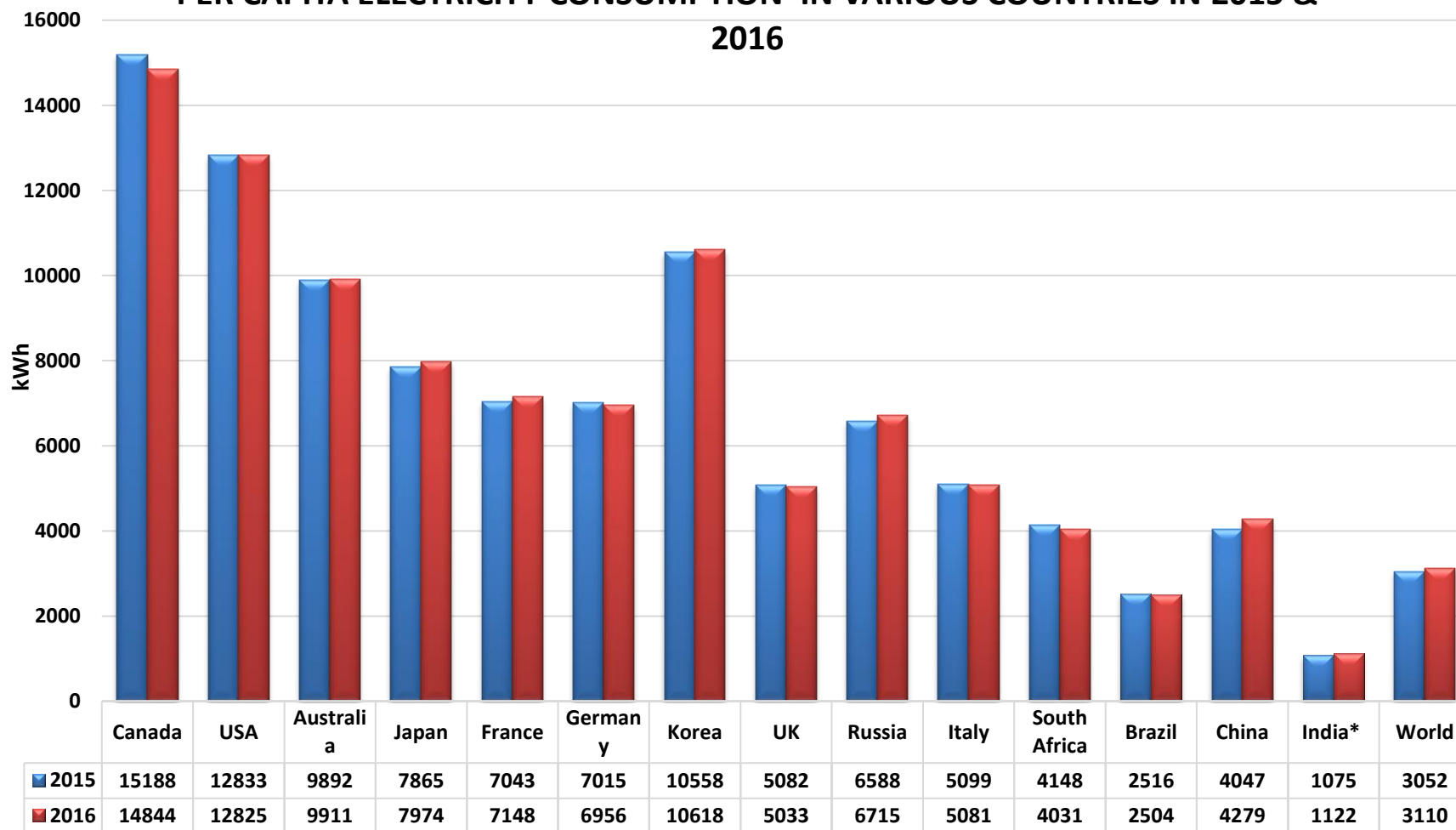


Chart : 5

PER CAPITA ELECTRICITY CONSUMPTION IN VARIOUS COUNTRIES IN 2015 & 2016



Source : IEA publication 'Key World Energy Statistics 2016 website (other than India)

* Per capita consumption = (gross electrical energy availability / mid year population)

Table 2
Plan wise Growth of Installed Capacity in India - Mode wise
(Utilities)

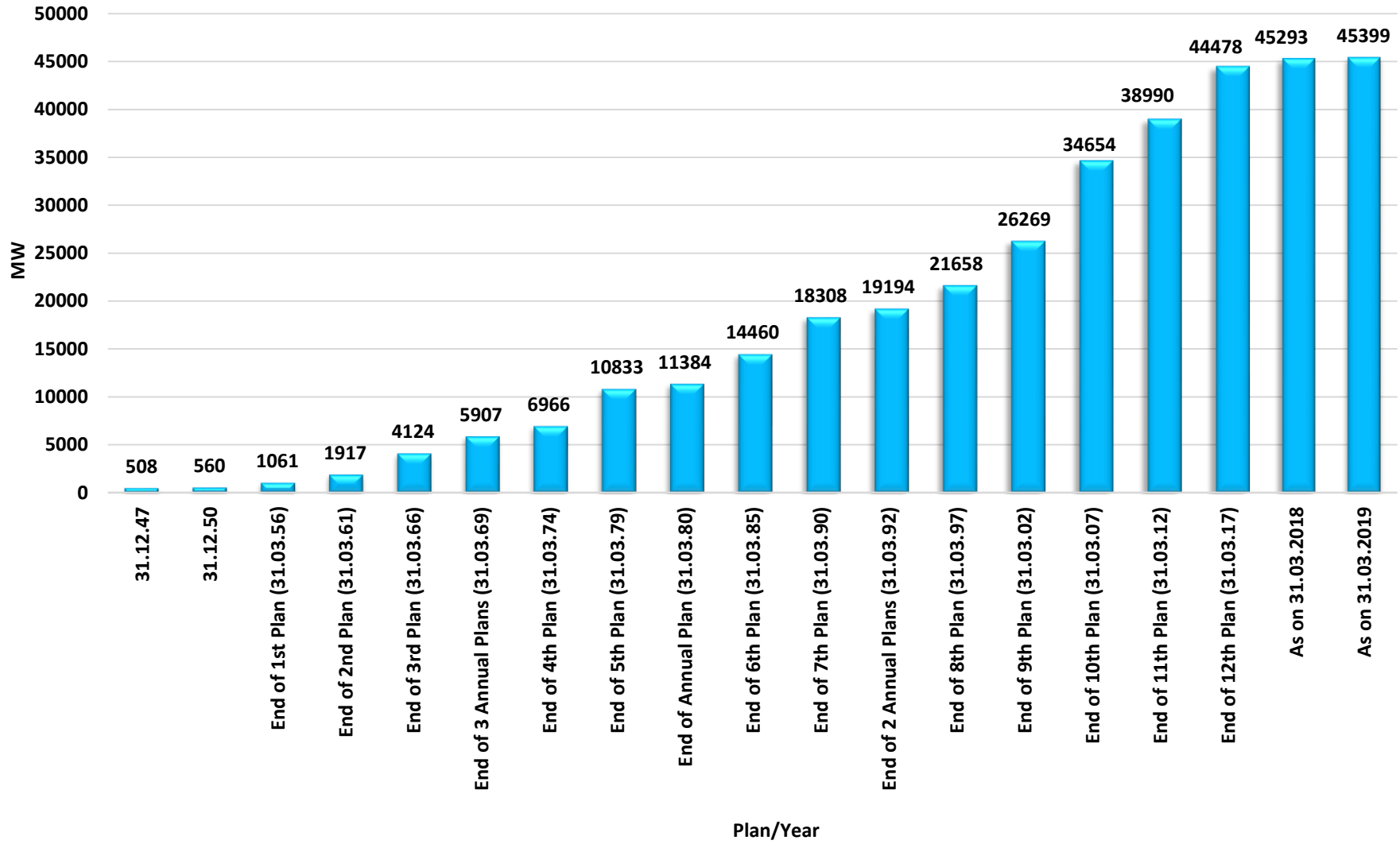
(MW)

Sl. No.	As on	Thermal				Hydro	Nuclear	RES	Total
		Coal/Lignite	Gas	Diesel	Total				
1	31.12.47	756	0	98	854	508	0	0	1362
2	31.12.50	1004	0	149	1153	560	0	0	1713
3	31.03.56 (End of 1st Plan)	1597	0	228	1825	1061	0	0	2886
4	31.03.61 (End of 2nd Plan)	2436	0	300	2736	1917	0	0	4653
5	31.03.66 (End of 3rd Plan)	4417	134	352	4903	4124	0	0	9027
6	31.03.69 (End of 3 Annual Plans)	6640	134	276	7050	5907	0	0	12957
7	31.03.74 (End of 4th Plan)	8652	165	241	9058	6966	640	0	16664
8	31.03.79 (End of 5th Plan)	14875	168	164	15207	10833	640	0	26680
9	31.03.80 (End of Annual Plan)	15991	268	165	16424	11384	640	0	28448
10	31.03.85 (End of 6th Plan)	26311	542	177	27030	14460	1095	0	42585
11	31.03.90 (End of 7th Plan)	41237	2343	165	43745	18308	1565	18	63636
12	31.03.92 (End of 2 Annual Plans)	44791	3095	168	48054	19194	1785	32	69065
13	31.03.97 (End of 8th Plan)	54154	6562	294	61010	21658	2225	902	85795
14	31.03.02 (End of 9th Plan)	62131	11163	1135	74429	26269	2720	1628	105046
15	31.03.07 (End of 10th Plan)	71121	13692	1202	86015	34654	3900	7760	132329
16	31.03.12 (End of 11th Plan)	112022	18381	1200	131603	38990	4780	24504	199877
17	31.03.17 (End of 12th Plan)	192163	25329	838	218330	44478	6780	57244	326833
18	31.03.2018	197172	24897	838	222907	45293	6780	69022	344002
19	31.03.2019	200705	24937	638	226279	45399	6780	77642	356100

(#) RES:-Renewable Energy Sources also includes Hydro capacity of 25.00 MW and below as reported by MNRE.

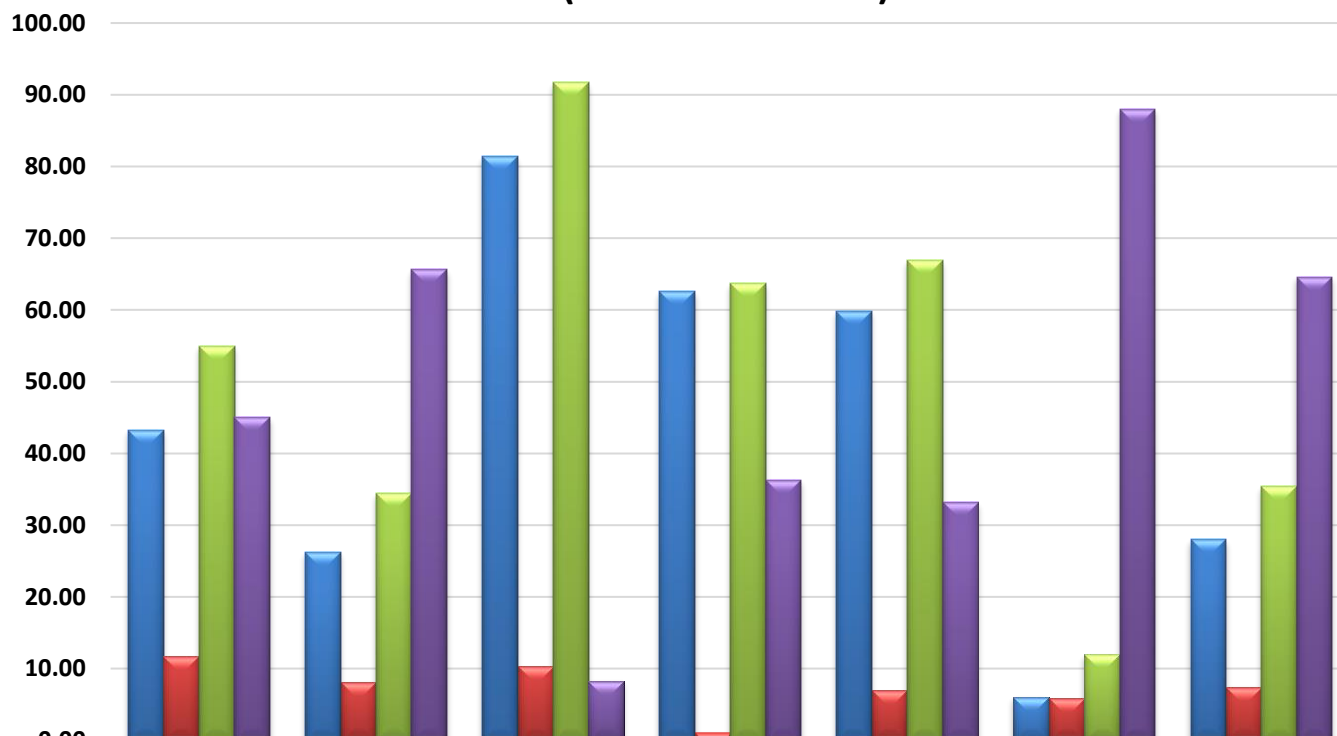
Chart : 6

Plan wise Growth of Installed Capacity in India Hydro Electric Power Stations



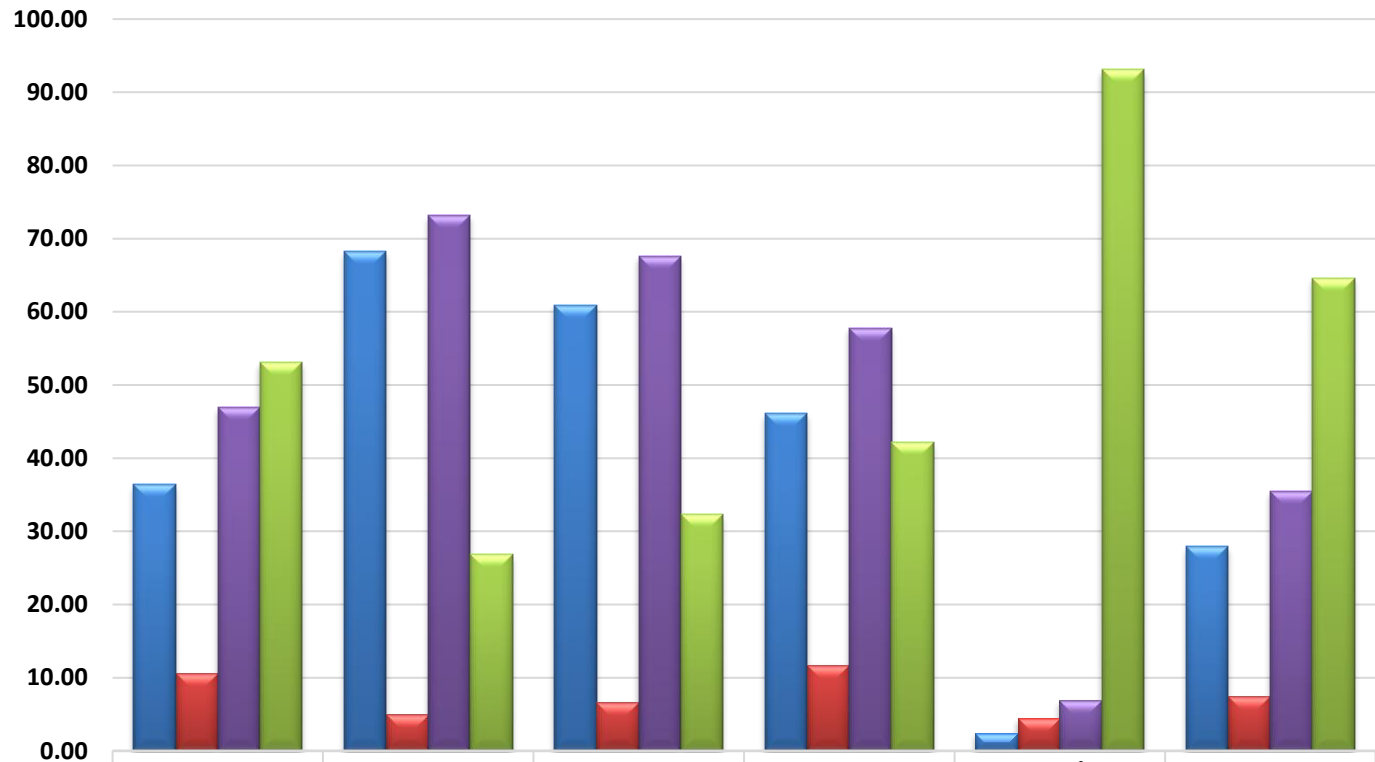
**Basinwise Status of Hydro Electric Potential Development
In terms of Installed Capacity above 25 MW
% wise (As on 31.03.2019)**

Chart : 6A



% Capacity Developed / Under Operation	43.28	26.26	81.37	62.60	59.88	6.08	27.95
% Cap. Under Construction	11.72	8.12	10.34	1.11	6.97	5.89	7.45
% Cap. Dev. + Under Con.	55.00	34.38	91.71	63.71	66.85	11.97	35.40
% Balance Potential	45.00	65.62	8.29	36.29	33.15	88.03	64.60

Regionwise Status of Hydro Electric Potential Development Chart : 6B
In terms of Installed Capacity above 25 MW
% wise (As on 31.03.2019)

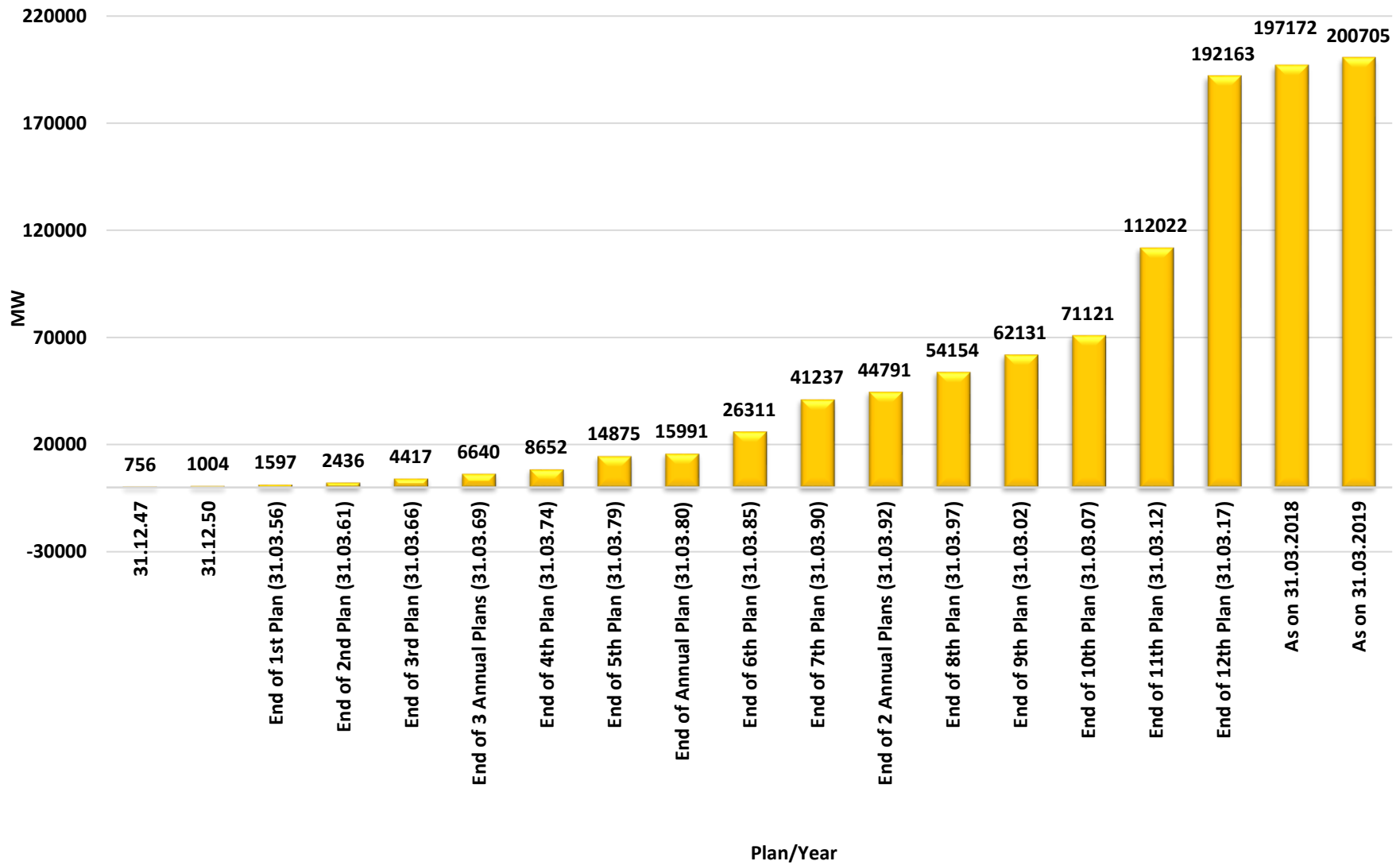


% Capacity Developed /Under Operation
%Cap. Under Construction
%Cap. Dev. +Under Construction
% Capacity yet to be Developed

	Northern Region	Western Region	Southern Region	Eastern Region	North Eastern Region	All India
	36.40	68.28	60.97	46.09	2.45	27.95
	10.56	4.92	6.67	11.73	4.46	7.45
	46.95	73.20	67.65	57.82	6.90	35.40
	53.05	26.80	32.35	42.18	93.10	64.60

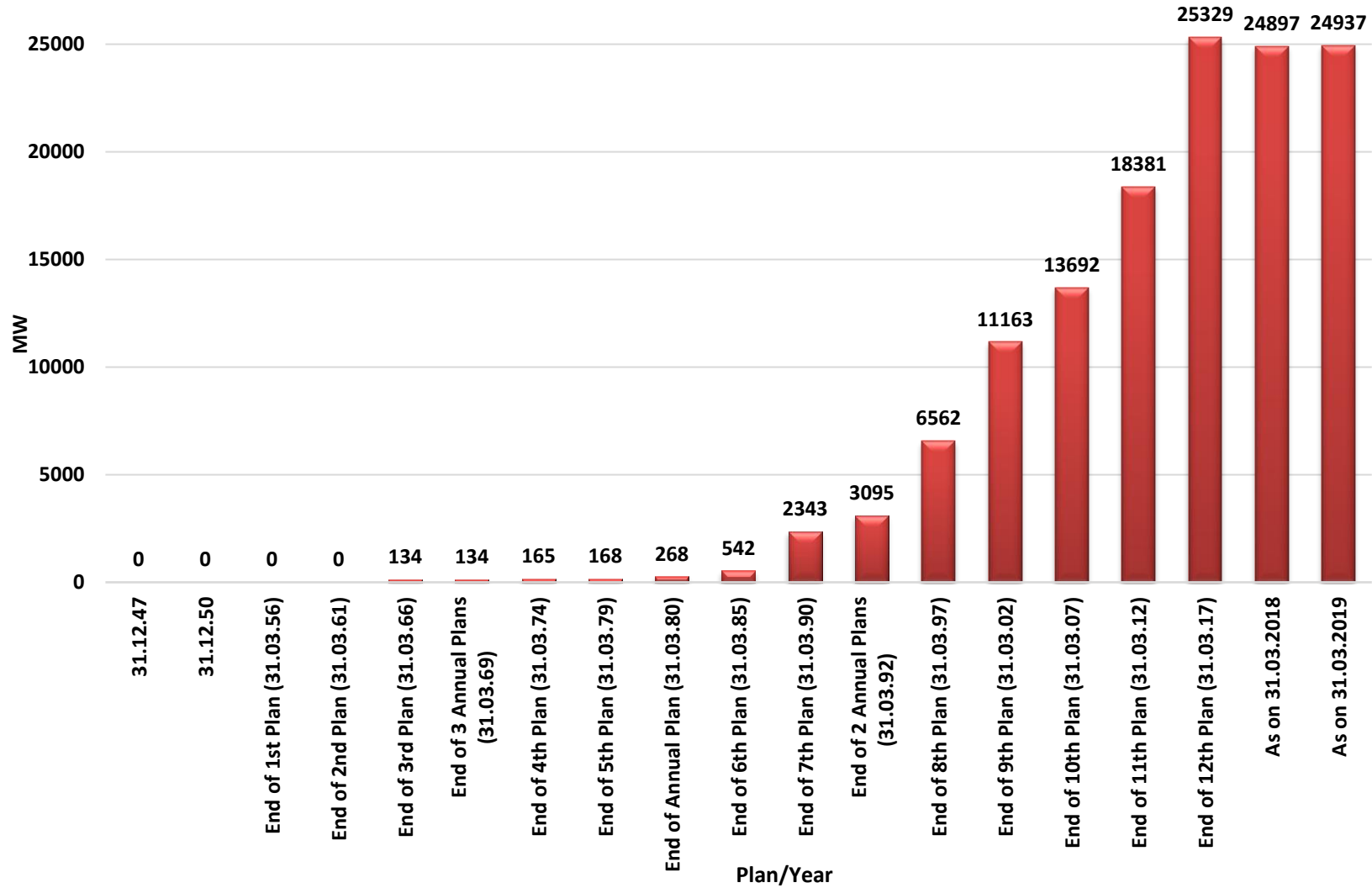
Plan wise Growth of Installed Capacity in India Coal/ Lignite based Plants

Chart : 7A



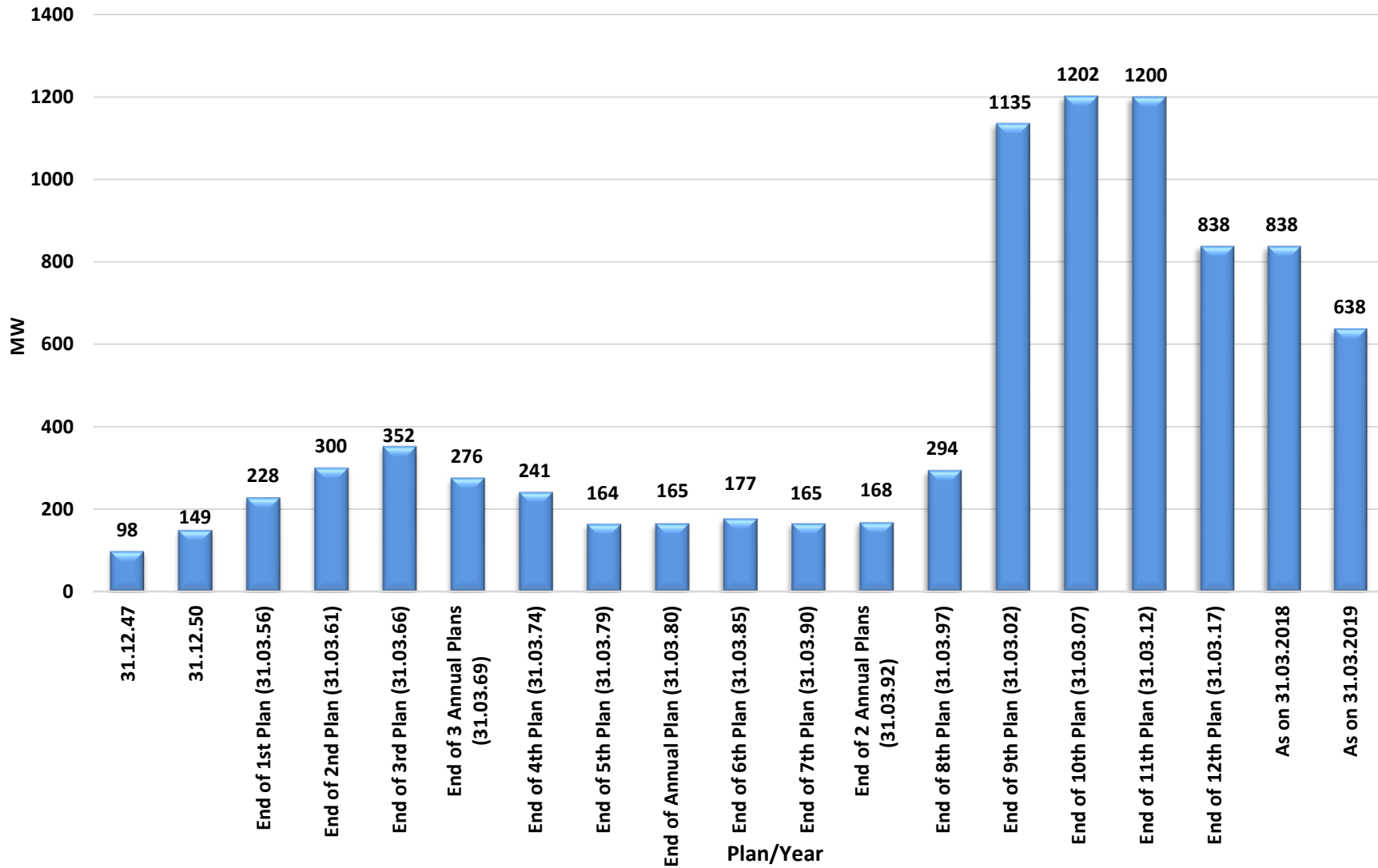
Plan wise Growth of Installed Capacity in India Gas/ Liquid based Plants

Chart : 7B



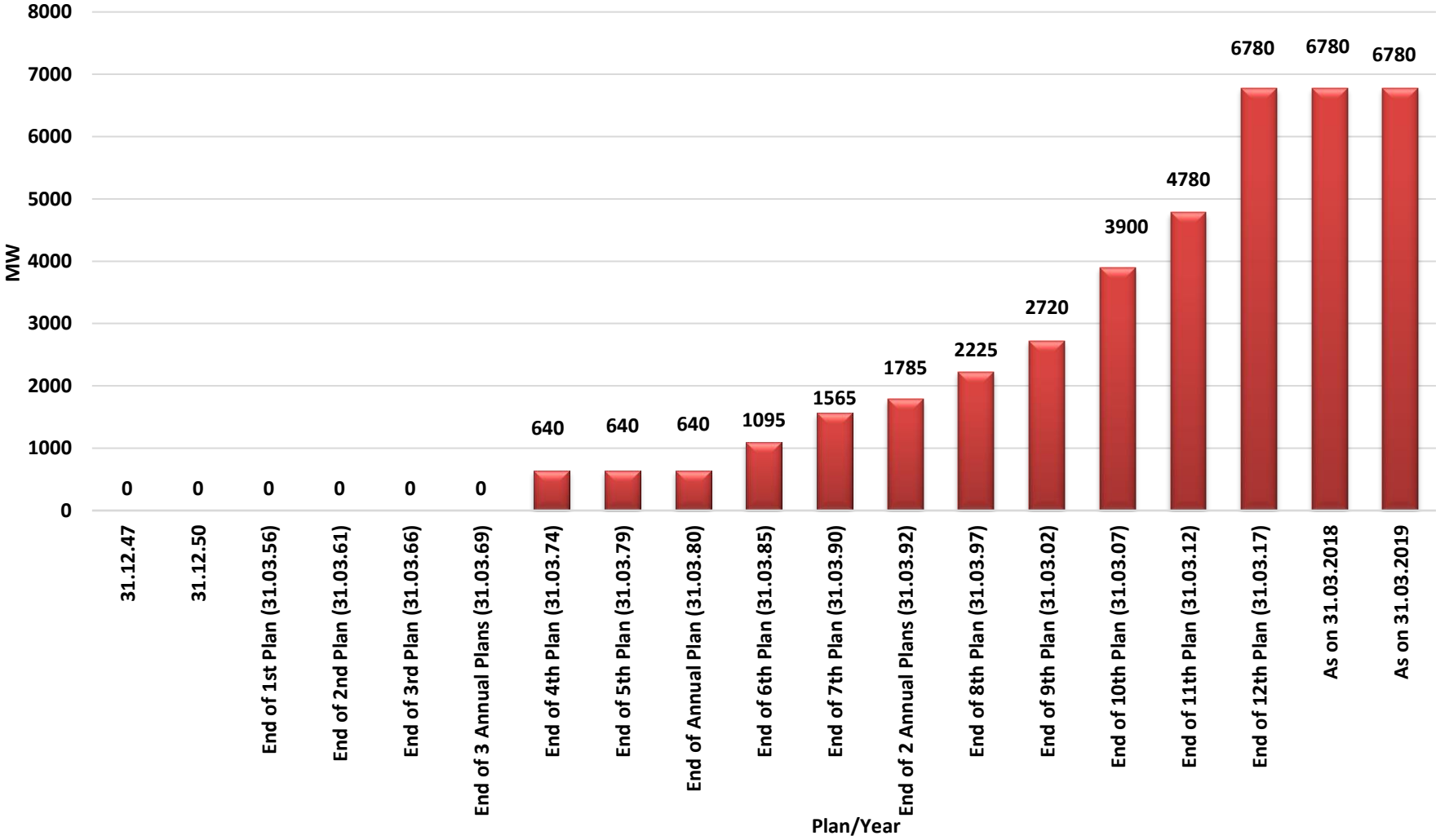
Plan wise Growth of Installed Capacity in India Diesel based Plants

Chart : 7C



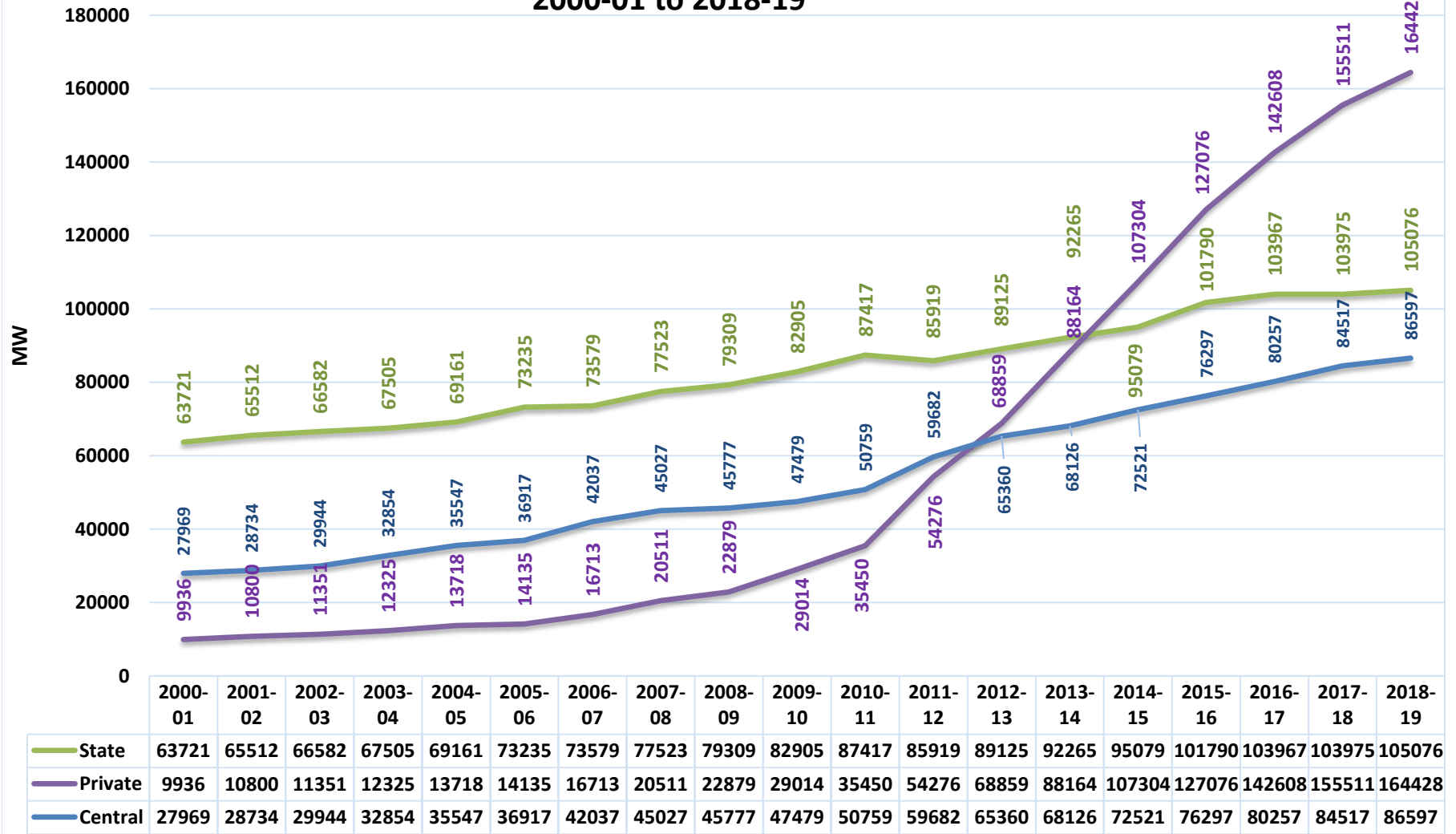
Plan wise Growth of Installed Capacity in India Nuclear based Plants

Chart : 8



Sector wise Growth of Installed Capacity (MW) 2000-01 to 2018-19

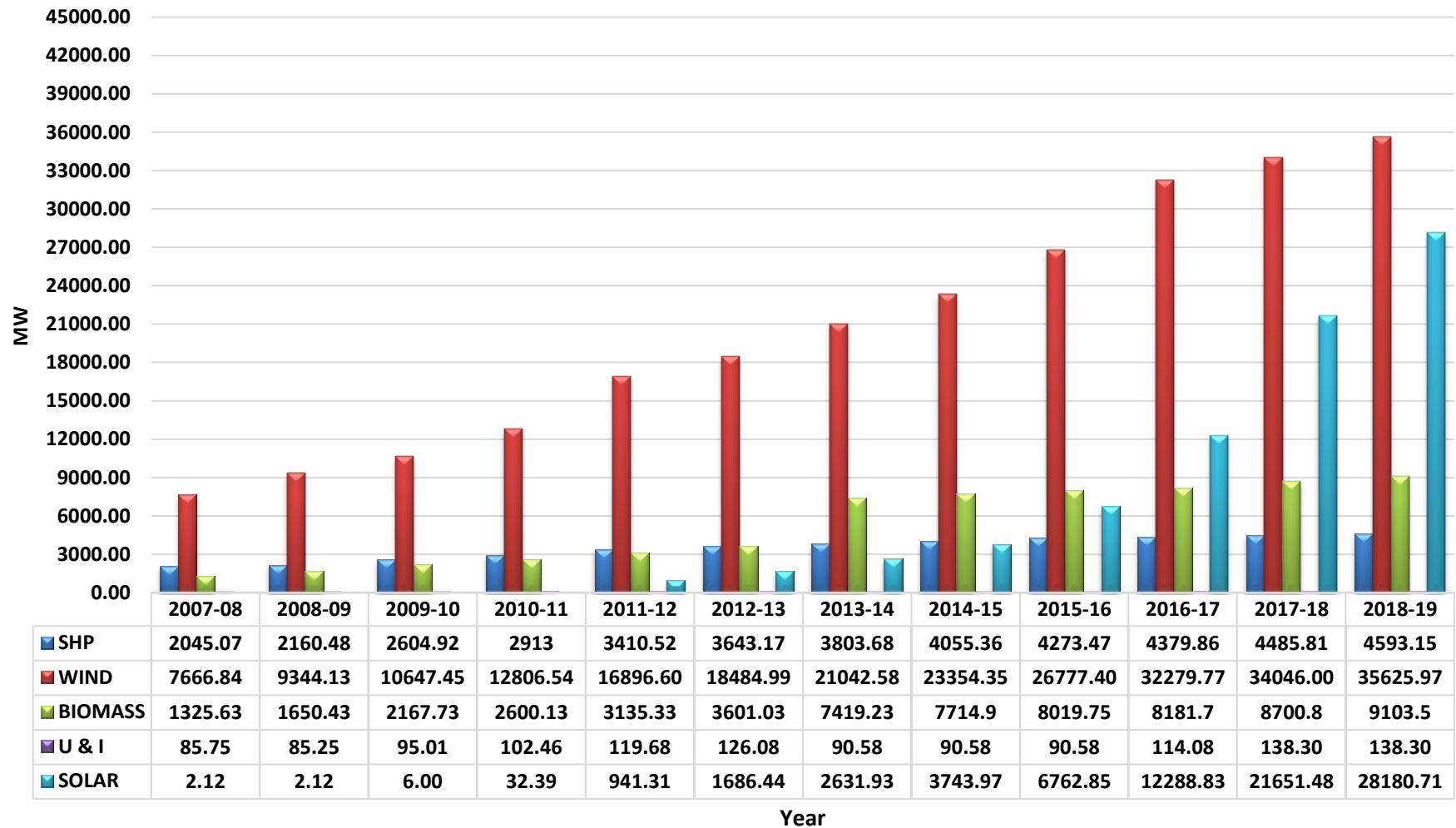
Chart : 8A



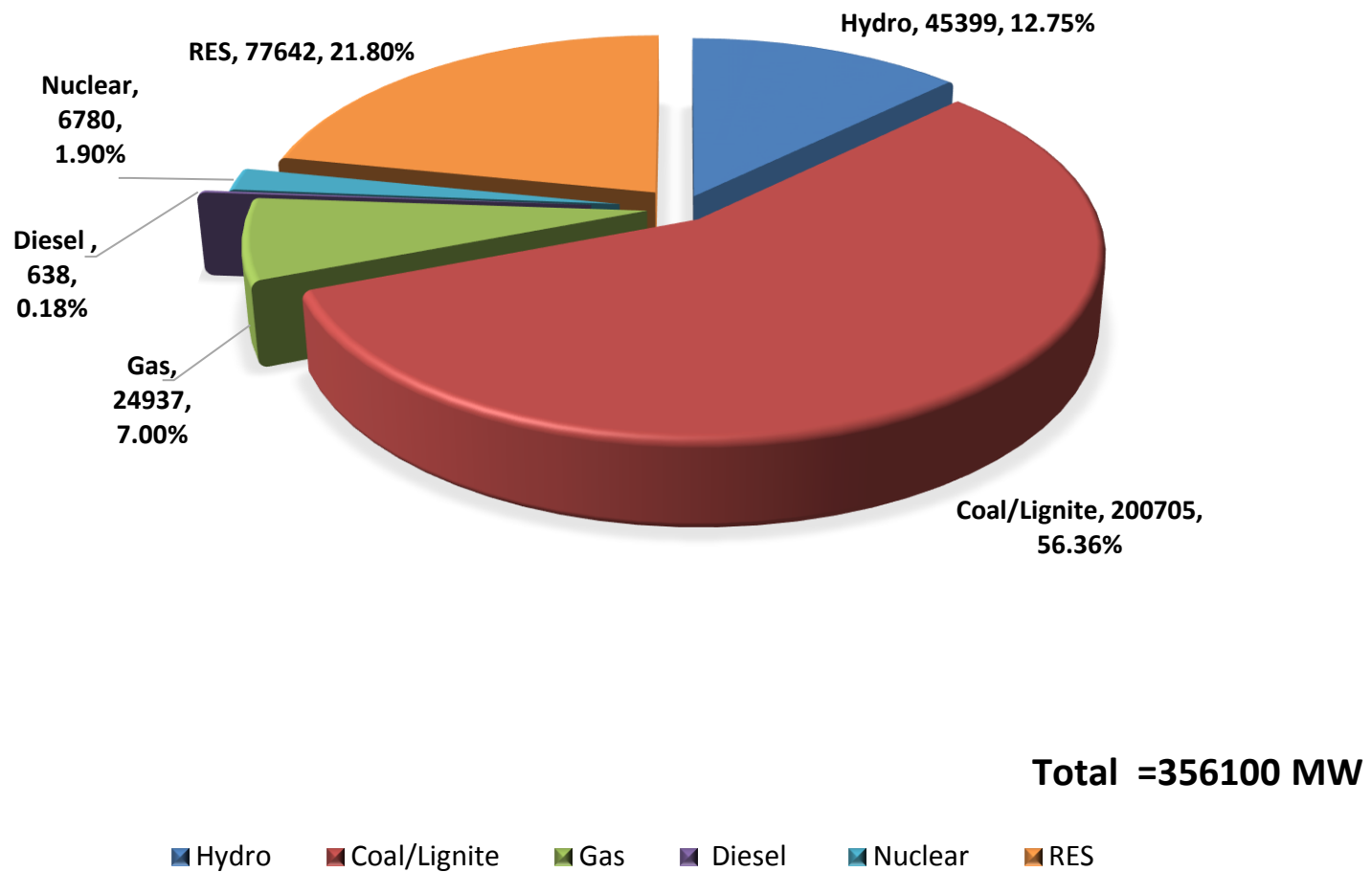
Note: DVC Installed Capacity is considered under Central Sector

Chart :8 B

**Mode wise/ Year wise Growth of Installed Capacity of R.E.S.
during last 12 years**

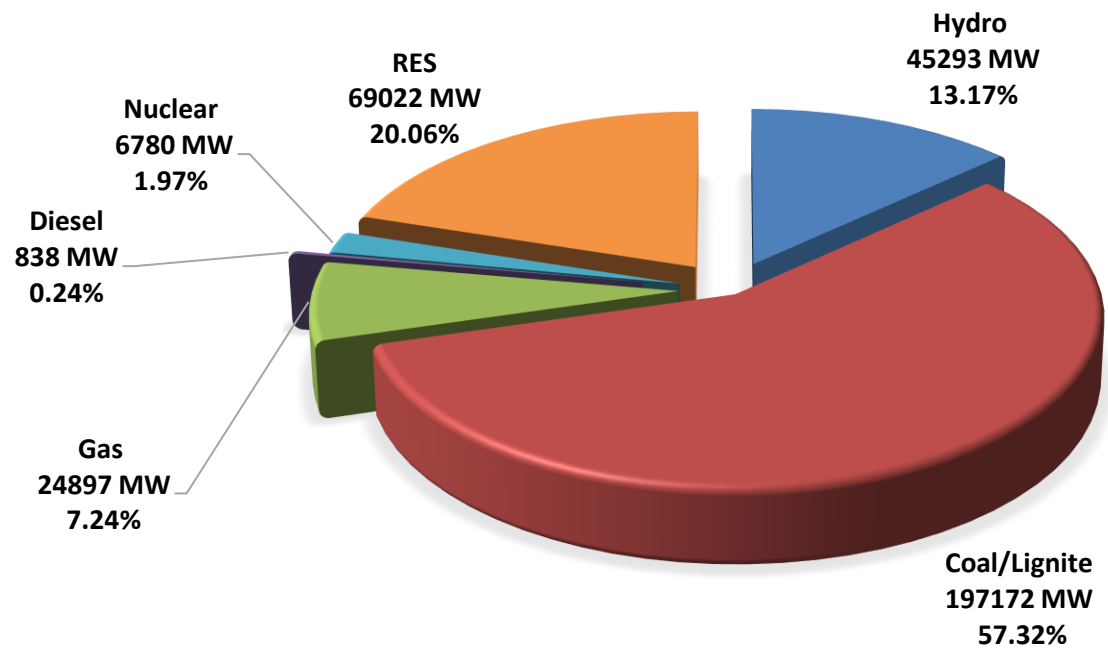


**ALL INDIA INSTALLED CAPACITY
(UTILITIES)
AS ON 31.03.2019**



Pie Chart : 9A

**ALL INDIA INSTALLED CAPACITY
(UTILITIES)
(AS ON 31.03.2018)**



Total =344002

■ Hydro ■ Coal/Lignite ■ Gas ■ Diesel ■ Nuclear ■ RES

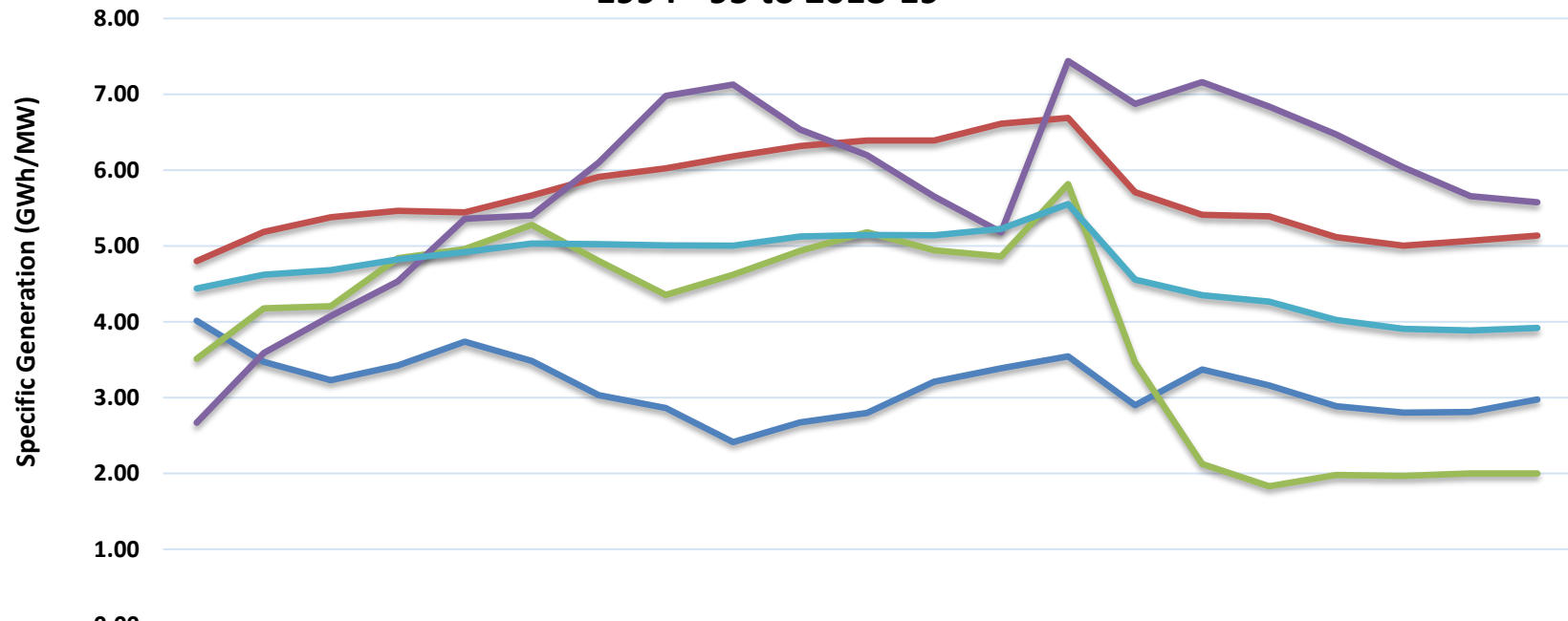
Table 3
Plan wise Growth of Gross Electricity Generation in India- Mode wise
(Utilities)

SL. No	During financial year ending with	Thermal				Hydro	Nuclear	RES	Total
		Coal/ Lignite	Gas	Diesel	Total				
1	1947	1733	0	144	1877	2195	0	0	4073
2	1950	2587	0	200	2787	2519	0	0	5106
3	1955-56 (End of the 1st Plan)	5367	0	233	5600	4295	0	0	9662
4	1960-61 (End of the 2nd Plan)	9100	0	368	9468	7837	0	0	16937
5	1965-66(End of the 3rd Plan)	17765	69	324	18158	15225	0	0	32990
6	1968-69(End of the 3 Annual Plans)	26711	124	194	27029	20723	0	0	47434
7	1973-74(End of the 4th Plan)	34853	343	125	35321	28972	2396	0	66689
8	1978-79(End of the 5th Plan)	52024	515	55	52594	47159	2770	0	102523
9	1979-80(End of the Annual Plan)	55720	500	53	56273	45478	2876	0	104627
10	1984-85 (End of the 6th Plan)	96957	1834	45	98836	53948	4075	0	156859
11	1989-90 (End of the 7th Plan)	172643	5962	85	178690	62116	4625	6	245438
12	1991-92(End of the 2 Annual Plans)	197163	11450	95	208708	72757	5525	38	287029
13	1996-97(End of the 8th Plan)	289378	26985	679	317042	68901	9071	876	395889
14	2001-02(End of the 9th Plan)	370884	47099	4317	422300	73579	19475	2085	517439
15	2006-07(End of the 10th Plan)	461794	64157	2539	528490	113502	18802	9860	670654
16	2011-12(End of the 11th Plan)	612497	93281	2649	708427	130511	32287	51226	922451
17	2016-17(End of the 12th Plan)	944022	49094	401	993516	122378	37916	81548	1235358
18	2017-18	986591	50208	348	1037146	126123	38346	101839	1303455
19	2018-19*	1022265	49834	212	1072311	134894	37813	126800	1371817

Note: * Provisional

1. RES Generation upto 2013-2014 as per normative generation.
2. RES Generation during 2014-2015 is as per actual generation received from utilities.

Specific Generation by All India Power Stations- Mode wise (Utilities) 1994 - 95 to 2018-19

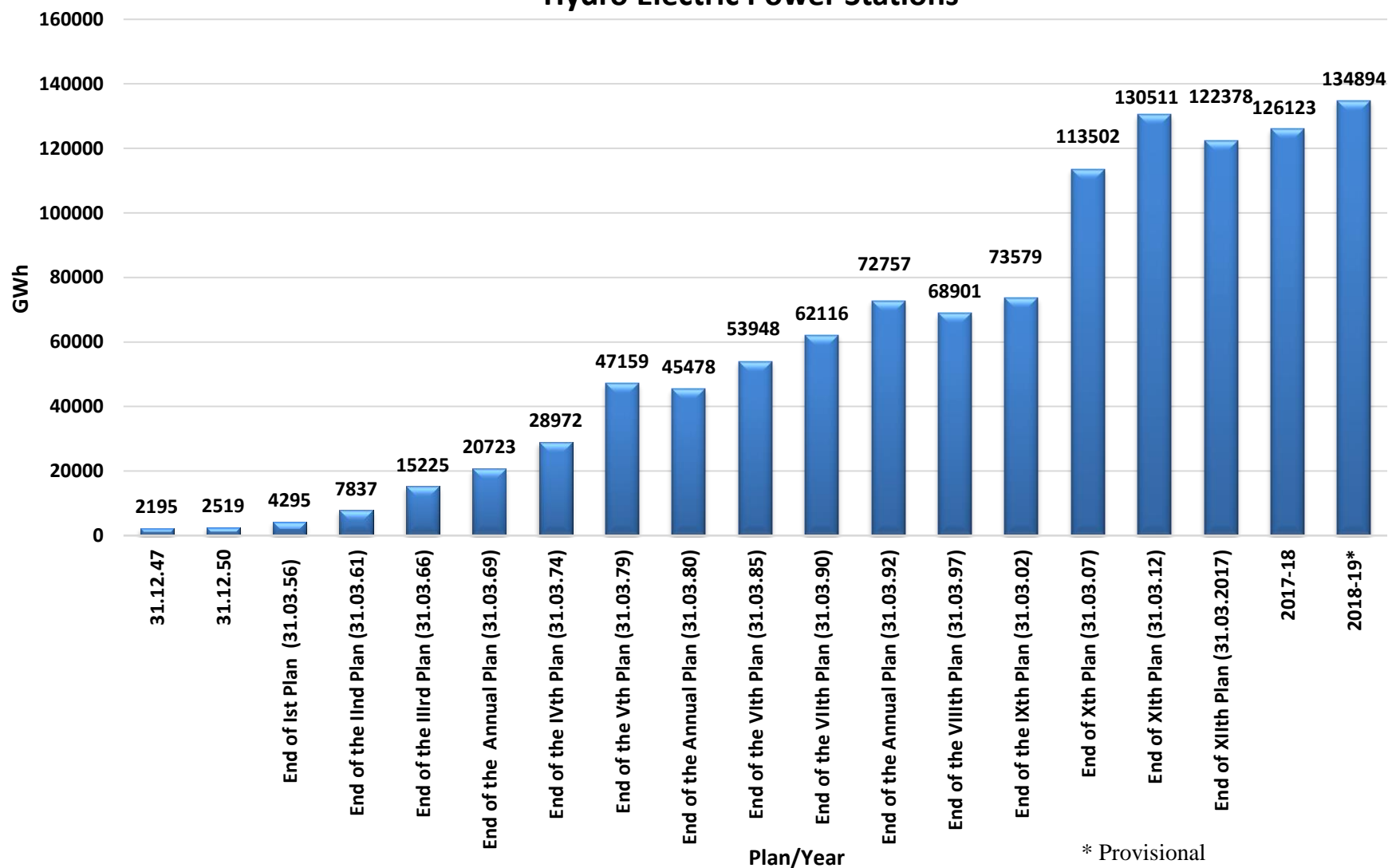


	1994 -95	1995 -96	1996 -97	1997 -98	1998 -99	1999 -00	2000 -01	2001 -02	2002 -03	2003 -04	2004 -05	2005 -06	2006 -07	2011 -12	2012 -13	2013 -14	2014 -15	2015 -16	2016 -17	2017 -18	2018 -19
Hydro	4.01	3.47	3.23	3.42	3.74	3.49	3.03	2.86	2.41	2.67	2.80	3.21	3.39	3.54	2.90	3.37	3.16	2.89	2.80	2.81	2.97
Coal/Lignite	4.80	5.18	5.38	5.46	5.44	5.66	5.91	6.02	6.18	6.32	6.39	6.39	6.61	6.69	5.71	5.41	5.39	5.12	5.00	5.07	5.14
Gas/Liquid	3.51	4.18	4.21	4.84	4.96	5.28	4.80	4.36	4.62	4.94	5.18	4.94	4.86	5.82	3.46	2.13	1.83	1.98	1.97	2.00	2.00
Nuclear	2.67	3.59	4.08	4.53	5.36	5.40	6.10	6.98	7.13	6.54	6.20	5.65	5.18	7.44	6.88	7.16	6.84	6.47	6.04	5.66	5.58
All Types	4.44	4.62	4.68	4.82	4.92	5.03	5.02	5.01	5.00	5.12	5.14	5.14	5.23	5.55	4.56	4.35	4.27	4.03	3.91	3.89	3.92

Years

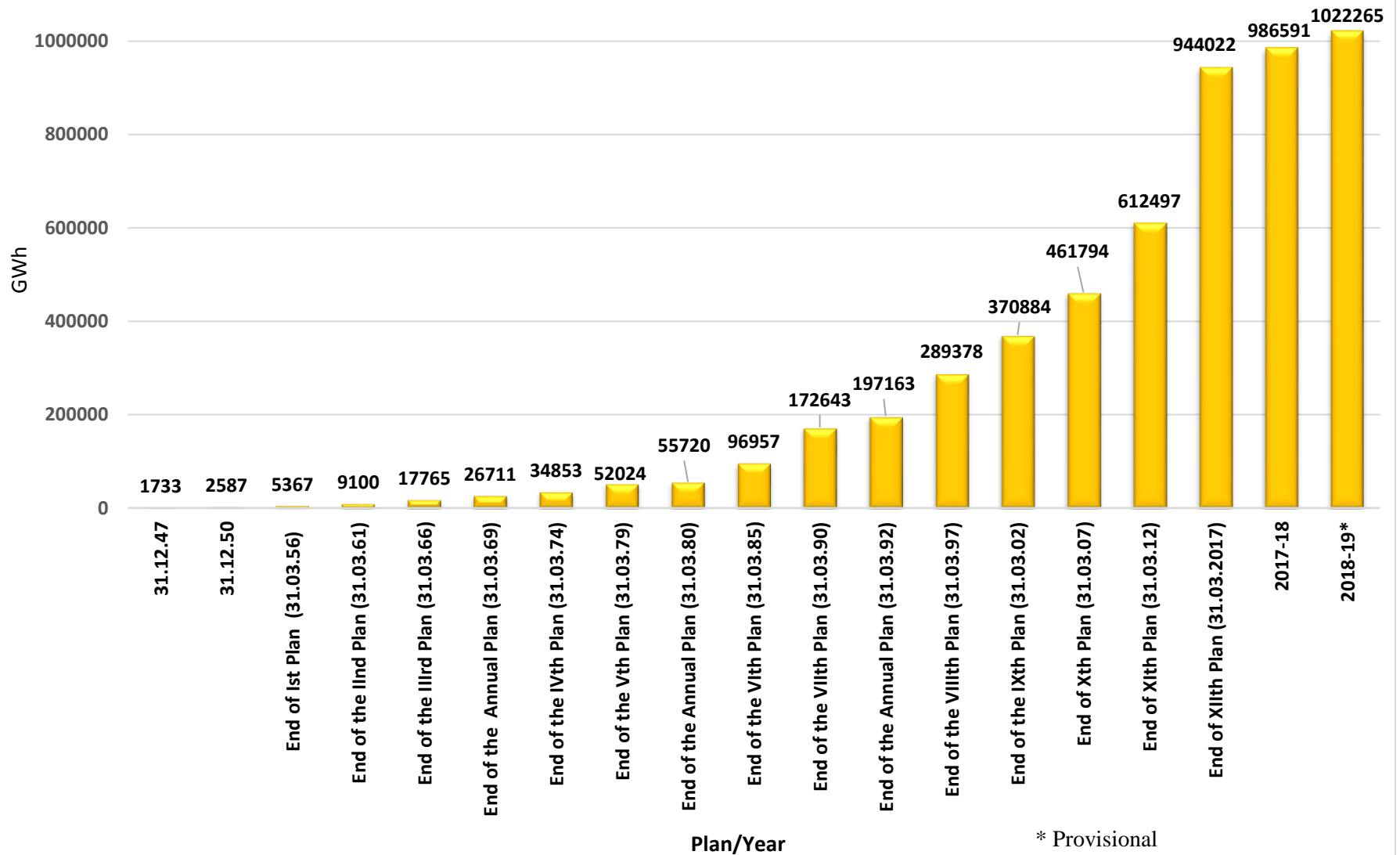
Chart : 11

Plan wise Growth of Electricity Generation in India Hydro Electric Power Stations



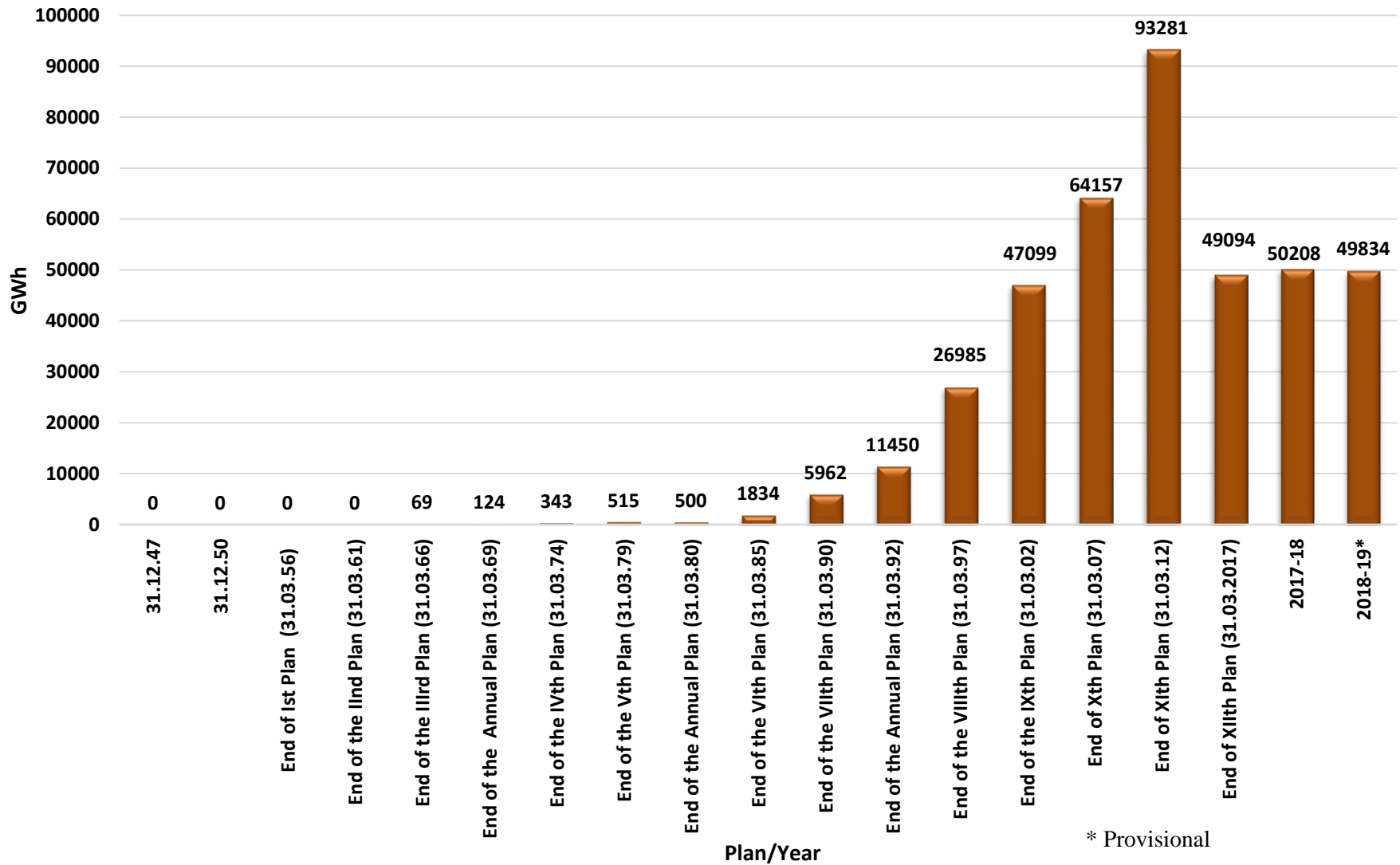
Plan wise Growth of Electricity Generation in India Coal / Lignite based Power Plants

Chart : 12A



Plan wise Growth of Electricity Generation in India Gas/ Liquid Fuel based Power Plants

Chart : 12B



Plan wise Growth of Electricity Generation in India Diesel based Power Plants

Chart : 12C

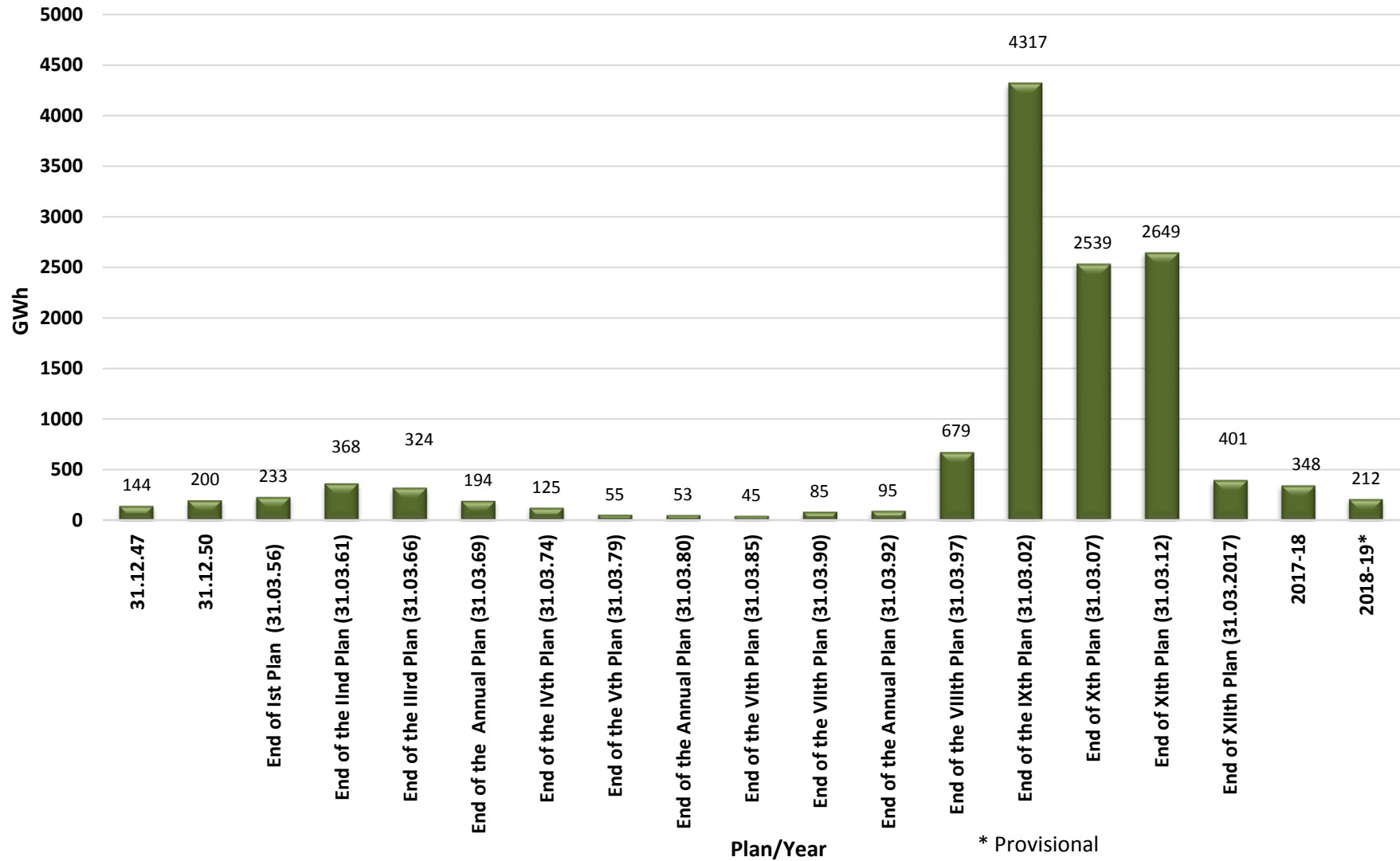


Chart : 13

All India PLF (%) of Thermal Power Stations (Coal and Lignite based)

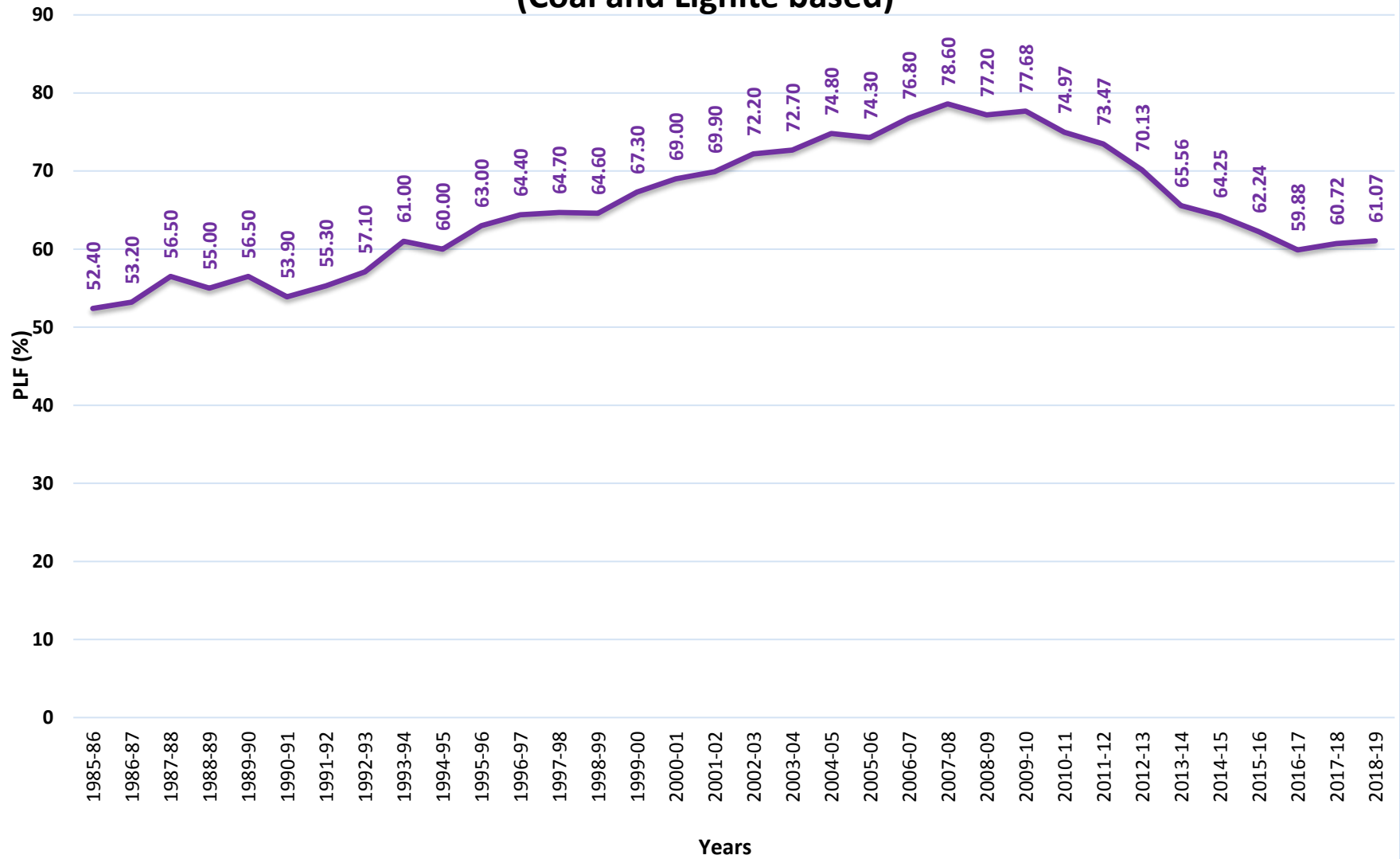
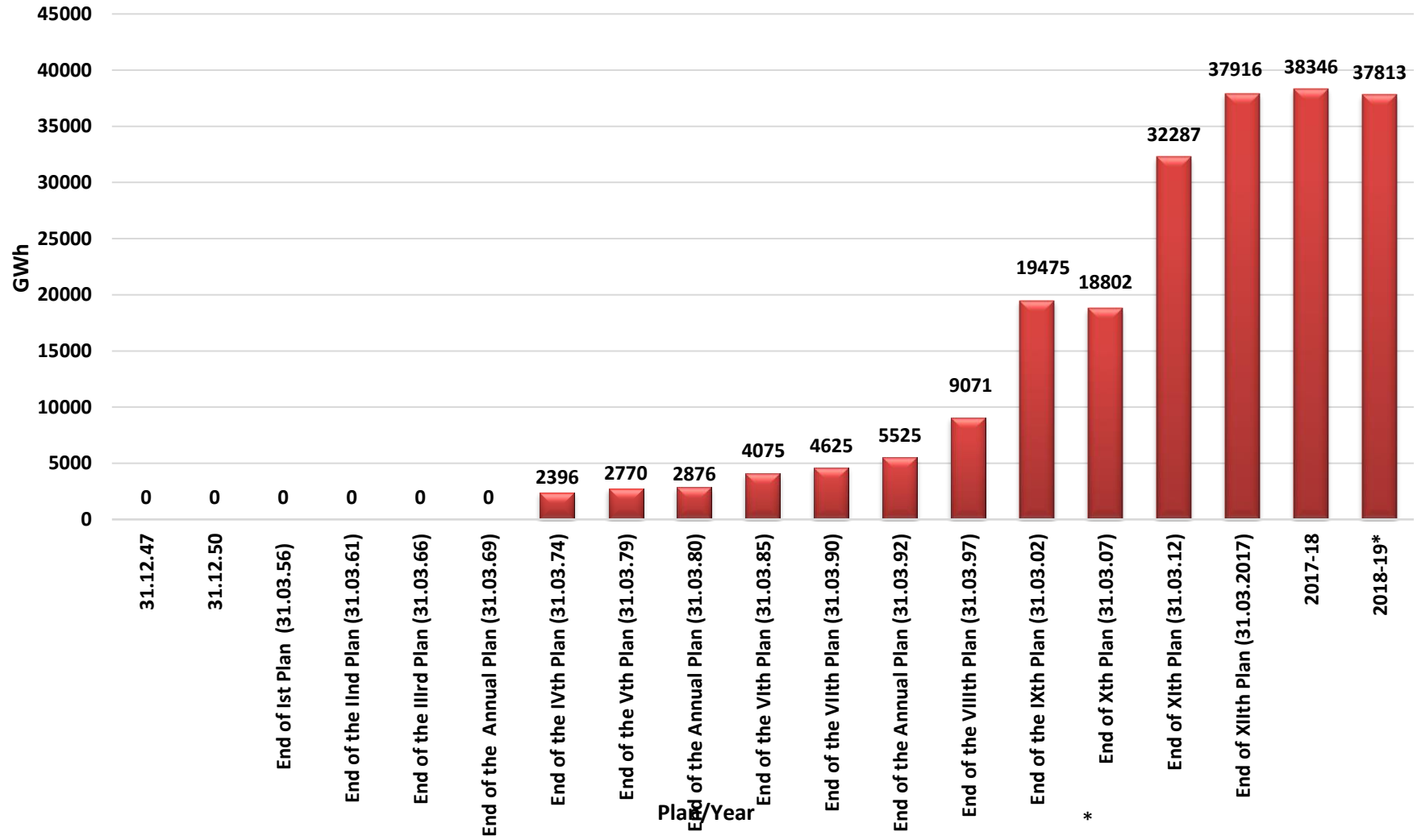


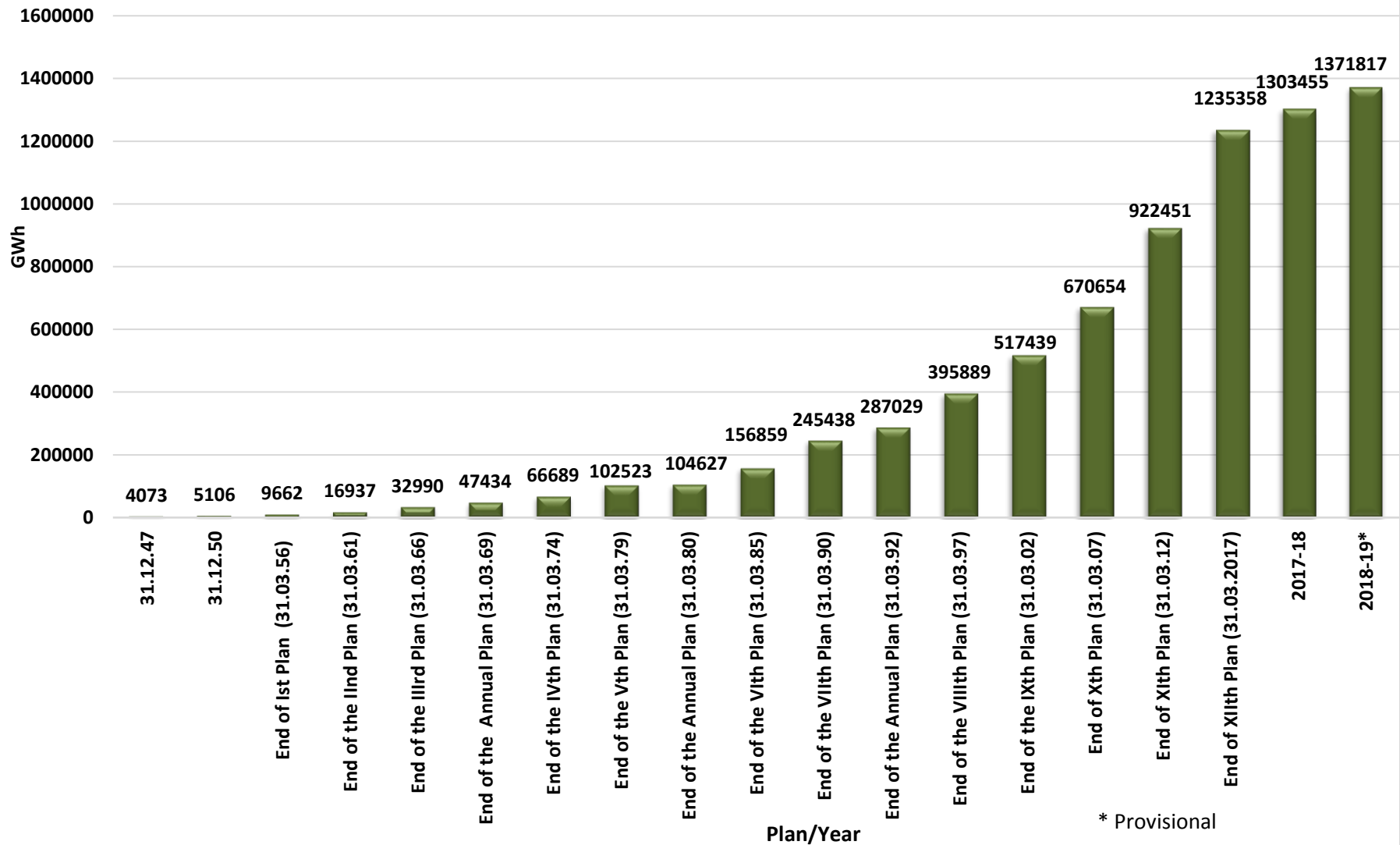
Chart : 14

Plan wise Growth of Electricity Generation in India Nuclear Power Plants



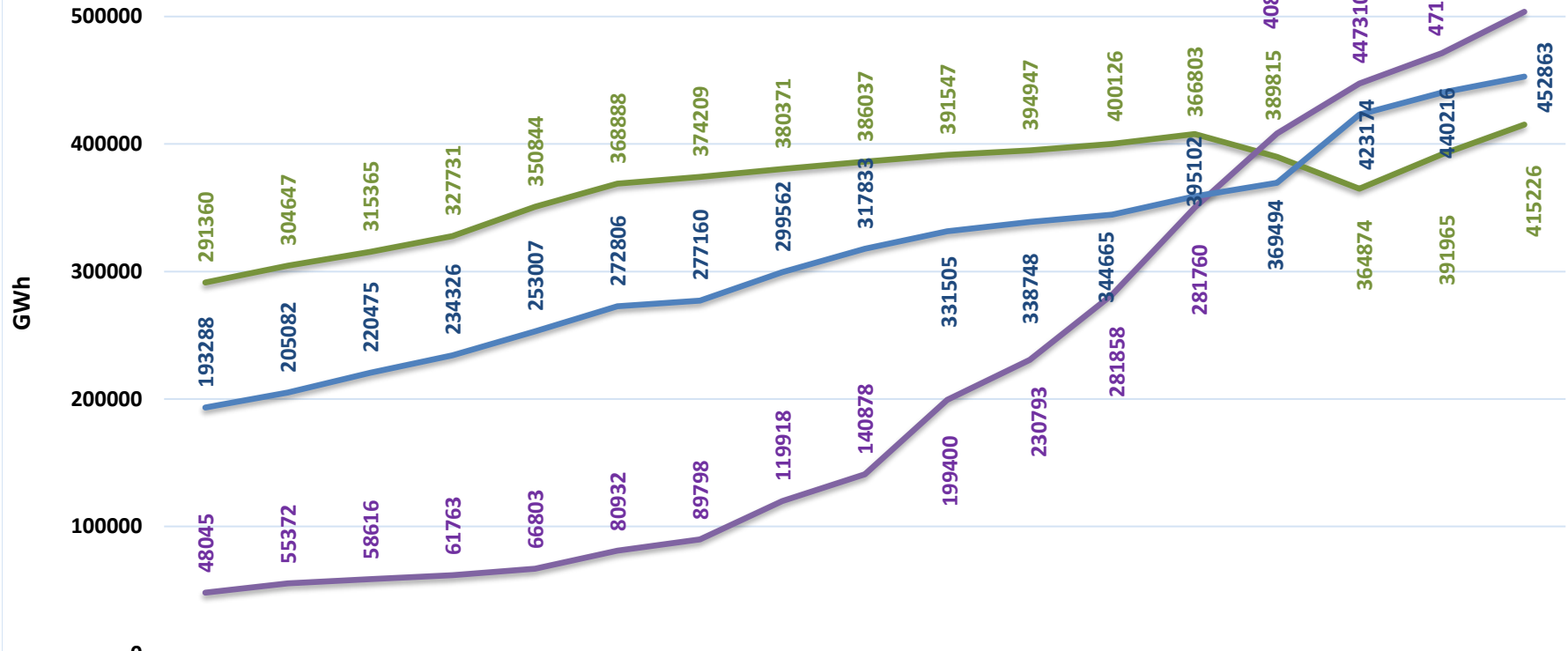
Plan wise Growth of All India Electricity Generation (Utilities)

Chart : 15



Sector wise Growth of Energy Generation (GWh) 2002-03 to 2018-19

Chart : 15A

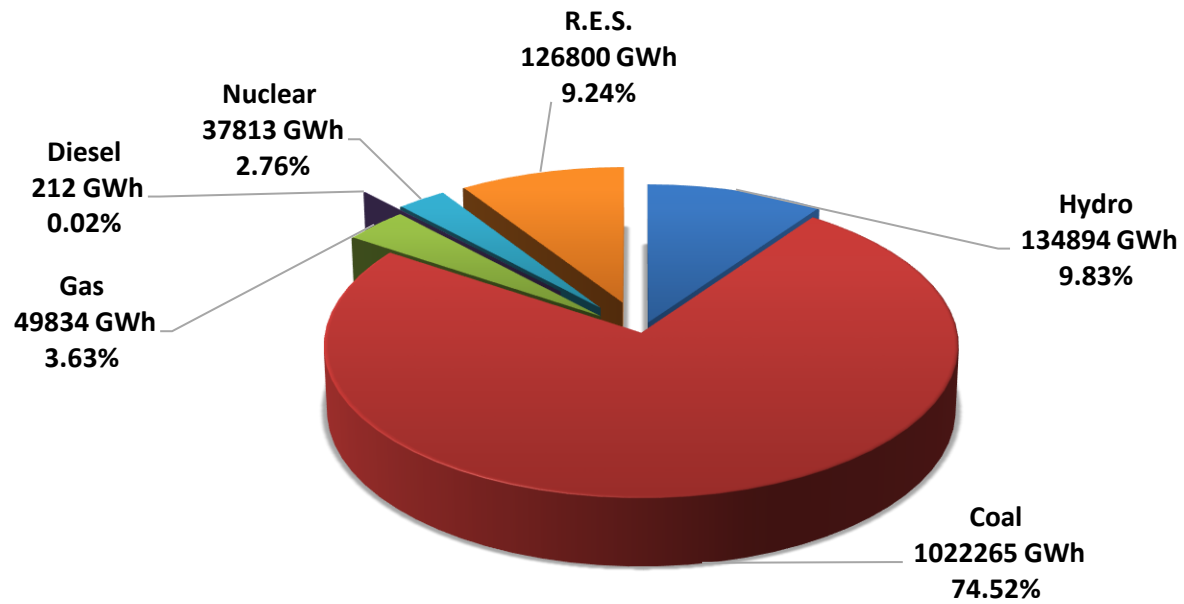


	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
State	291360	304647	315365	327731	350844	368888	374209	380371	386037	391547	394947	400126	407817	389815	364874	391965	415226
Private	48045	55372	58616	61763	66803	80932	89798	119918	140878	199400	230793	281858	350074	408275	447310	471274	503728
Central	193288	205082	220475	234326	253007	272806	277160	299562	317833	331505	338748	344665	358959	369494	423174	440216	452863

Note: DVC Generation is considered under Central Sector

Year

Gross Electricity Generation in India Modewise -Utilities 2018-19*

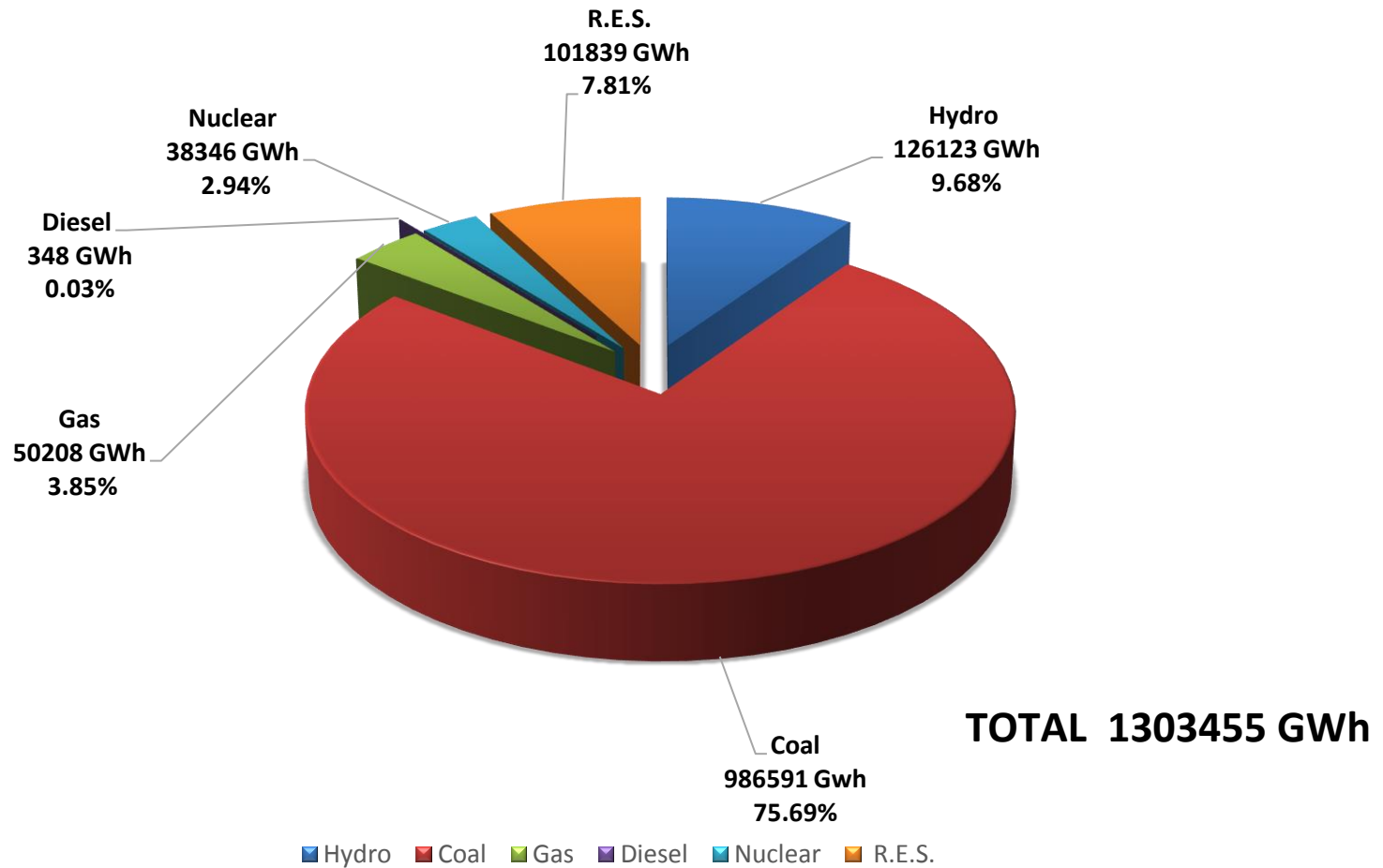


TOTAL 1371817 GWh

* Provisional

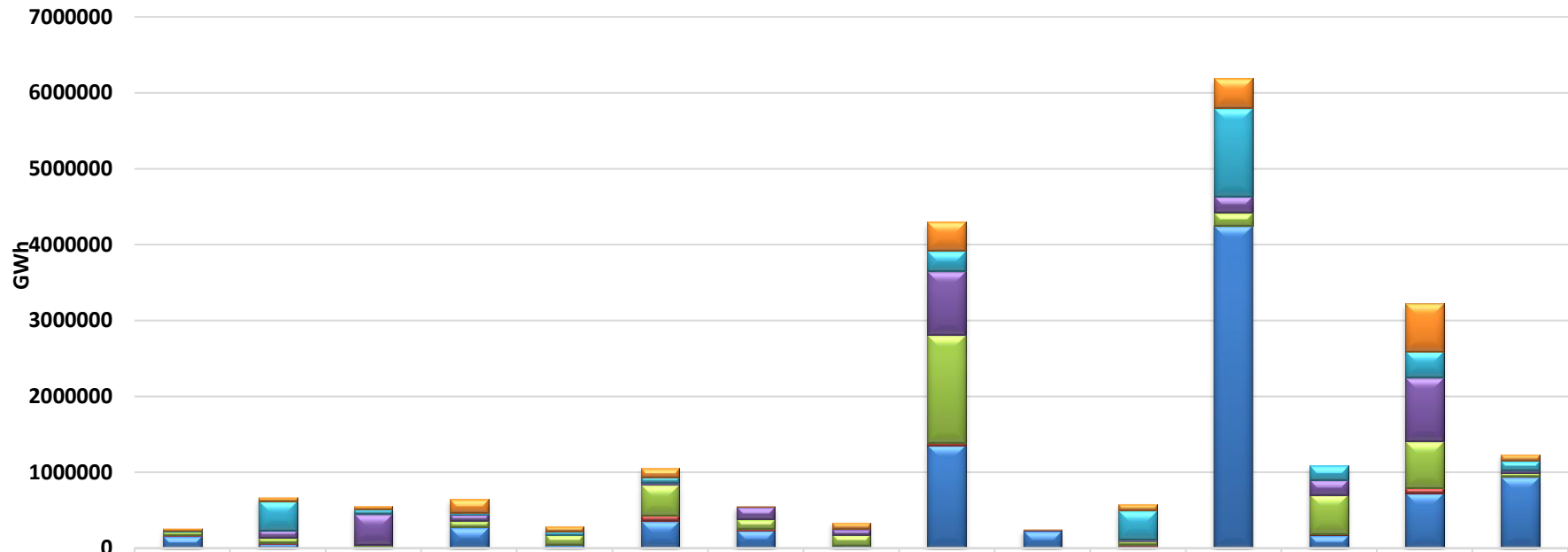
■ Hydro ■ Coal ■ Gas ■ Diesel ■ Nuclear ■ R.E.S.

Gross Electricity Generation in India Mode wise-Utilities 2017-18



Gross Electricity Generation in various Countries Mode- Wise in 2016

Chart : 17

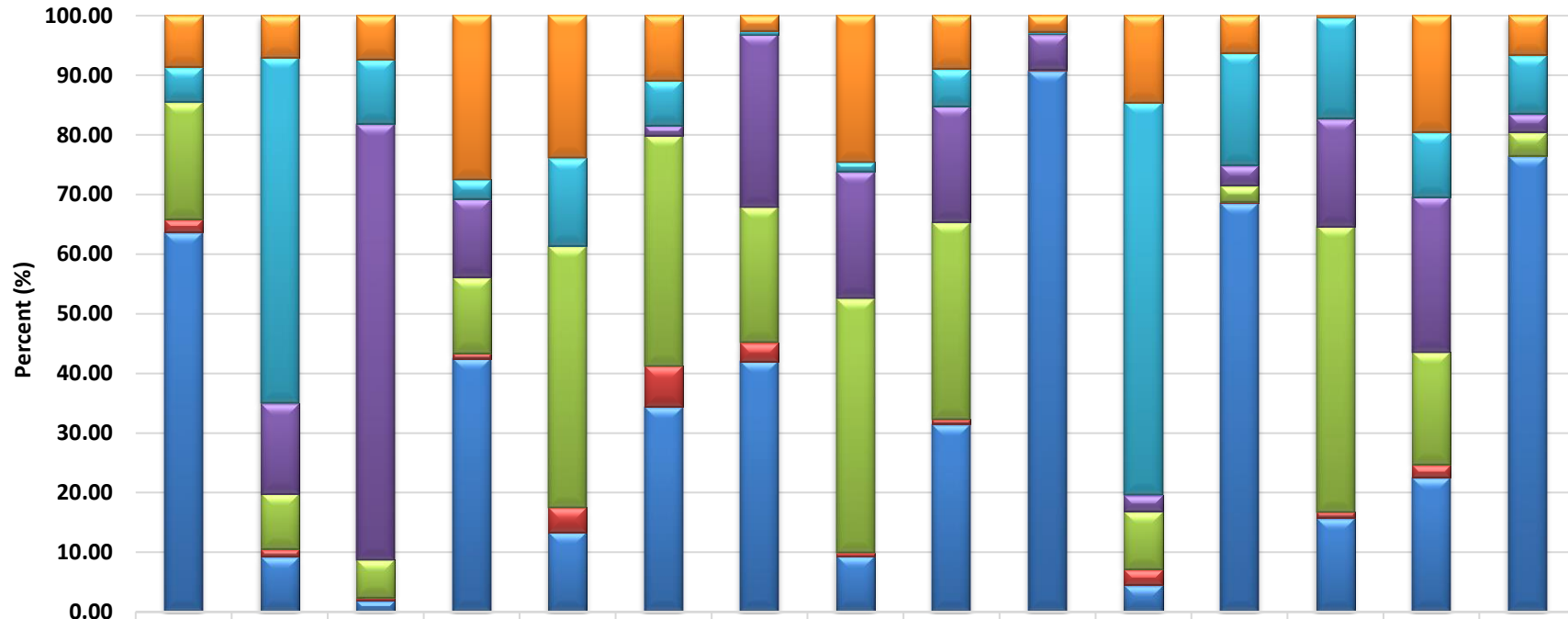


	Australia	Canada	France	Germany	Italy	Japan	Korea	United Kingdom	United States	South Africa	Brazil	People's Republic of China	Russian Federation	European Union - 28	India
Others	22130	46729	40179	177014	68829	114425	14817	82637	383114	7060	84215	388605	3520	630985	81548
Hydro	15074	387097	60043	20547	42432	78902	2847	5395	269670	700	380911	1162574	184612	350121	122378
Nuclear	0	101143	403195	84634	0	18060	161995	71726	839918	15026	15864	213287	196614	839684	37916
Gas	50410	61984	34864	82294	126148	406498	126559	143362	1418100	0	56484	170488	521788	610795	49094
Oil	5575	8242	2537	5846	12131	72780	17757	1839	34759	183	15279	10367	10960	69129	401
Coal	163130	62132	10520	273196	38403	361130	234699	31481	1354034	226484	25745	4241786	171451	726162	944022

Source : - International Energy Agency (IEA) except India

Chart : 18

Mode wise % Share in Electricity Generation in various Countries in 2016



	Australia	Canada	France	Germany	Italy	Japan	Korea	United Kingdom	United States	South Africa	Brazil	People's Republic of China	Russian Federation	European Union - 28	India
Others	8.63	7.00	7.29	27.51	23.90	10.88	2.65	24.56	8.91	2.83	14.56	6.28	0.32	19.55	6.60
Hydro	5.88	58.01	10.89	3.19	14.74	7.50	0.51	1.60	6.27	0.28	65.84	18.79	16.95	10.85	9.91
Nuclear	0.00	15.16	73.13	13.15	0.00	1.72	29.00	21.32	19.53	6.02	2.74	3.45	18.06	26.02	3.07
Gas	19.67	9.29	6.32	12.79	43.81	38.65	22.65	42.61	32.98	0.00	9.76	2.76	47.92	18.93	3.97
Oil	2.18	1.24	0.46	0.91	4.21	6.92	3.18	0.55	0.81	0.07	2.64	0.17	1.01	2.14	0.03
Coal	63.64	9.31	1.91	42.45	13.34	34.33	42.01	9.36	31.49	90.79	4.45	68.56	15.74	22.50	76.42

Source : - International Energy Agency (IEA) except India.

Table: 4
Plan wise / Category wise Growth of Electricity Consumption in India
(Utilities & Non- Utilities)

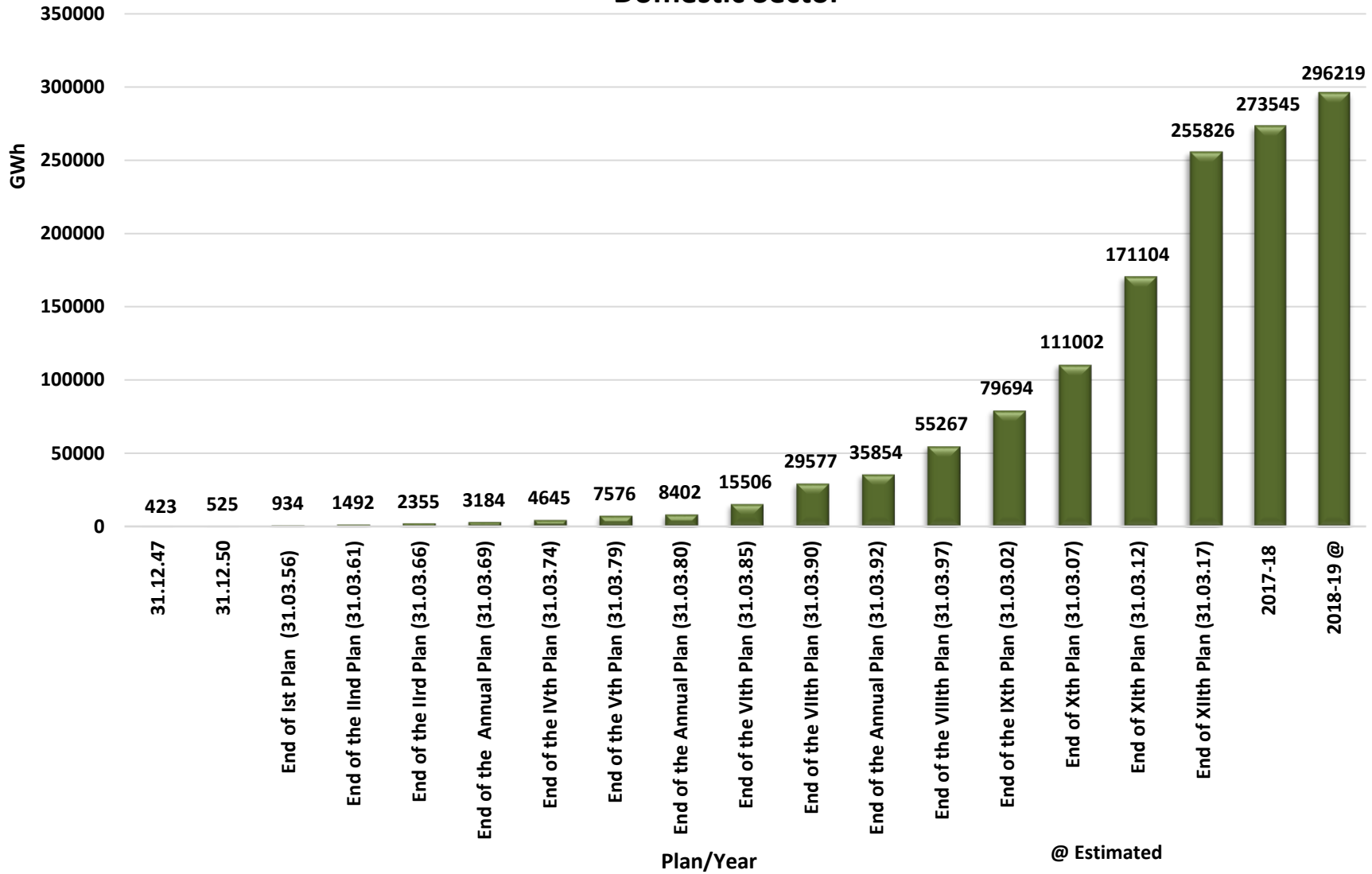
(GWh)

Sl. No.	During financial year ending with	Domestic	% to Total	Commercial	% to Total	Industrial	% to Total	Traction	% to Total	Agriculture	% to Total	Misc.	% to Total	Total
1	1947	423	10.11	178	4.26	2960	70.78	277	6.62	125	2.99	219	5.24	4182
2	1950	525	9.36	309	5.51	4057	72.32	308	5.49	162	2.89	249	4.44	5610
3	1955-56 (End of the 1st Plan)	934	9.20	546	5.38	7514	74.03	405	3.99	316	3.11	435	4.29	10150
4	1960-61 (End of the 2nd Plan)	1492	8.88	848	5.05	12547	74.67	454	2.70	833	4.96	630	3.75	16804
5	1965-66(End of the 3rd Plan)	2355	7.73	1650	5.42	22596	74.19	1057	3.47	1892	6.21	905	2.97	30455
6	1968-69(End of the 3 Annual Plans)	3184	7.69	2126	5.14	29931	72.31	1247	3.01	3465	8.37	1439	3.48	41392
7	1973-74(End of the 4th Plan)	4645	8.36	2988	5.38	37791	68.02	1531	2.76	6310	11.36	2292	4.13	55557
8	1978-79(End of the 5th Plan)	7576	9.02	4330	5.15	54440	64.81	2186	2.60	12028	14.32	3445	4.10	84005
9	1979-80(End of the 2 Annual Plans)	8402	9.85	4657	5.46	53206	62.35	2301	2.70	13452	15.76	3316	3.89	85334
10	1984-85 (End of the 6th Plan)	15506	12.45	6937	5.57	73520	59.02	2880	2.31	20961	16.83	4765	3.83	124569
11	1989-90 (End of the 7th Plan)	29577	15.16	9548	4.89	100373	51.45	4070	2.09	44056	22.58	7474	3.83	195098
12	1991-92(End of the 2 Annual Plans)	35854	15.51	12032	5.20	110844	47.94	4520	1.96	58557	25.33	9394	4.06	231201
13	1996-97(End of the 8th Plan)	55267	17.53	17519	5.56	139253	44.17	6594	2.09	84019	26.65	12642	4.01	315294
14	2001-02(End of the 9th Plan)	79694	21.27	24139	6.44	159507	42.57	8106	2.16	81673	21.80	21551	5.75	374670
15	2006-07(End of 10th Plan)	111002	21.12	40220	7.65	241216	45.89	10800	2.05	99023	18.84	23411	4.45	525672
16	2011-12 (End of 11th Plan)	171104	21.79	65381	8.33	352291	44.87	14206	1.81	140960	17.95	41252	5.25	785194
17	2016-17 (End of 12th Plan)	255826	24.11	89825	8.46	440206	41.48	15683	1.48	191151	18.01	68493	6.45	1061183
18	2017-18	273545	24.35	93755	8.35	468613	41.71	17433	1.55	199247	17.74	70834	6.31	1123427
19	2018-19 @	296219	24.76	98622	8.24	492361	41.16	18188	1.52	211609	17.69	79309	6.63	1196309

(@) Estimated

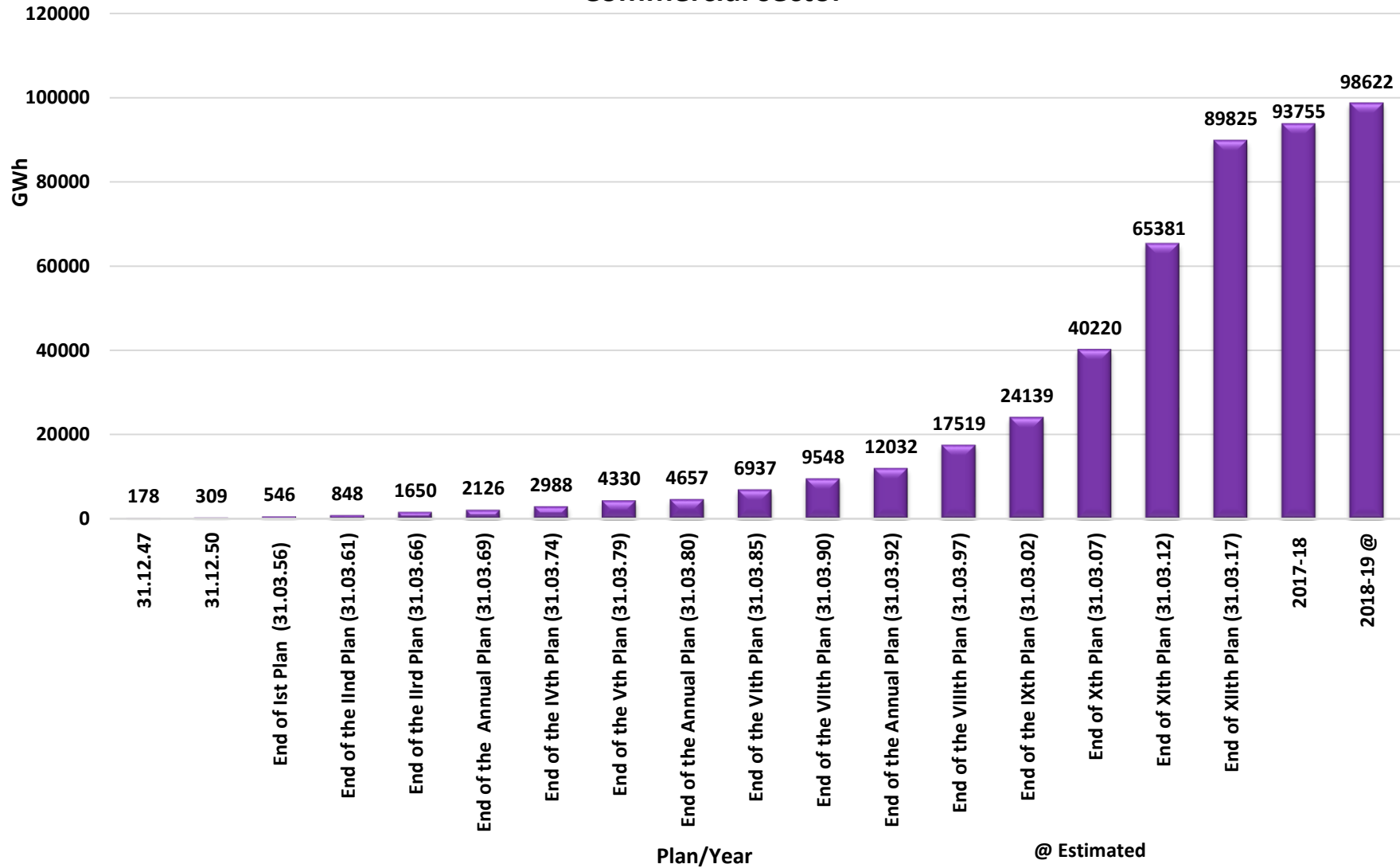
Plan wise Growth of Electricity Consumption in India Domestic Sector

Chart : 19



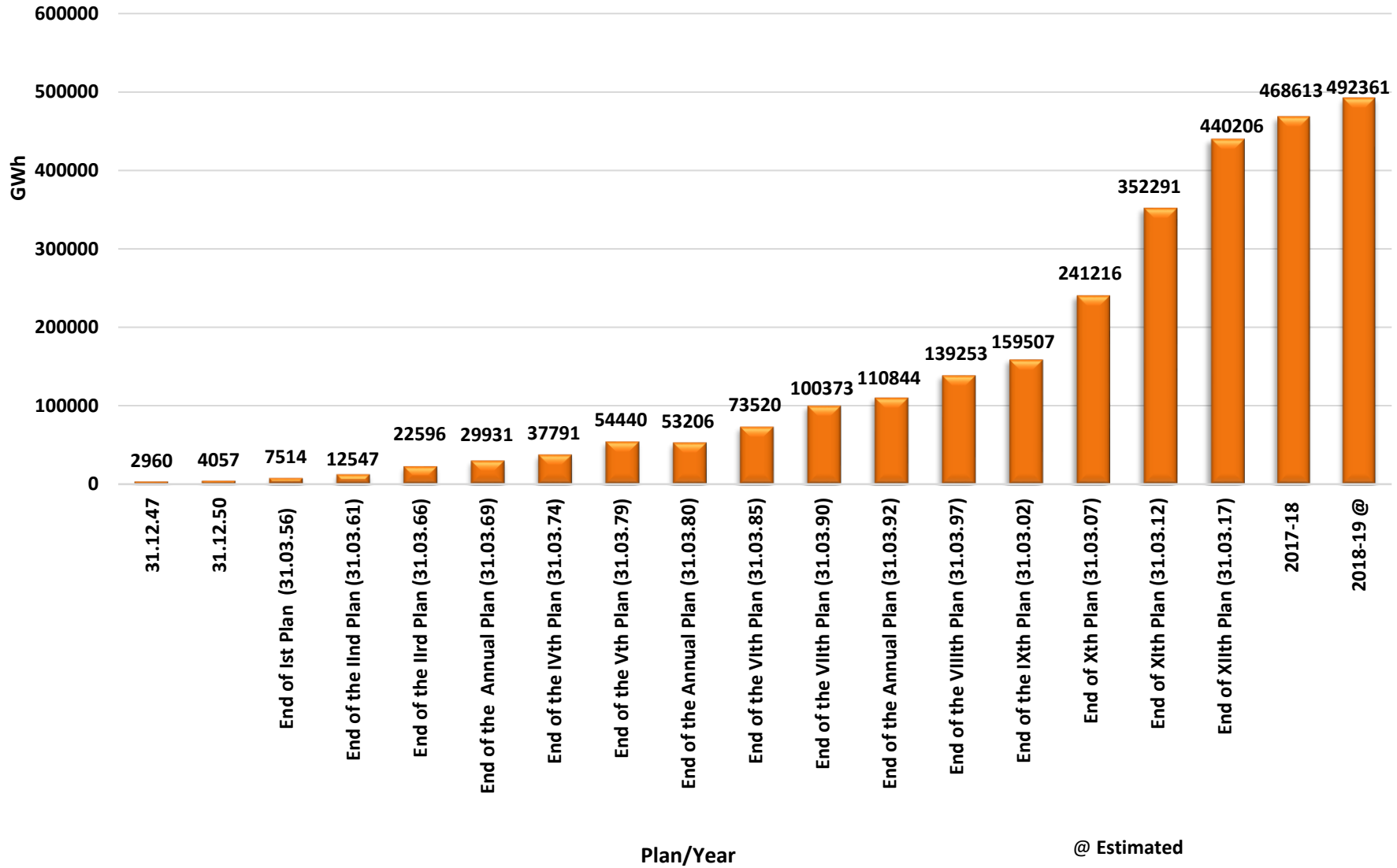
Plan wise Growth of Electricity Consumption in India Commercial sector

Chart : 20



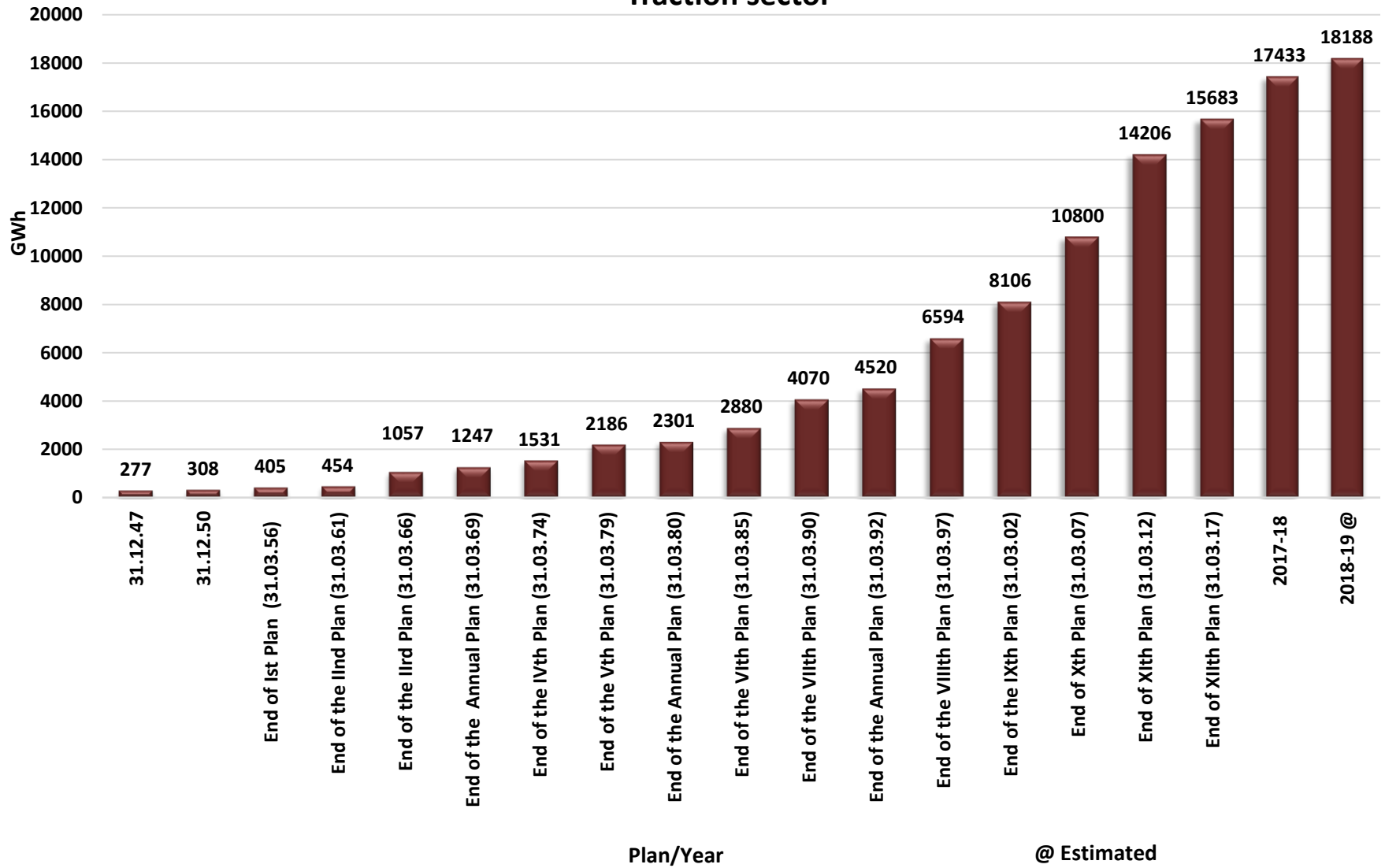
Plan wise Growth of Electricity Consumption in India Industrial sector

Chart : 21



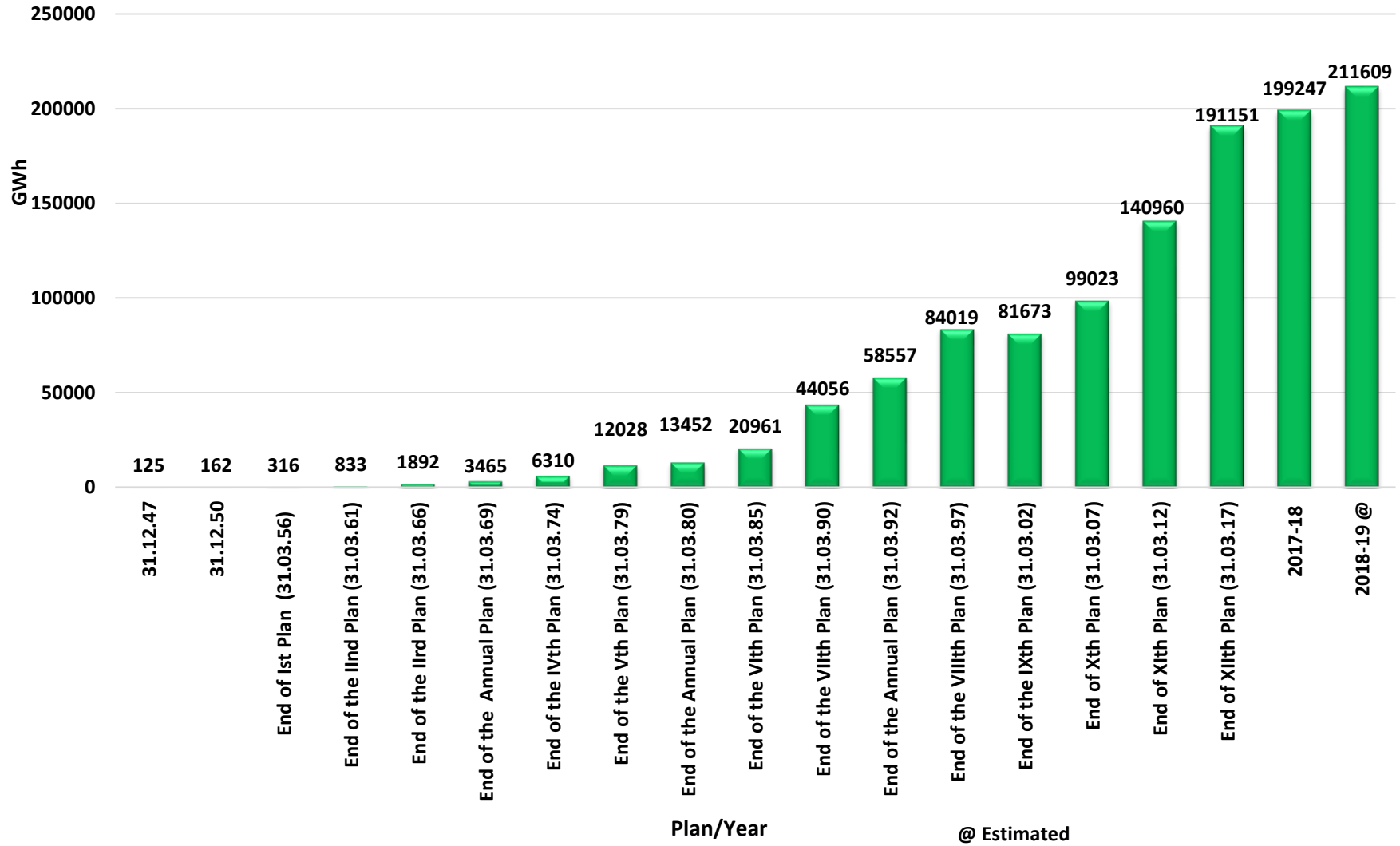
Plan wise Growth of Electricity Consumption in India Traction sector

Chart : 22



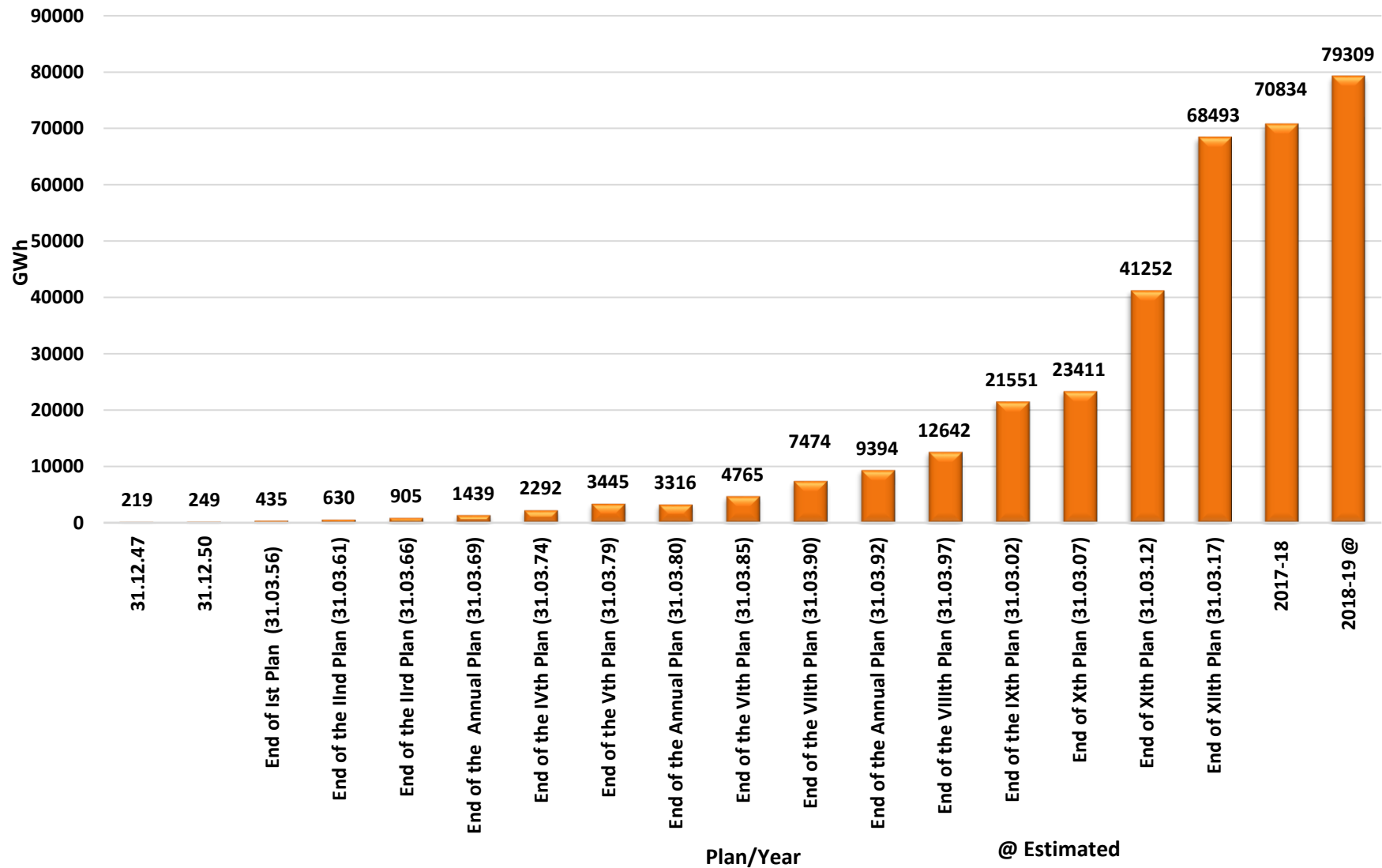
Plan wise Growth of Electricity Consumption in India Agriculture scetor

Chart : 23



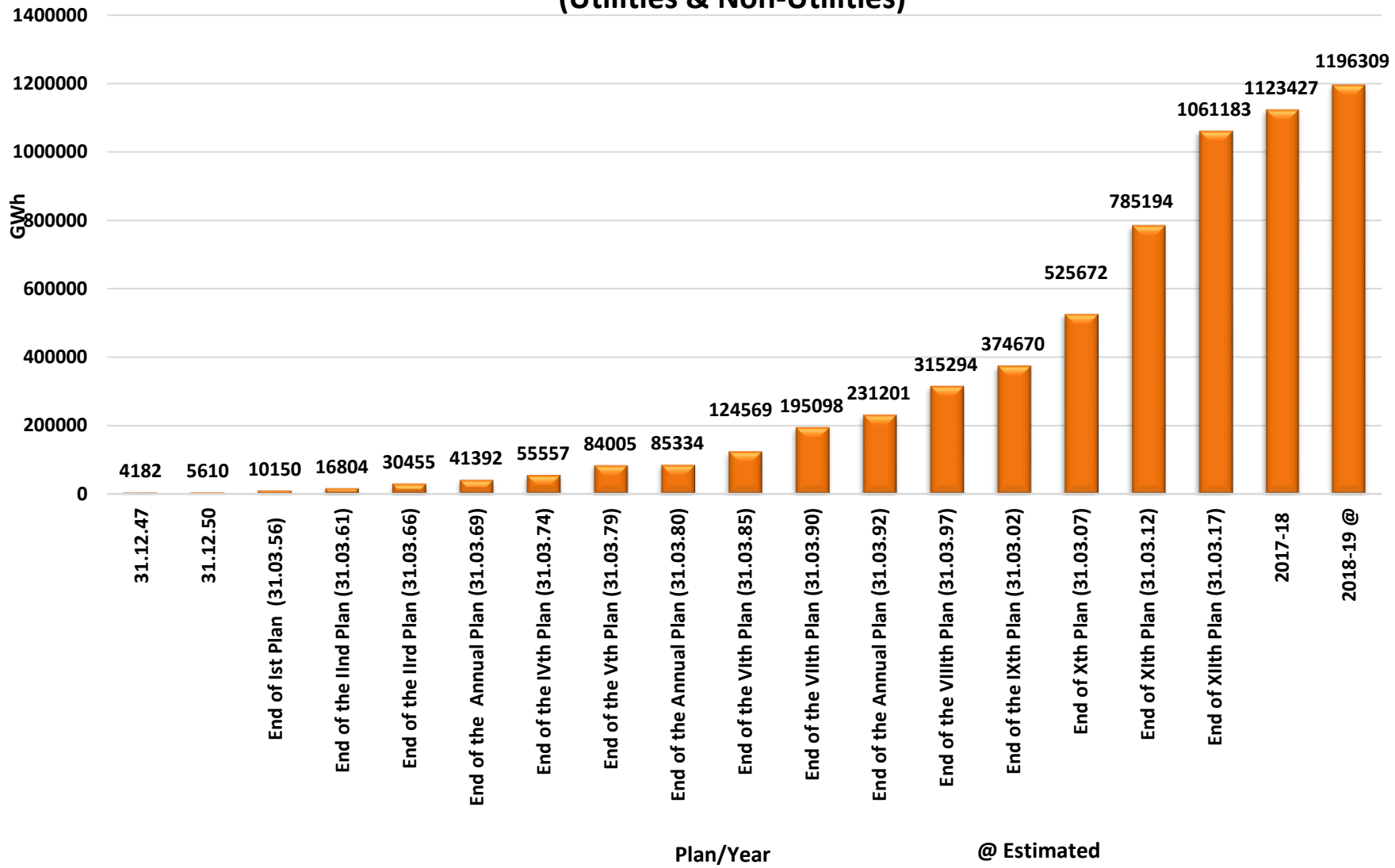
Plan wise Growth of Electricity Consumption in India Miscellaneous sector

Chart : 24



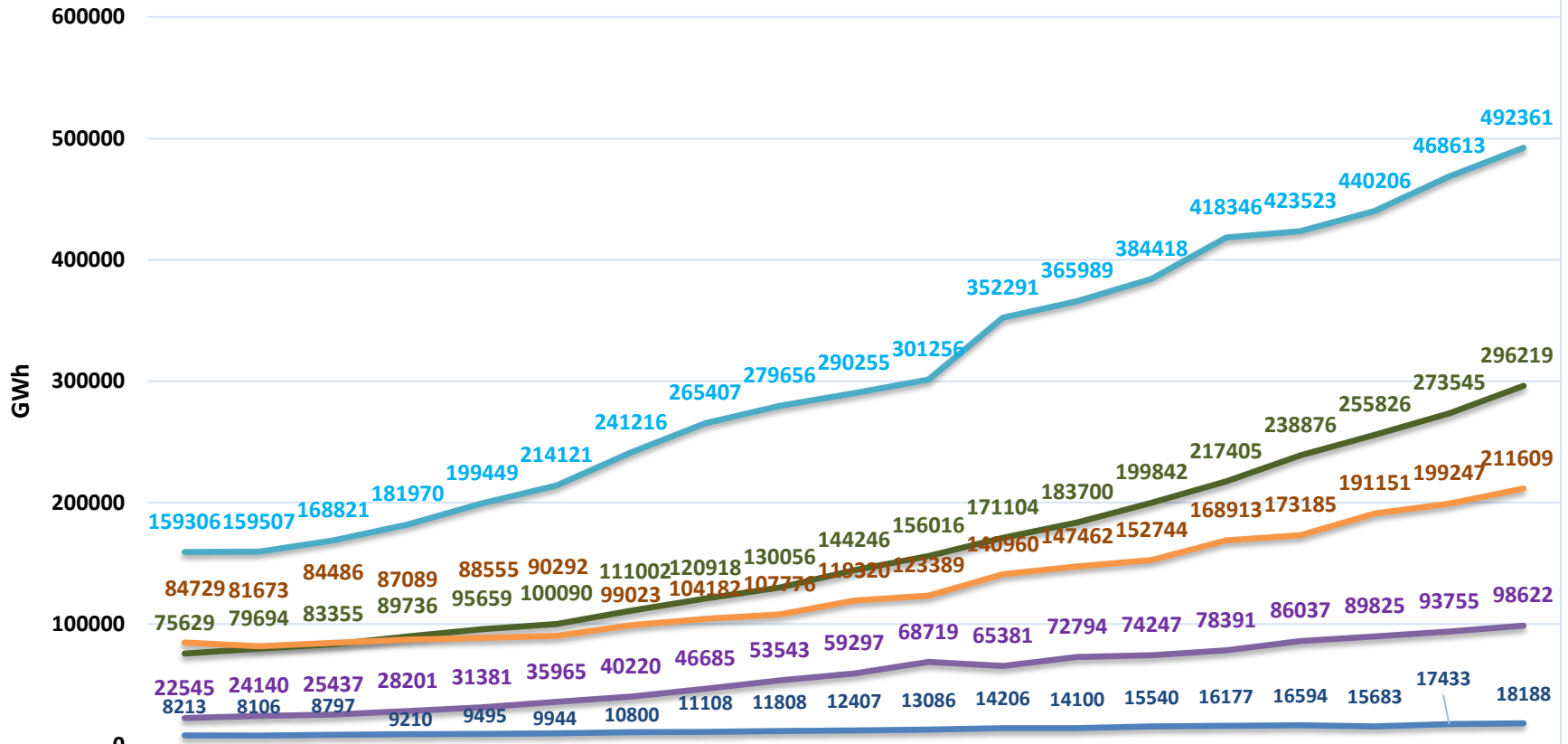
Planwise Growth of All India Total Electricity Consumption (Utilities & Non-Utilities)

Chart : 25



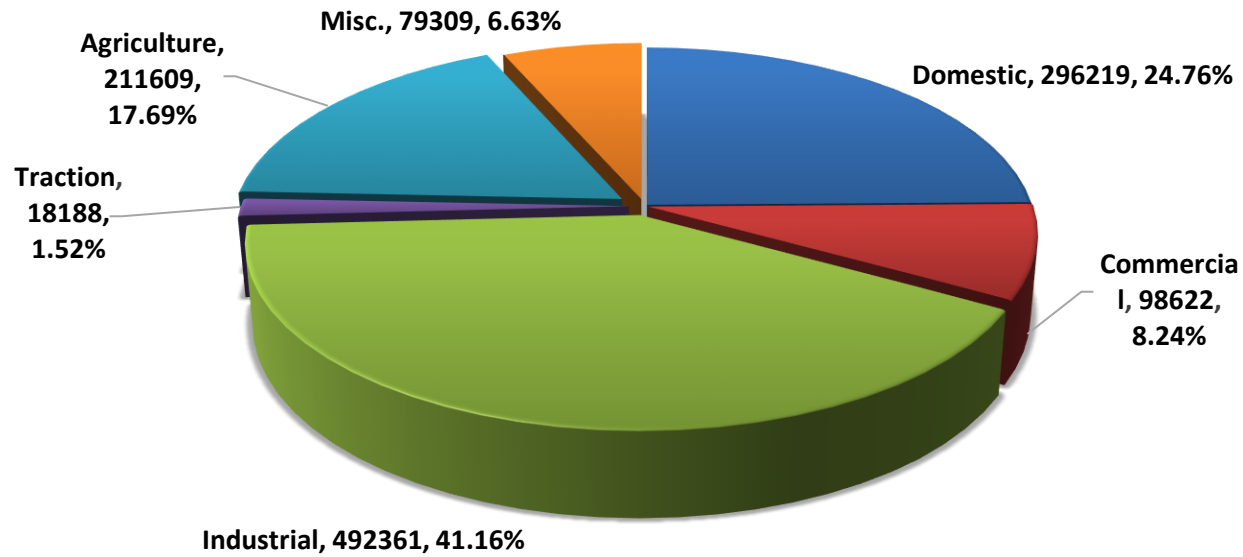
Trend of Categorywise Energy Consumption 2000-01 TO 2018-19

Chart : 25A



	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
Domestic	75629	79694	83355	89736	95659	100090	111002	120918	130056	144246	156016	171104	183700	199842	217405	238876	255826	273545	296219
Commercial	22545	24140	25437	28201	31381	35965	40220	46685	53543	59297	68719	65381	72794	74247	78391	86037	89825	93755	98622
Industrial	159306	159507	168821	181970	199449	214121	241216	265407	279656	290255	301256	352291	365989	384418	418346	423523	440206	468613	492361
Agriculture	84729	81673	84486	87089	88555	90292	99023	104182	107776	119320	123389	140960	147462	152744	168913	173185	191151	199247	211609
Traction	8213	8106	8797	9210	9495	9944	10800	11108	11808	12407	13086	14206	14100	15540	16177	16594	15683	17433	18188

All India Electricity Consumption Sector Wise (Utilities & Non- Utilities) 2018-19@

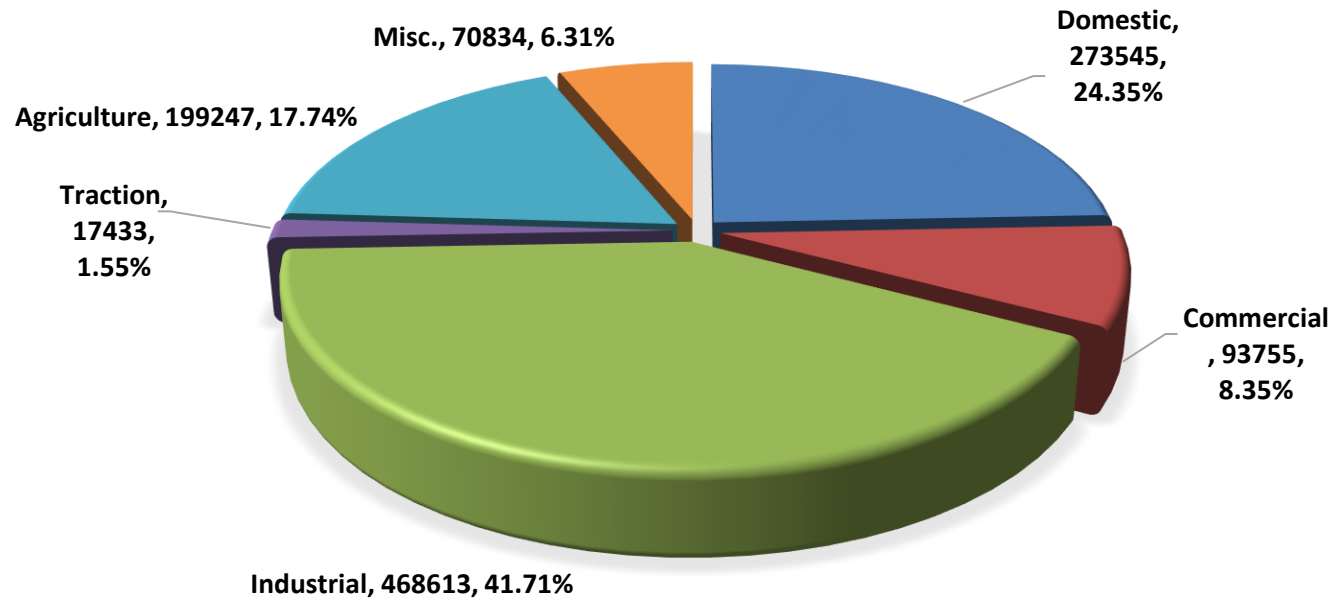


TOTAL = 1196309

@ Estimated

■ Domestic ■ Commercial ■ Industrial ■ Traction ■ Agriculture ■ Misc.

All India Electricity Consumption Sector wise Utilities & Non-Utilities 2017-18

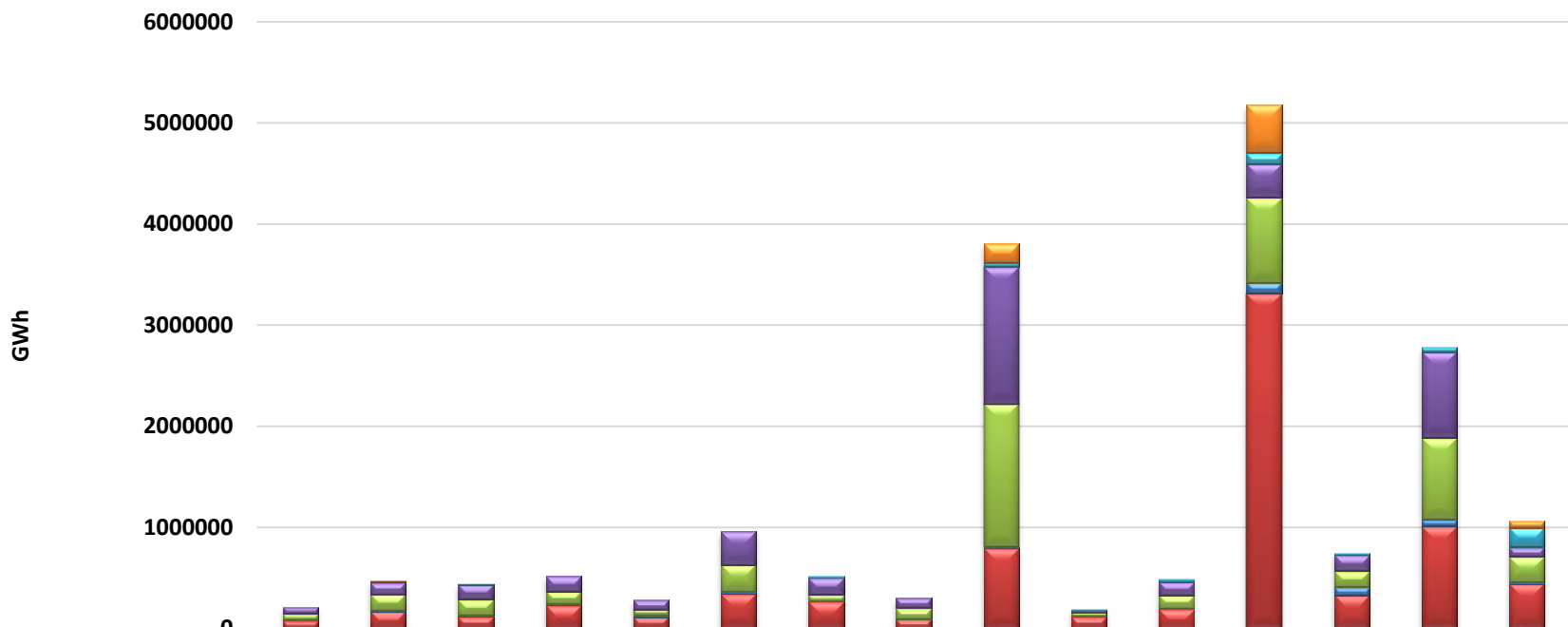


TOTAL = 1123427 GWh

■ Domestic ■ Commercial ■ Industrial ■ Traction ■ Agriculture ■ Misc.

Chart : 27

Category-wise Electricity Consumption in various Countries -2016

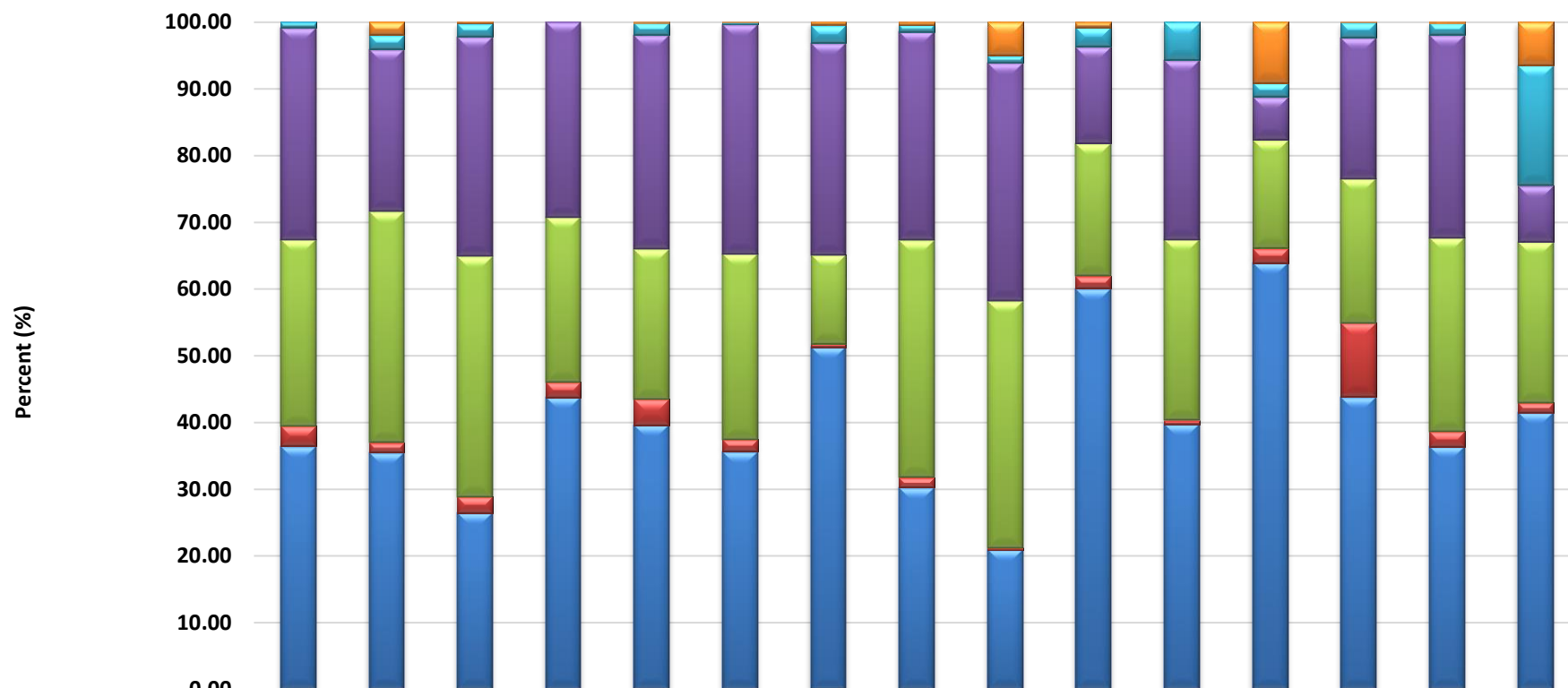


	Austral ia	Canada	France	Germa ny	Italy	Japan	Korea	United Kingdo m	United States	South Africa	Brazil	People' s Repub lic of China	Russia n Federa tion	Europe an Union - 28	India
Non-specified (other)	0	9133	822	0	254	315	2164	1106	189113	1507	0	471178	200	4223	68493
Agriculture/forestry	1756	10024	8602	0	5314	2816	13838	3317	41097	5649	27771	109191	17162	48781	191151
Commercial and public services	67331	115688	145797	151440	91736	332619	164422	94924	1360145	27890	132497	332949	157205	846126	89825
Residential	59189	164166	159396	127600	64304	269279	68775	107971	1409855	38375	132916	842060	161205	808214	255826
Transport	6284	6910	10784	11739	11162	17604	2689	4669	10605	3457	2584	113297	82569	63685	15683
Industry	77291	168756	116971	226598	113257	344716	265383	91916	796896	115940	195347	3308367	326343	1013148	440206

Source: - International Energy Agency (IEA) except

Chart : 28

Category-wise % Shares in Electricity Consumption in various Countries -2016



	Australia	Canada	France	Germany	Italy	Japan	Korea	United Kingdom	United States	South Africa	Brazil	People's Republic of China	Russian Federation	European Union - 28	India
Non-specified (other)	0.00	1.92	0.19	0.00	0.09	0.03	0.42	0.36	4.97	0.78	0.00	9.10	0.03	0.15	6.45
Agriculture/forestry	0.83	2.11	1.94	0.00	1.86	0.29	2.68	1.09	1.08	2.93	5.65	2.11	2.30	1.75	18.01
Commercial and public services	31.78	24.37	32.96	29.27	32.07	34.38	31.79	31.23	35.72	14.46	26.98	6.43	21.11	30.39	8.46
Residential	27.94	34.58	36.03	24.66	22.48	27.84	13.30	35.53	37.03	19.90	27.06	16.27	21.65	29.03	24.11
Transport	2.97	1.46	2.44	2.27	3.90	1.82	0.52	1.54	0.28	1.79	0.53	2.19	11.09	2.29	1.48
Industry	36.48	35.55	26.44	43.80	39.60	35.64	51.30	30.25	20.93	60.13	39.78	63.90	43.82	36.39	41.48

Source: - International Energy Agency (IEA) except India

Table 5
Per Capita Electricity Consumption and T&D Losses
of various Countries in 2015 & 2016

Sl. No.	Per Capita Consumption (kWh)			Sl. No.	T & D Losses (%)		
	Name of the Country	2015	2016		Name of the Country	2015	2016
1	Canada	15188	14844	1	Korea	3.59	3.45
2	USA	12833	12825	2	Japan	4.30	4.51
3	Australia	9892	9911	3	Germany	4.74	4.74
4	Japan	7865	7974	4	Italy	6.42	6.15
5	France	7043	7148	5	Australia	6.33	6.02
6	Germany	7015	6956	6	South Africa	9.11	9.99
7	Korea	10558	10618	7	France	7.81	7.68
8	UK	5082	5033	8	China	5.77	5.59
9	Russia	6588	6715	9	USA	6.33	5.81
10	Italy	5099	5081	10	Canada	11.72	12.04
11	South Africa	4148	4031	11	UK	8.77	8.03
12	Brazil	2516	2504	12	Russia	12.79	12.59
13	China	4047	4279	13	Brazil	15.92	16.87
14	India*	1075	1122	14	India	21.81	21.42
15	World	3052	3110	15	World	8.95	8.64

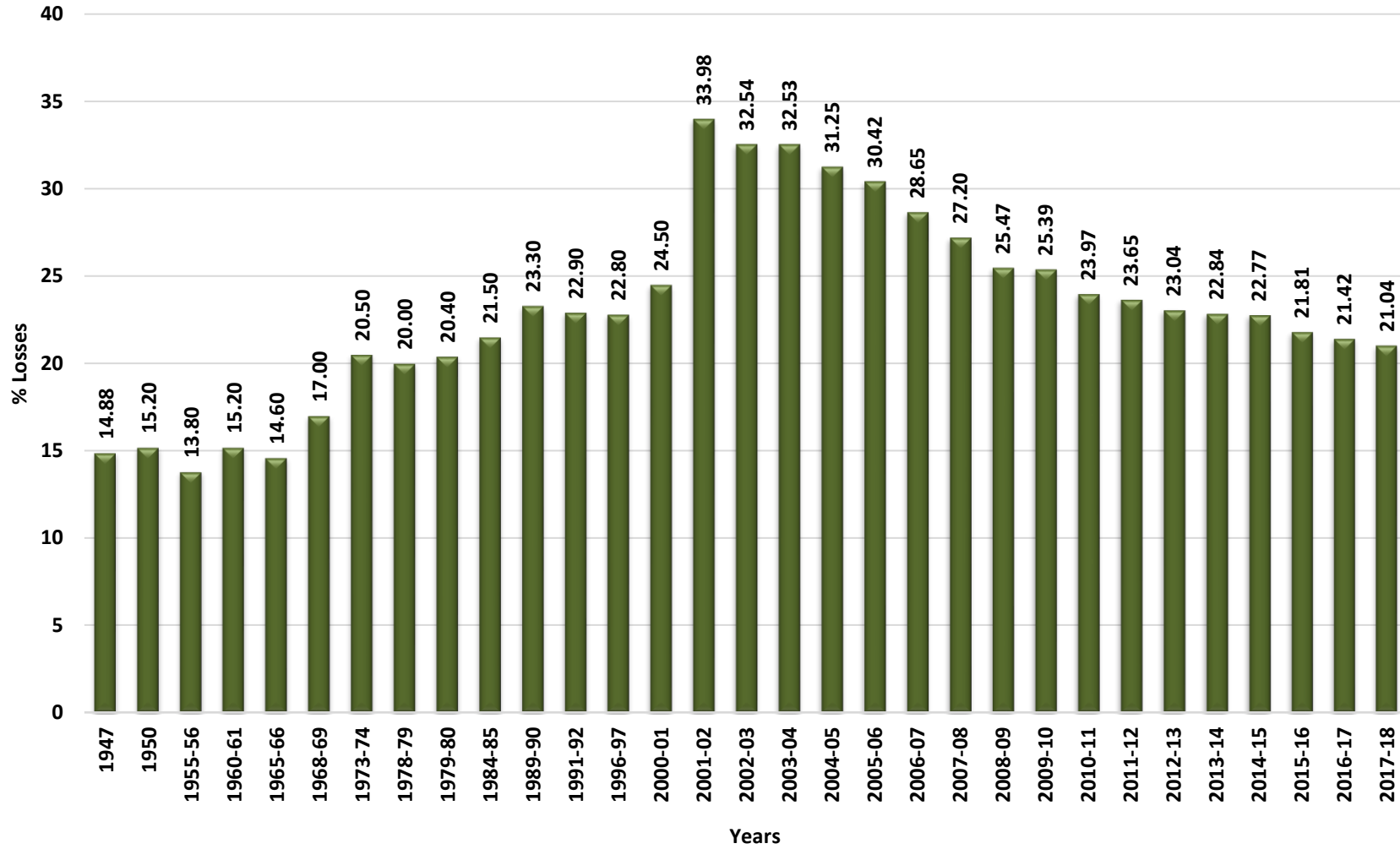
Note :-

Basic data obtained from IEA Website (except) India.

* Per Capita Consumption= (Gross Electrical Energy Availability/Midyear Population).

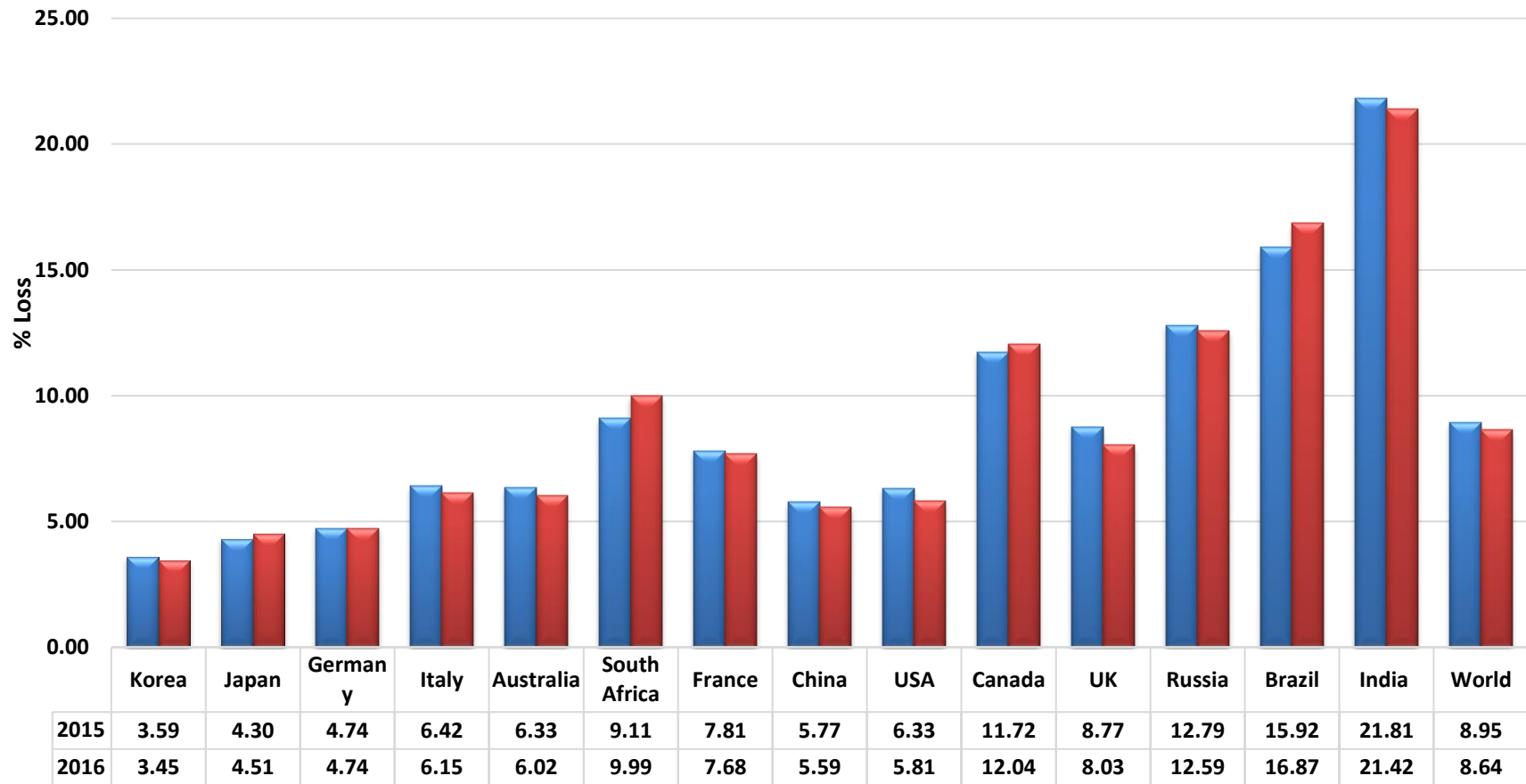
All India Transmission and Distribution Losses (%)

Chart : 29



T & D Losses of Various Countries in 2015 & 2016 (%)

Chart : 30



Source: - International Energy Agency (IEA) (except India)

■ 2015 ■ 2016

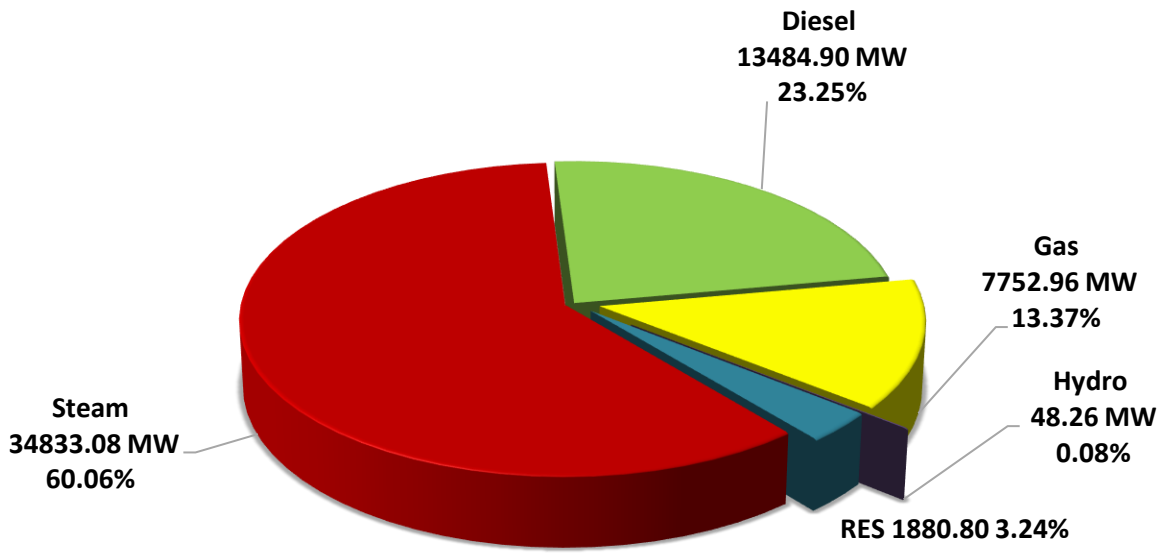
Table 6
Plan wise Growth of Installed Capacity of Captive Power Plants in Industries having
Demand of 1 MW & Above - Mode wise

								(MW)
Sl. No.	As on	Steam	Diesel	Gas	Hydro	RES	Railways	Total
1	2	3	4	5	6	7	8	9
								(3+4+5+6+7+8)
1	31.12.1947	**	**	**	**	**	0.00	410.00
2	31.12.1950	**	**	**	**	**	0.00	587.85
3	31.03.1956 (End of the 1st Plan)	**	**	**	**	**	0.00	759.65
4	31.03.1961 (End of the 2nd Plan)	**	**	**	**	**	0.00	1001.37
5	31.03.1966(End of the 3rd Plan)	**	**	**	**	**	0.00	1082.36
6	31.03.1969(End of the 3 Annual Plans)	**	**	**	**	**	0.00	1277.47
7	31.03.1974(End of the 4th Plan)	**	**	**	**	**	0.00	1732.70
8	31.03.1979(End of the 5th Plan)	1949.23	559.17	44.27	2.61	0.00	62.31	2617.59
9	31.03.1980(End of the 2 Annual Plans)	2021.61	720.58	54.27	2.61	0.00	60.44	2859.51
10	31.03.1985 (End of the 6th Plan)	2803.18	2077.06	155.31	2.91	0.00	81.80	5120.26
11	31.03.1990 (End of the 7th Plan)	4822.85	2754.48	425.51	3.60	0.00	109.29	8115.73
12	31.03.1992 (End of the 2 Annual Plans)	5377.10	3291.06	495.72	4.30	0.00	133.23	9301.41
13	31.03.1997(End of the 8th Plan)	6151.69	4529.91	1166.38	3.50	64.83	162.62	12078.93
14	31.03.2002(End of the 9th Plan)	8354.03	6521.95	2125.91	51.10	92.21	0.00	17145.20
15	31.03.07 (End of 10th Plan)	11397.52	7723.35	2976.00	60.50	177.67	0.00	22335.04
16	31.03.12(End of 11th Plan)	22615.39	9955.23	5884.95	47.59	872.21	0.00	39375.37
17	31.03.17 (End of 12th Plan)	30571.95	13349.69	6109.21	65.29	1433.06	0.00	51529.19
18	31.03.18	32854.41	13144.60	7156.37	50.96	1726.17	0.00	54932.51
19	31.03.19 @	34833.08	13484.90	7752.96	48.26	1880.80	0.00	58000.00

** Breakup Not Available

@ Estimated

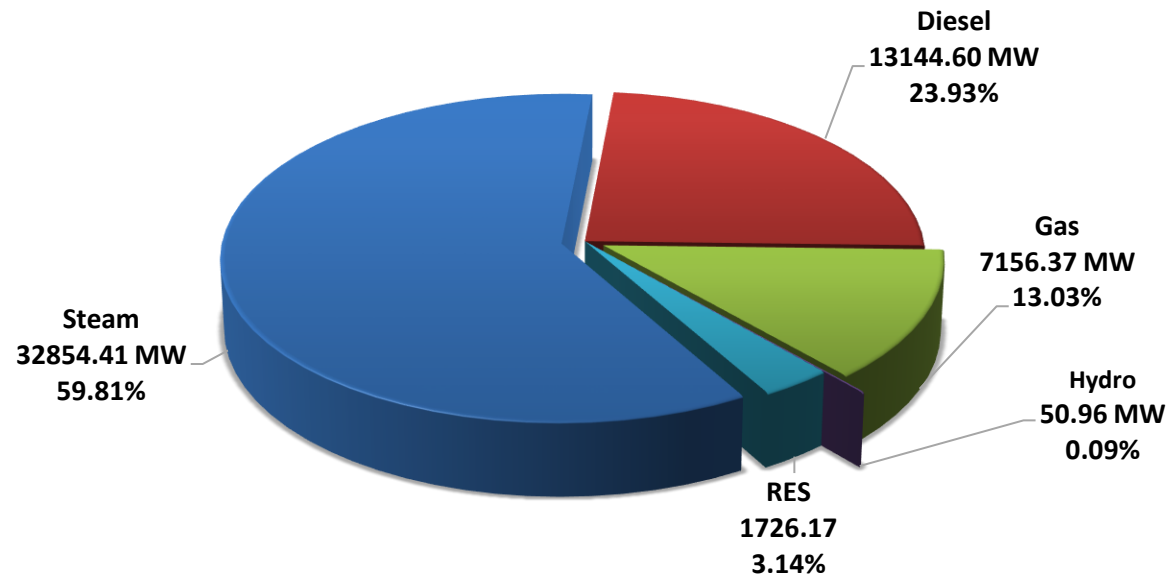
Installed Generating Capacity of Captive Power Plants in Industries having Demand of 1MW & Above - Modewise (As on 31.03.2019)@



TOTAL = 58000 MW

■ Steam ■ Diesel ■ Gas ■ Hydro ■ RES @-Estimated

Installed Generating Capacity of Captive Power Plants in Industries having Demand of 1MW & Above - Mode wise (31.03.2018)



TOTAL = 54932.51 MW

■ Steam ■ Diesel ■ Gas ■ Hydro ■ RES

Plan wise Growth of All India Installed Generating Capacity of Captive Power Plants in Industries having Demand of 1MW & Above

Chart : 32

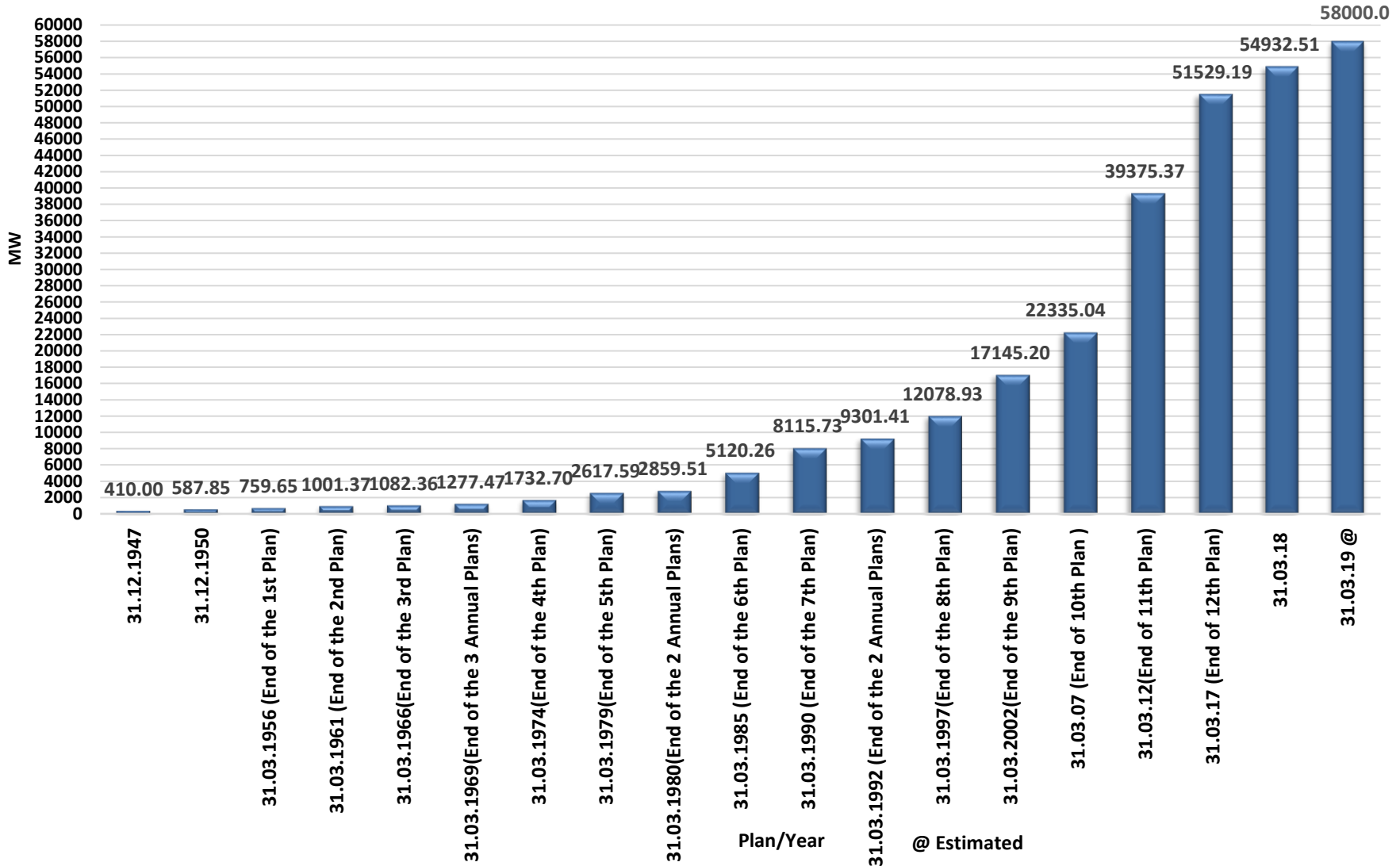


Table 7
Plan wise Growth of Energy Generated by Captive Power Plants in Industries
having Demand of 1MW & Above - Mode wise

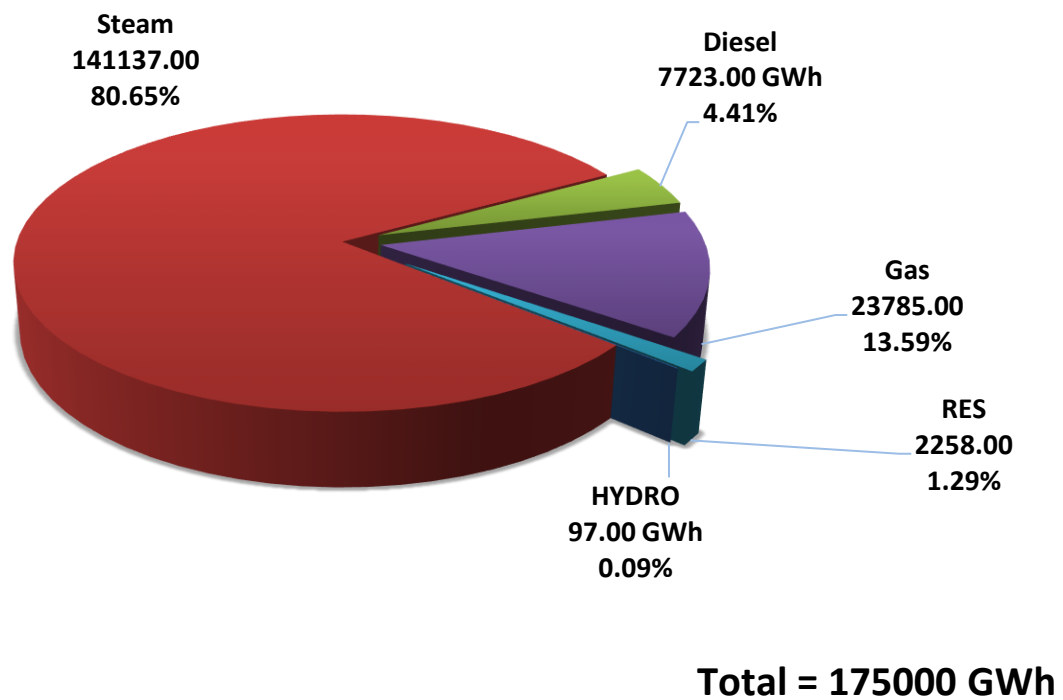
								(GWh)
Sl. No.	During financial year ending with	Hydro	Steam	Diesel	Gas	RES	Railways	Total
1	2	3	4	5	6	7	8	9
								(3+4+5+6+7+8)
1	1947	**	**	**	**	**	**	856.91
2	1950	**	**	**	**	**	0.00	1467.81
3	1955-56 (End of the 1st Plan)	**	**	**	**	**	0.00	2184.82
4	1960-61 (End of the 2nd Plan)	**	**	**	**	**	0.00	3186.10
5	1965-66(End of the 3rd Plan)	**	**	**	**	**	0.00	3733.19
6	1968-69(End of the 3 Annual Plans)	**	**	**	**	**	0.00	4136.06
7	1973-74(End of the 4th Plan)	**	**	**	**	**	0.00	6067.47
8	1978-79(End of the 5th Plan)	13.22	7211.30	299.13	48.97	0.00	34.47	7607.09
9	1979-80(End of the 2 Annual Plans)	15.06	7225.60	825.71	90.67	0.00	35.67	8192.71
10	1984-85 (End of the 6th Plan)	18.29	9966.55	2001.18	317.03	0.00	42.80	12345.85
11	1989-90 (End of the 7th Plan)	15.83	19110.46	2757.27	1313.29	0.00	29.07	23225.92
12	1991-92(End of the 2 Annual Plans)	17.57	23409.35	3247.81	1905.24	0.00	22.52	28602.49
13	1996-97(End of the 8th Plan)	28.84	29127.94	6573.38	5039.22	45.63	25.07	40840.08
14	2001-02(End of the 9th Plan)	116.59	41853.85	10719.66	8835.19	155.53	0.00	61680.82
15	2006-07(End of 10th Plan)	217.81	56184.04	9974.85	15207.17	215.88	0.00	81799.75
16	2011-12 (End of 11th Plan)	131.28	104862.65	6244.32	21971.57	1178.17	0.00	134387.99
17	2016-17 (End of 12th Plan)	143.64	137588.31	9181.74	22855.31	2277.02	0.00	172046.03
18	2017-18	112.48	143867.68	8106.89	25362.17	2328.17	0.00	179777.39
19	2018-19 @	97.00	141137.00	7723.00	23785.00	2258.00	0.00	175000.00

** Breakup Not Available

@ Estimated

**All India Electrical Energy Generated by Captive Power Plants in Industries
having Demand of 1MW and Above - Mode wise
2018-19 @**

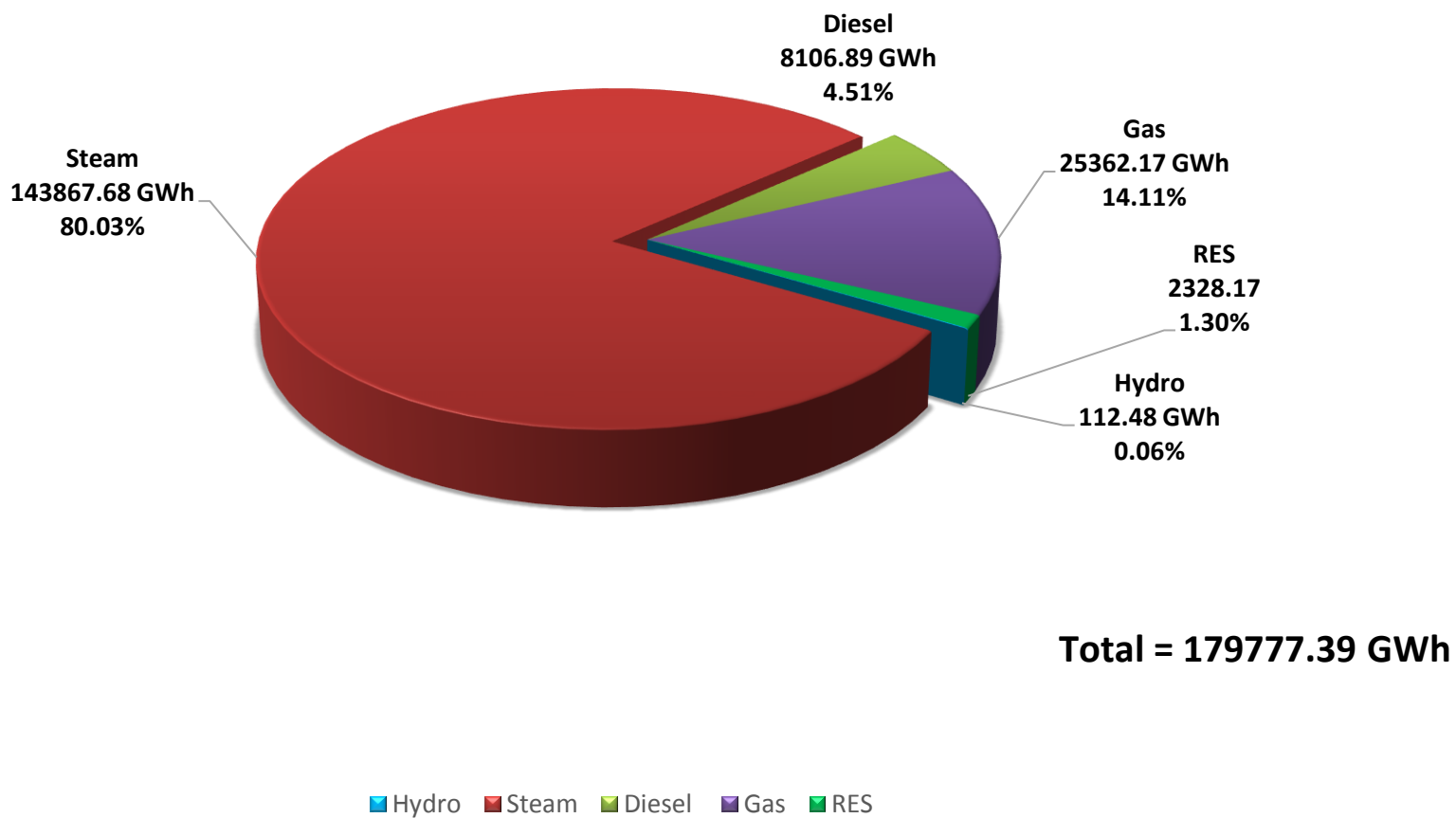
Pie Chart : 33



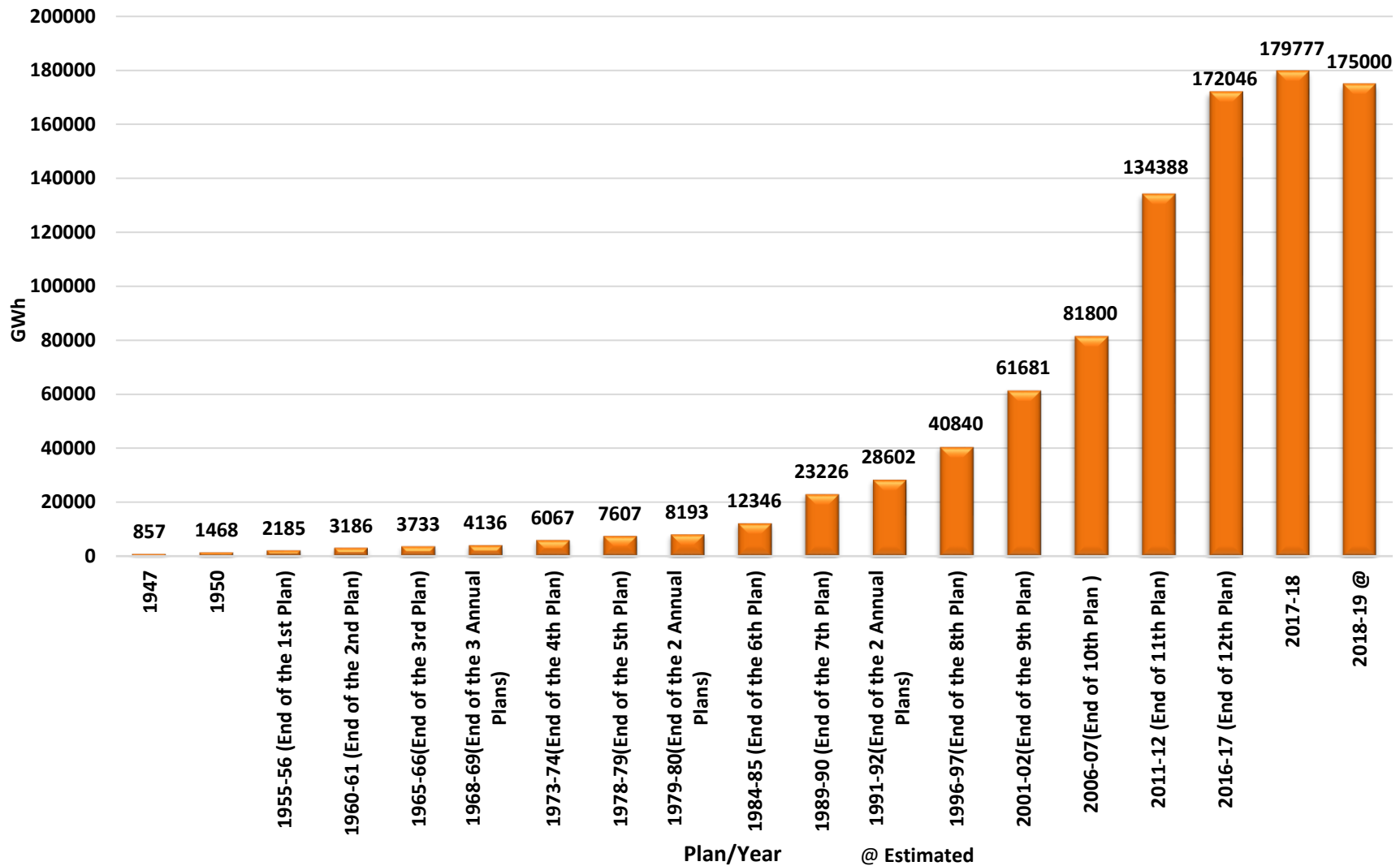
■ Hydro ■ Steam ■ Diesel ■ Gas ■ RES

@ Estimated

**All India Electrical Energy Generated by Captive Power Plants in Industries Pie Chart : 33A
having Demand of 1MW and Above - Mode wise
2017-18**

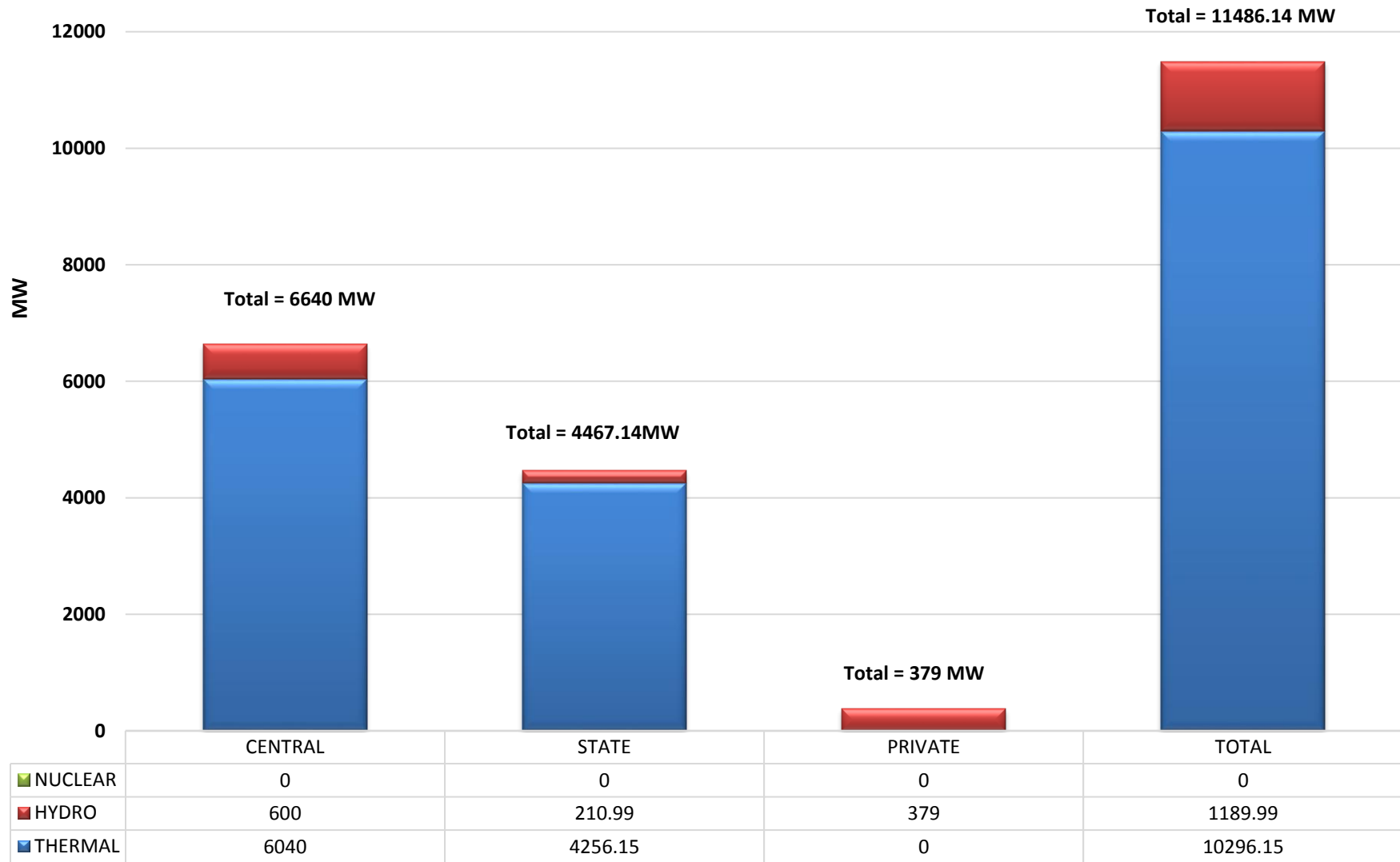


Plan wise Growth of Energy Generated by Captive Power Plants in Industries having Demand of 1MW & above



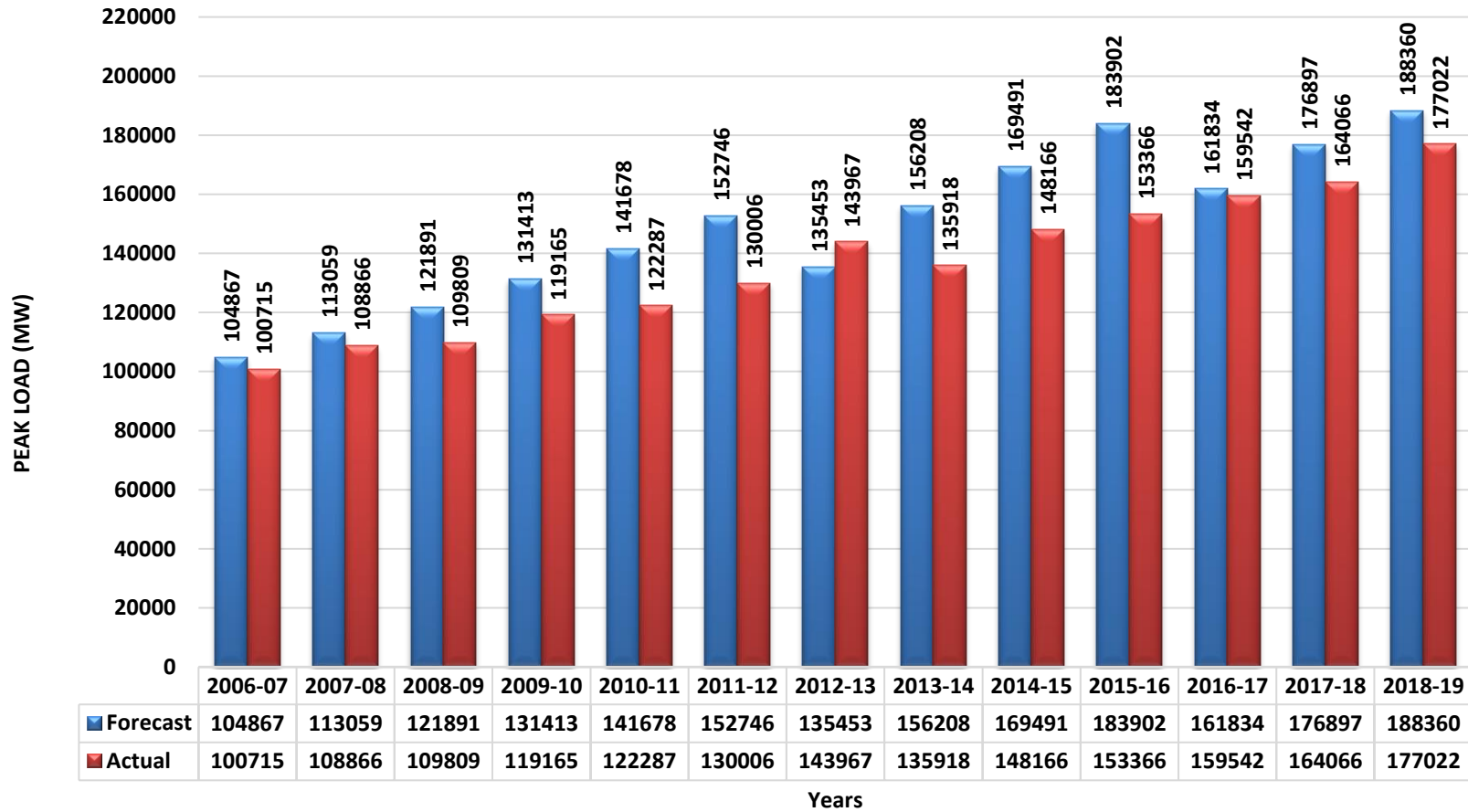
Capacity Addition Programme during 2019-20

Chart : 35



Forecast of All India Peak Electricity Demand (Utilities) As Per 18th & 19th Electric Power Survey in MW

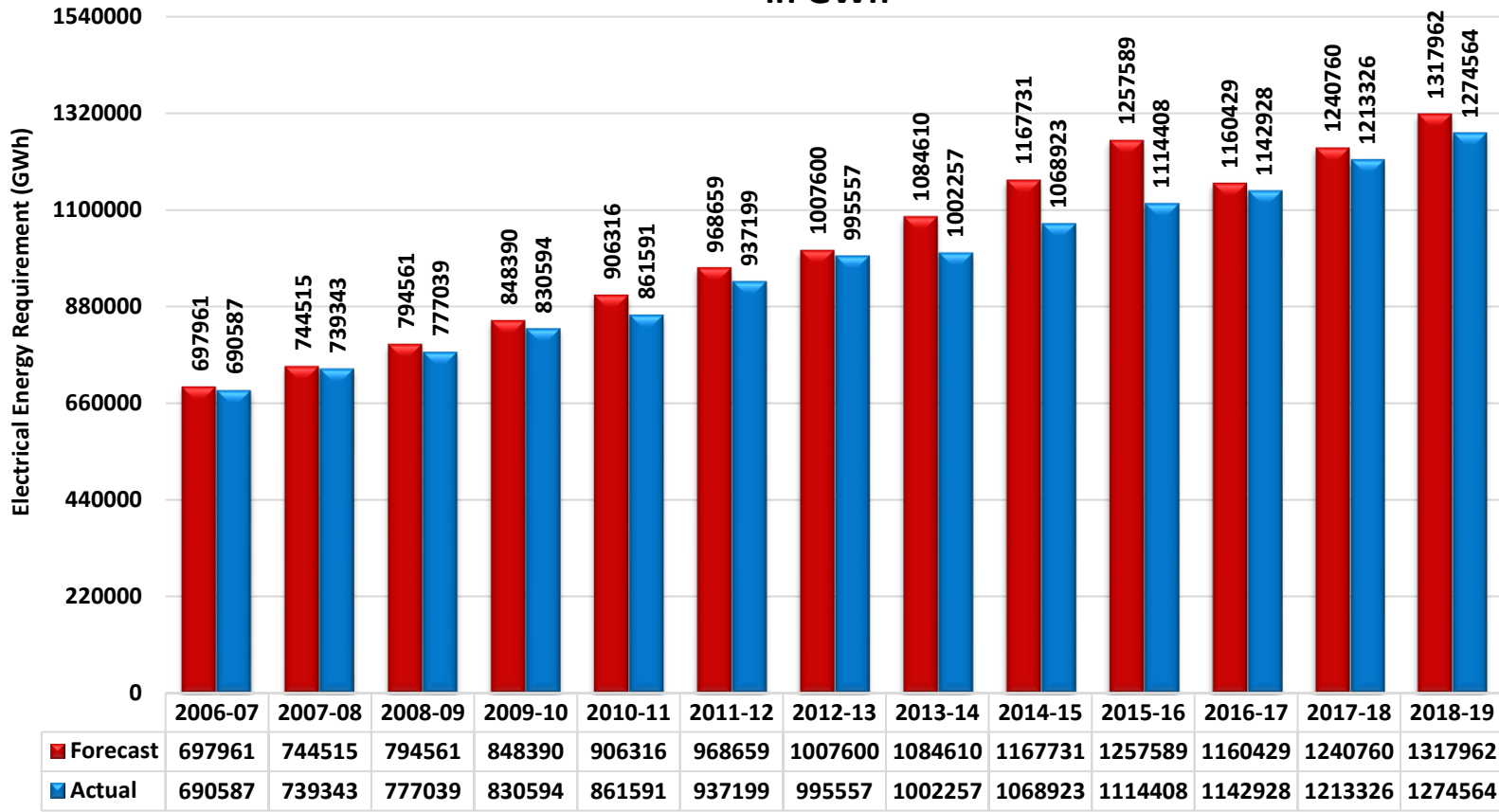
Chart : 36



■ Forecast ■ Actual

Forecast of All India Energy Requirement (Utilities) As Per 18th & 19th Electric Power Survey in GWh

Chart : 37

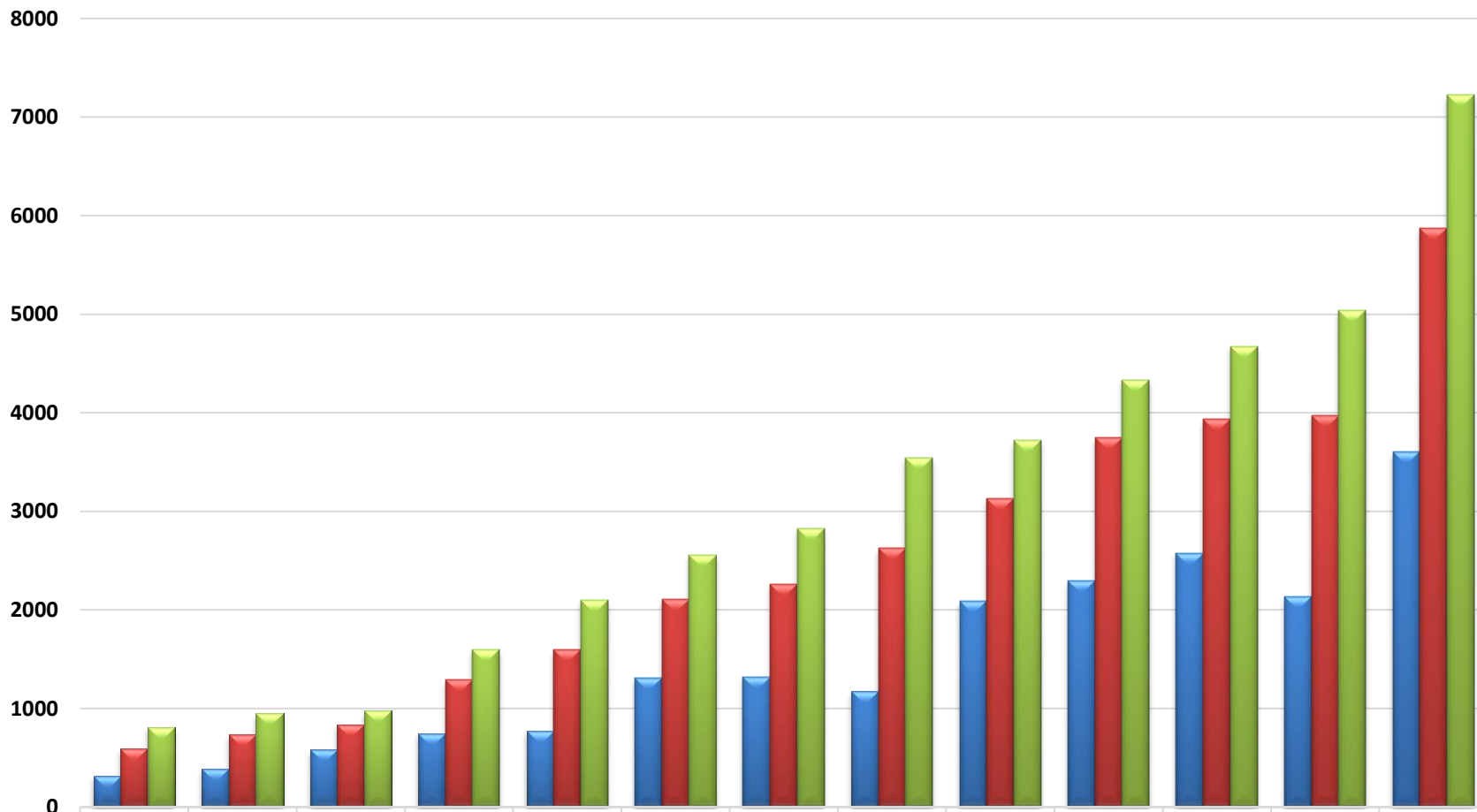


Years

■ Forecast ■ Actual

18th Electric Power Survey of India (Volume - II)
Annual Electric Peak Load (in MW) of mega Cities at Power Station Bus Bar
For the year 2011-12, 2018-19 & 2021-22

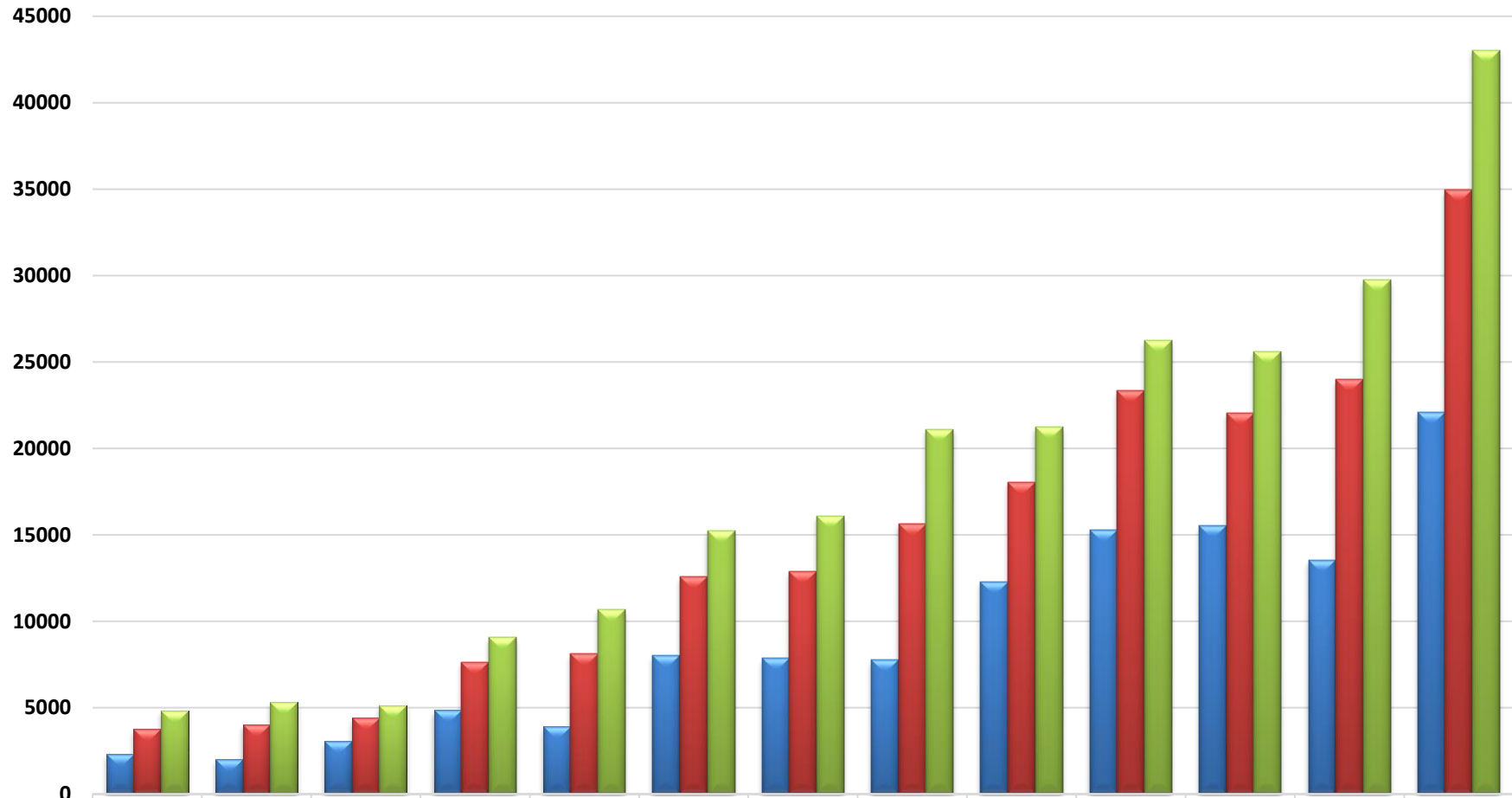
Chart :37A



	Nagpur	Indore	Kanpur	Lucknow	Jaipur	Surat	Ahmedabad	Pune	Bengaluru	Chennai	Kolkata	Hyderabad	Greater Mumbai
2011-12	315	391	580	750	771	1309	1320	1173	2090	2291	2577	2134	3605
2018-19	590	737	839	1288	1596	2107	2264	2628	3133	3744	3932	3975	5871
2021-22	812	950	976	1594	2103	2556	2827	3544	3717	4334	4674	5039	7225

18th Electric Power Survey of India (Volume - II)
Electrical Energy Requirement (in MU) of mega Cities
For the year 2011-12, 2018-19 & 2021-22

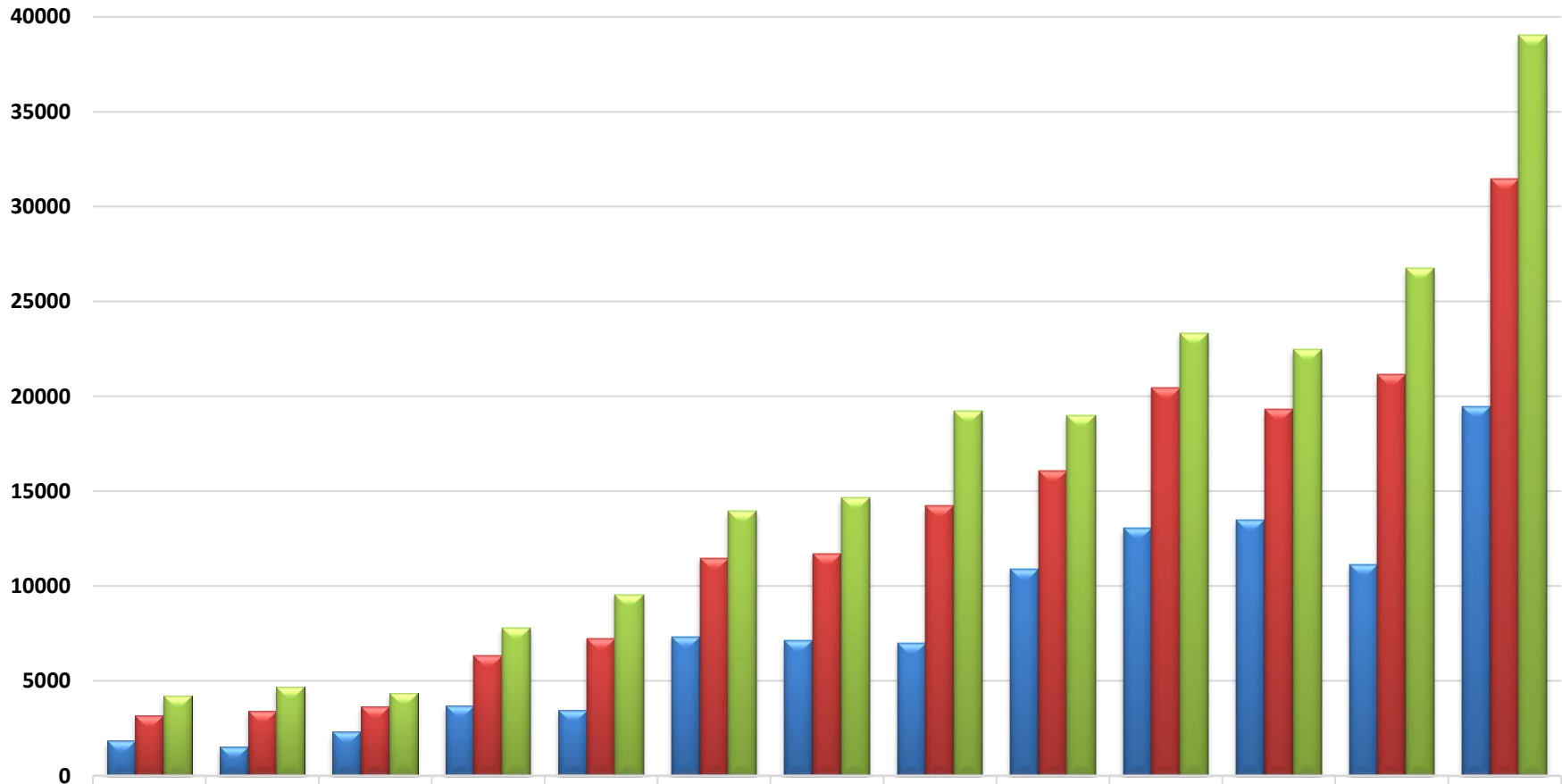
Chart : 37B



	Nagpur	Indore	Kanpur	Lucknow	Jaipur	Surat	Ahmedabad	Pune	Bengaluru	Chennai	Kolkata	Hyderabad	Greater Mumbai
2011-12	2311	2007	3046	4840	3905	8029	7862	7760	12300	15273	15528	13528	22107
2018-19	3749	4008	4412	7628	8100	12553	12889	15654	18050	23353	22059	23977	34974
2021-22	4820	5292	5131	9074	10683	15225	16097	21111	21219	26236	25588	29730	43039

18th Electric Power Survey of India (Volume - II)
Electrical Energy Consumption (in MU) of mega Cities
For the year 2011-12, 2018-19 & 2021-22

Chart : 37C



	Nagpur	Indore	Kanpur	Lucknow	Jaipur	Surat	Ahmedabad	Pune	Bengaluru	Chennai	Kolkata	Hyderabad	Greater Mumbai
2011-12	1829	1528	2315	3679	3484	7325	7117	7000	10917	13034	13483	11127	19472
2018-19	3178	3434	3662	6331	7238	11479	11713	14226	16090	20430	19306	21148	31464
2021-22	4200	4691	4361	7803	9553	13940	14665	19241	18972	23346	22471	26757	39023

Table No.8
All India Power Supply Position Energy wise & Peak wise (Utilities)
1984-85 to 2018-19

Year	Energy				Peak Demand			
	Requirement	Availability	Deficit	Deficit	Demand	Availability	Deficit	Deficit
	(GWh)	(GWh)	(GWh)	(%)	(MW)	(MW)	(MW)	(%)
1984-85	155432	145013	10419	6.70	25810	22800	3010	11.66
1985-86	170746	157262	13484	7.90	28090	24215	3875	13.79
1986-87	192356	174276	18080	9.40	30850	26924	3926	12.73
1987-88	210993	187976	23017	10.91	31990	28242	3748	11.72
1988-89	223194	205909	17285	7.74	36245	31713	4532	12.50
1989-90	247762	228151	19611	7.92	40385	33658	6727	16.66
1990-91	267632	246560	21072	7.87	44005	37171	6834	15.53
1991-92	288974	266432	22542	7.80	48055	39027	9028	18.79
1992-93	305266	279824	25442	8.33	52805	41984	10821	20.49
1993-94	323252	299494	23758	7.35	54875	44830	10045	18.31
1994-95	352260	327281	24979	7.09	57530	48066	9464	16.45
1995-96	389721	354045	35676	9.15	60981	49836	11145	18.28
1996-97	413490	365900	47590	11.51	63853	52376	11477	17.97
1997-98	424505	390330	34175	8.05	65435	58042	7393	11.30
1998-99	446584	420235	26349	5.90	67905	58445	9460	13.93
1999-00	480430	450594	29836	6.21	72669	63691	8978	12.35

Table No.8 (Contd.)
All India Power Supply Position Energy wise & Peak wise (Utilities)
1984-85 to 2018-19

Year	Energy				Peak Demand			
	Requirement	Availability	Deficit	Deficit	Demand	Availability	Deficit	Deficit
	(GWh)	(GWh)	(GWh)	(%)	(MW)	(MW)	(MW)	(%)
2000-01	507216	467409	39807	7.85	74872	65628	9244	12.35
2001-02	522537	483350	39187	7.50	78441	69189	9252	11.79
2002-03	545674	497589	48085	8.81	81492	71547	9945	12.20
2003-04	559264	519398	39866	7.13	84574	75066	9508	11.24
2004-05	591373	548115	43258	7.31	87906	77652	10254	11.66
2005-06	631757	578819	52938	8.38	93255	81792	11463	12.29
2006-07	690587	624495	66092	9.57	100715	86818	13897	13.80
2007-08	739343	666007	73336	9.92	108866	90793	18073	16.60
2008-09	777039	691038	86001	11.07	109809	96785	13024	11.86
2009-10	830594	746644	83950	10.11	119166	104009	15157	12.72
2010-11	861591	788355	73236	8.50	122287	110256	12031	9.84
2011-12	937199	857886	79313	8.46	130006	116191	13815	10.63
2012-13	998114	911209	86905	8.71	135453	123294	12159	8.98
2013-14	1002257	959829	42428	4.23	135918	129815	6103	4.49
2014-15	1067085	1028955	38130	3.57	148166	141160	7006	4.73
2015-16	1114408	1090850	23558	2.11	153366	148463	4903	3.20
2016-17	1142928	1135332	7596	0.66	159542	156934	2608	1.63
2017-18	1213326	1204697	8629	0.71	164066	160752	3314	2.02
2018-19	1274564	1267209	7355	0.58	177022	175528	1494	0.84

All India Peak and Energy Deficit (Utilities) 1984-85 to 2018-19

Chart : 38

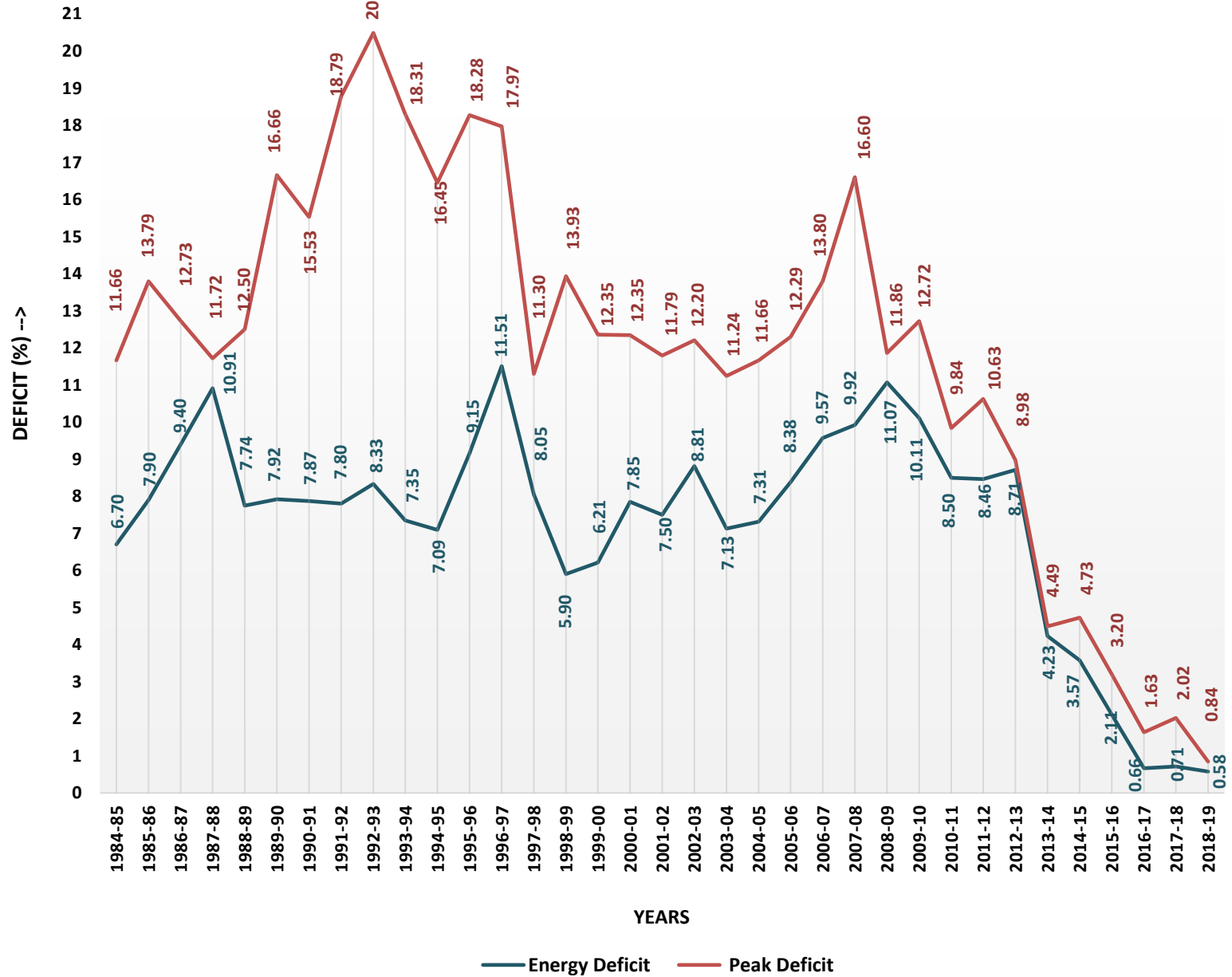


Table 8A
Region wise Summary of Electrical Energy Requirement (MU) & Peak Electricity Demand (MW)
projections for the Year 2019-20 and 2021-22 As Per 19th EPS (Volume-I)

Region/Year	Electrical Energy Requirement (MU)		Peak Electricity Demand (MW)	
	2019-20	2021-22	2019-20	2021-22
Northern	420047	468196	65919	73770
Western	429217	481501	62728	71020
Southern	376376	420753	56007	62975
Eastern	153363	171228	25130	28046
North East	20437	23809	3856	4499
A & N Island	414	475	84	97
Lakshdweep	57	62	11	11
All India Total	1399913	1566023	200696	225751

NOTE : EPS - Electric Power Survey

Table 8B
Category wise Forecast of Electrical Energy Consumption
For the Year 2019-20 and 2021-22
As Per 19th EPS (Volume-I)

Category	GWh	
	Year	Year
	2019-20	2021-22
Domestic	333356	386790
Commercial	112630	128888
Irrigation	247283	276277
Industries	341492	386450
Others	109818	122081
Total	1144579	1300486

Table 8C
Forecast of Electrical Energy Requirement (in MU) of NCR
For the Year 2019-20 and 2021-22
As Per 18th EPS (Volume-III)

NCR Sub Region	GWh	
	2019-20	2021-22
Delhi	46085	52930
Haryana	34267	37864
Rajasthan	9379	10868
Uttar Pradesh	26053	30192
NCR - Total	115784	131854

Chart : 39

**Forecast of Electrical Energy Requirement (in MU) of NCR
For the Year 2019-20 and 2021-22**

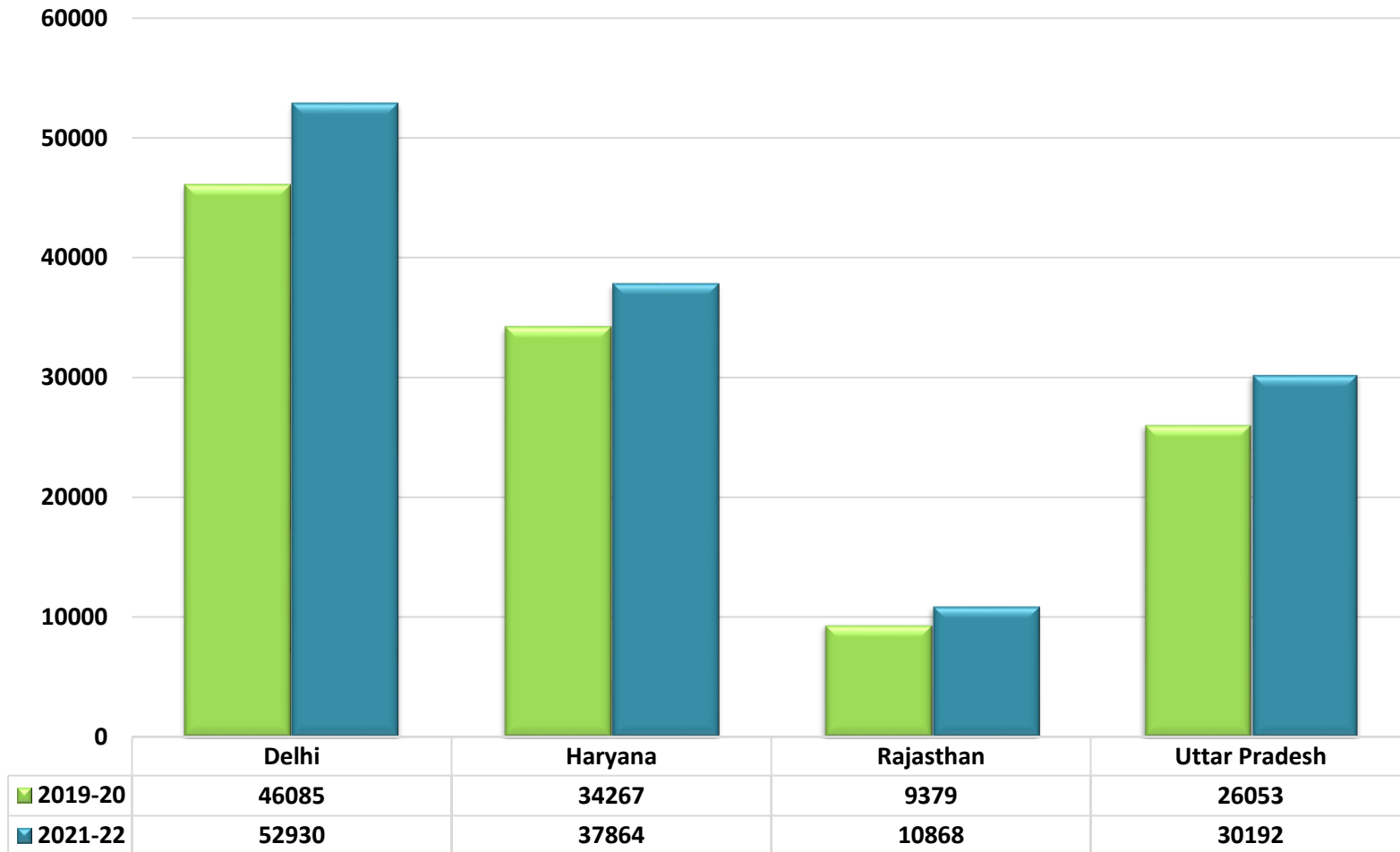
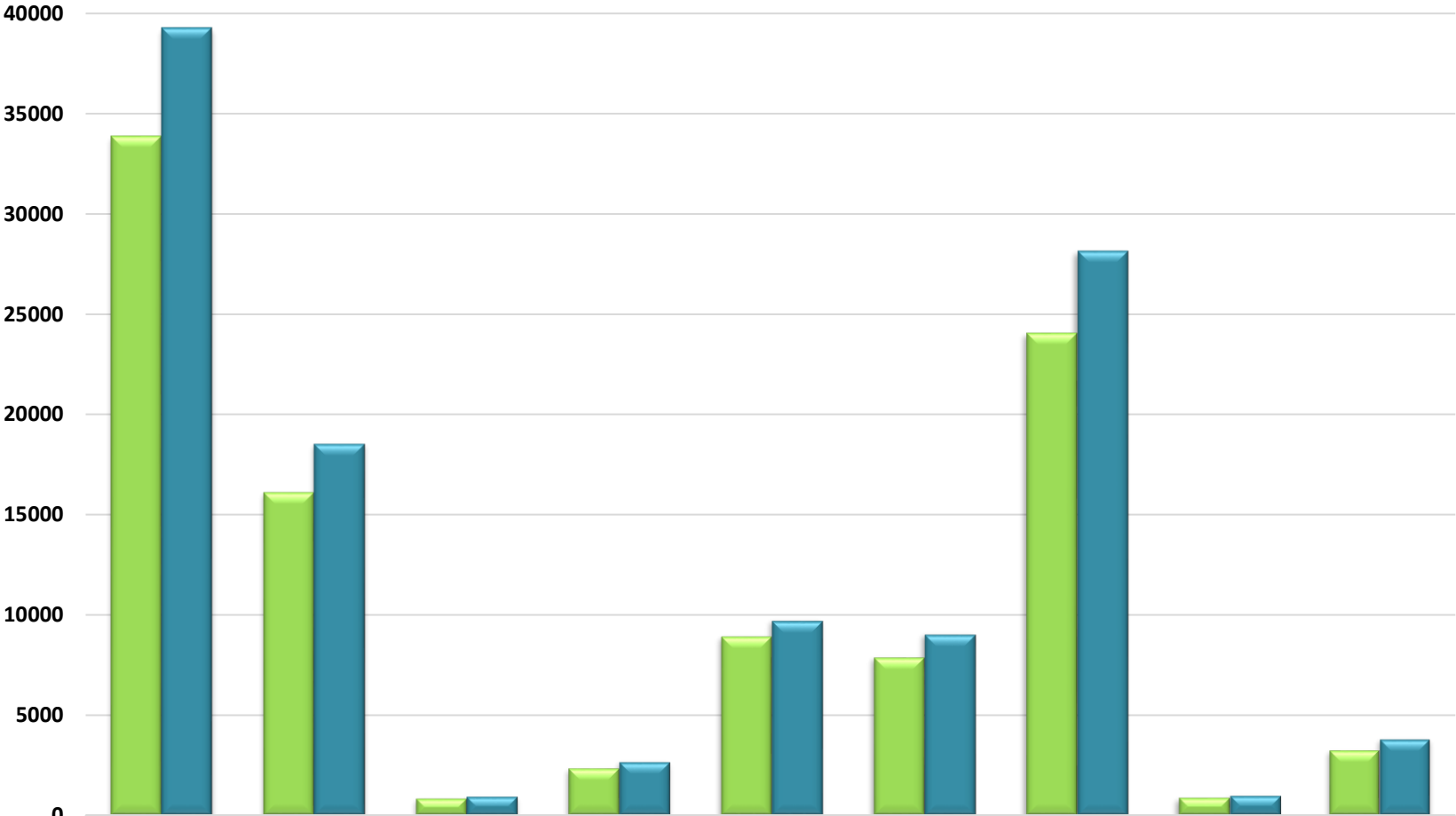


Table 8D
Forecast of Electrical Energy Consumption (in MU) of NCR
For the Year 2019-20 to 2021-22
As Per 18th EPS (Volume-III)

Consumption Category	GWh	
	2019-20	2021-22
Domestic	33852	39278
Commercial & Misc.	16141	18588
Public lighting	839	937
Public Water Works	2367	2687
Irrigation	8972	9781
Industries LT	7911	9101
Industries HT	24063	28189
Railway traction	890	993
Bulk Supply	3273	3830
Total (Energy Consumption)	98306	113384

**Forecast of Electrical Energy Consumption (in MU) of NCR
For the year 2019-20 & 2021-22**



■ 2019-20	33852	16141	839	2367	8972	7911	24063	890	3273
■ 2021-22	39278	18588	937	2687	9781	9101	28189	993	3830

MAP OF INDIA

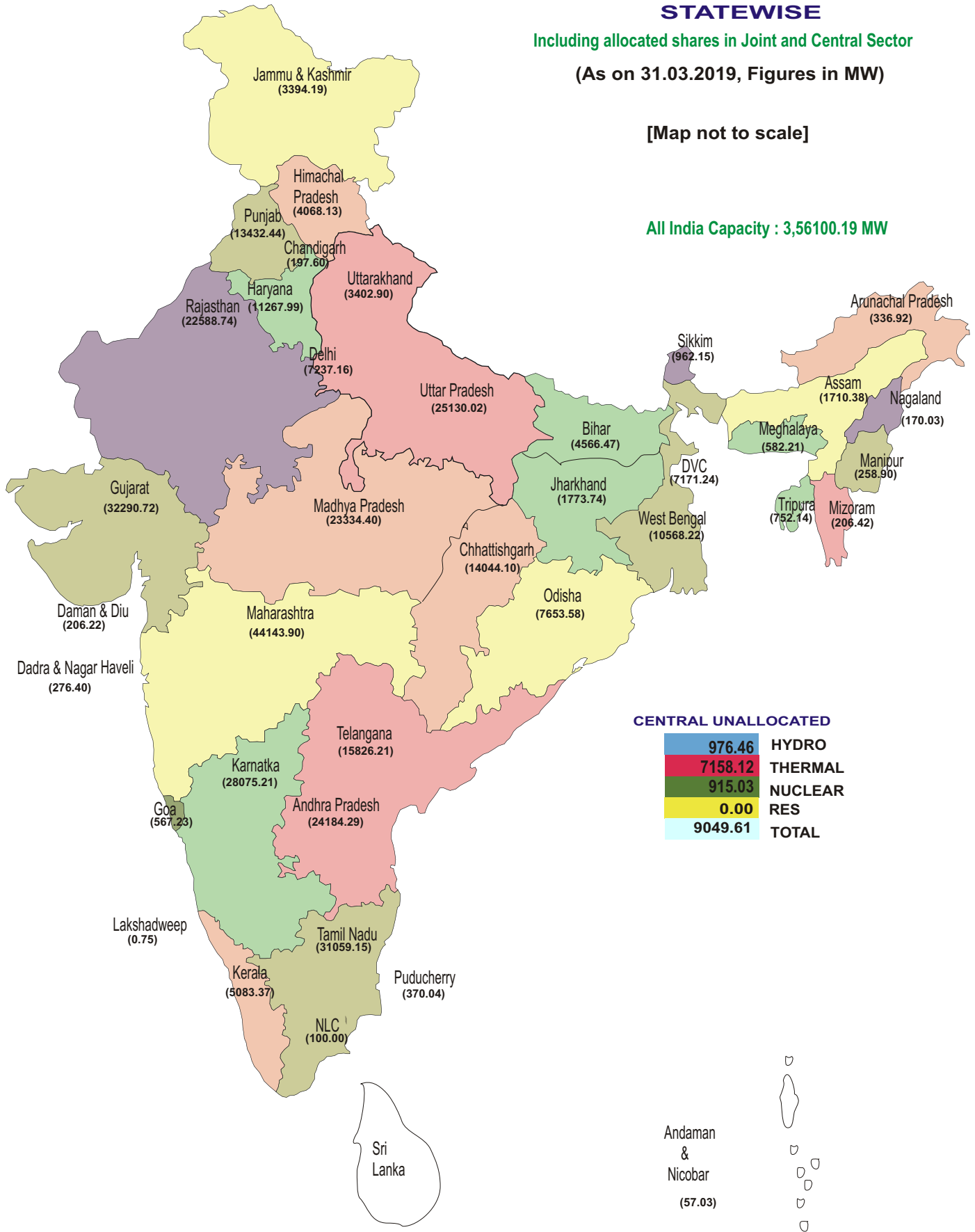
SHOWING INSTALLED GENERATING CAPACITY STATEWISE

Including allocated shares in Joint and Central Sector

(As on 31.03.2019, Figures in MW)

[Map not to scale]

All India Capacity : 3,56100.19 MW



MAP OF INDIA

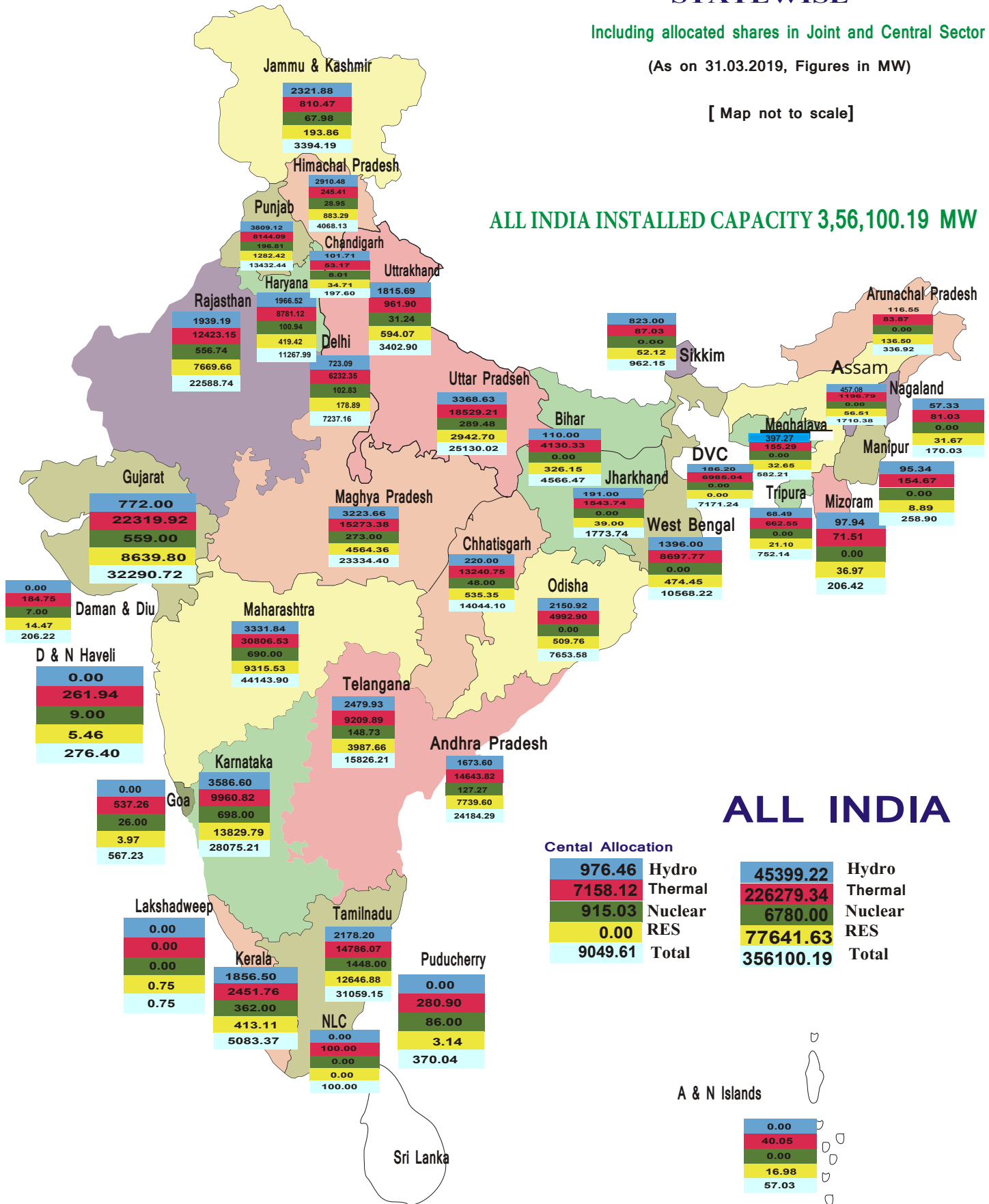
SHOWING INSTALLED GENERATING CAPACITY STATEWISE

Including allocated shares in Joint and Central Sector

(As on 31.03.2019, Figures in MW)

[Map not to scale]

ALL INDIA INSTALLED CAPACITY 3,56,100.19 MW



ALL INDIA

Central Allocation

976.46	Hydro
7158.12	Thermal
915.03	Nuclear
0.00	RES
9049.61	Total

45399.22	Hydro
226279.34	Thermal
6780.00	Nuclear
77641.63	RES
356100.19	Total