



भारत के विद्युत क्षेत्र का 1947 से 2020 तक का संवर्धन

**GROWTH OF ELECTRICITY SECTOR IN INDIA FROM 1947-2020**

भारत सरकार

**GOVERNMENT OF INDIA**

विद्युत मंत्रालय

**MINISTRY OF POWER**

केन्द्रीय विद्युत प्राधिकरण

**CENTRAL ELECTRICITY AUTHORITY**

नई दिल्ली

**NEW DELHI**

अक्टूबर, 2020

**October, 2020**



प्रकाश मस्के  
अध्यक्ष  
केंद्रीय विद्युत प्राधिकरण  
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## प्राक्कथन

केंद्रीय 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 आरम्भ होने के बाद से भारतीय विद्युत क्षेत्र ने बहुत प्रगति की है। यह प्रकाशन महत्वपूर्ण विकास संकेतकों जैसे स्थापित विद्युत उत्पादन क्षमता, विद्युत ऊर्जा उत्पादन, परेषण और संवितरण नेटवर्क, कैप्टिव विद्युत संयंत्रों और विद्युत खपत के पैटर्न आदि की संवृद्धि के विवरण उपलब्ध कराता है। प्रति व्यक्ति विद्युत खपत, खपत की विभिन्न श्रेणियों का प्रतिशतांक हिस्सा, परेषण और संवितरण हानि आदि जैसी महत्वपूर्ण सांख्यिकी की कुछ विकसित और विकासशील राष्ट्रों के आंकड़ों के साथ तुलना की गई है।

इस प्रकाशन के लिए आंकड़े देश में विद्युत क्षेत्र के विभिन्न संगठनों से प्राप्त किये गए हैं। आशा है कि यह पुस्तिका भारतीय विद्युत क्षेत्र पर संक्षिप्त और लाभदायक सूचना उपलब्ध कराने में बहुत उपयोगी सिद्ध होगी।

अक्टूबर, 2020

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 forms 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 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.

The data for this publication has been sourced from various power sector entities in the country. I hope that this booklet will be very helpful in providing concise & useful information on Indian Electricity Sector.

October, 2020

A handwritten signature in blue ink, appearing to read "Prakash Mhaske".

**(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 (यूटिलिटि और गैर-यूटिलिटि की) 1947 में मात्र 1362 मेगावाट से बढ़कर मार्च अंत, 2020 में लगभग 448.11 गीगा वाट हो गई। प्रतिव्यक्ति बिजली की खपत जो 1947 में केवल 16.3 यूनिट थी, 2019-20 में बढ़कर 1208 यूनिट हो गई है। पिछले 3 वर्षों में, विद्युत कमी काफी कम हो गई हैं 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 हक्कदार 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 कॉरिडोर 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 अवधी 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।

सन्देश कुमार शर्मा  
(Sandesh Kumar Sharma)

( सन्देश कुमार शर्मा )

अक्टूबर, 2020



**Sandesh Kumar Sharma**  
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## 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 448.11 GW at the end of March, 2020. The Per Capita Electricity Consumption which was a mere 16.3 units in 1947, has increased to 1208 units in 2019-20. 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)

October, 2020

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**Table 1**  
**Plan wise Growth of Electricity Sector in India**  
**Utilities**

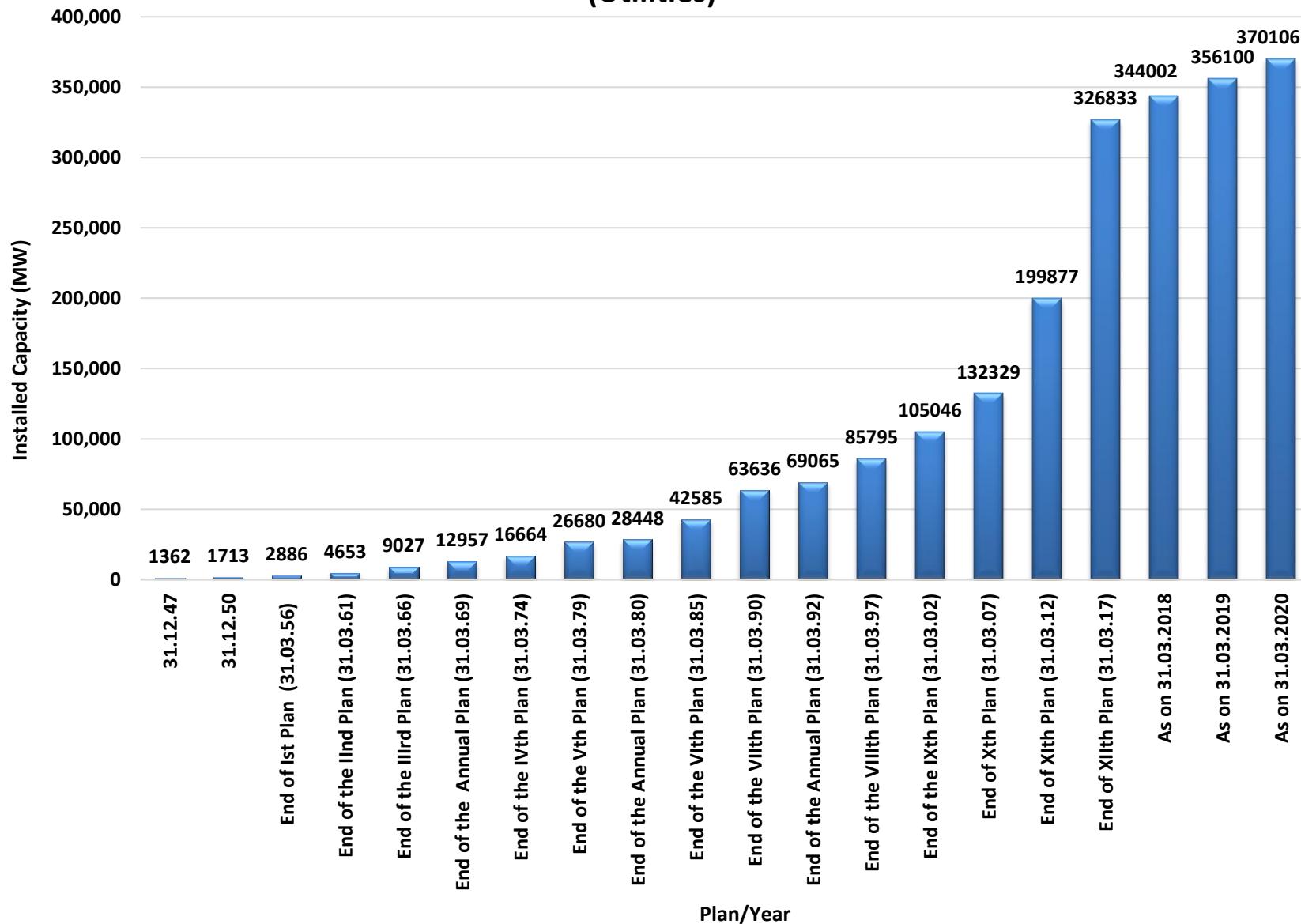
Sl. No.	As on / during financial year ending with	Installed Capacity (MW)	No.of villages electrified	Length of T & D Lines (Ckt. kms.)(#)	Per Capita Consumption (\$) (kWh)
1	31.12.1947	1362	N.A.	23238	16
2	31.12.1950	1713	3061	29271	18
3	31.03.1956( End of the 1st Plan)	2886	7294	85427	31
4	31.03.1961( 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	12682649	1181
20	31.03.2020	370106	597464	13440258@	1208

Note:

1. N.A. : Not Available.
2. (@) Estimated.
3. (\$) Per Capita Consumption=Gross Electrical Energy availability/ Mid year Population
4. (#) Includes 440 Volts Distribution Lines.
5. Rural electrification is based on revised definition of village electrification in the year 2004 and based on 2011 Census.

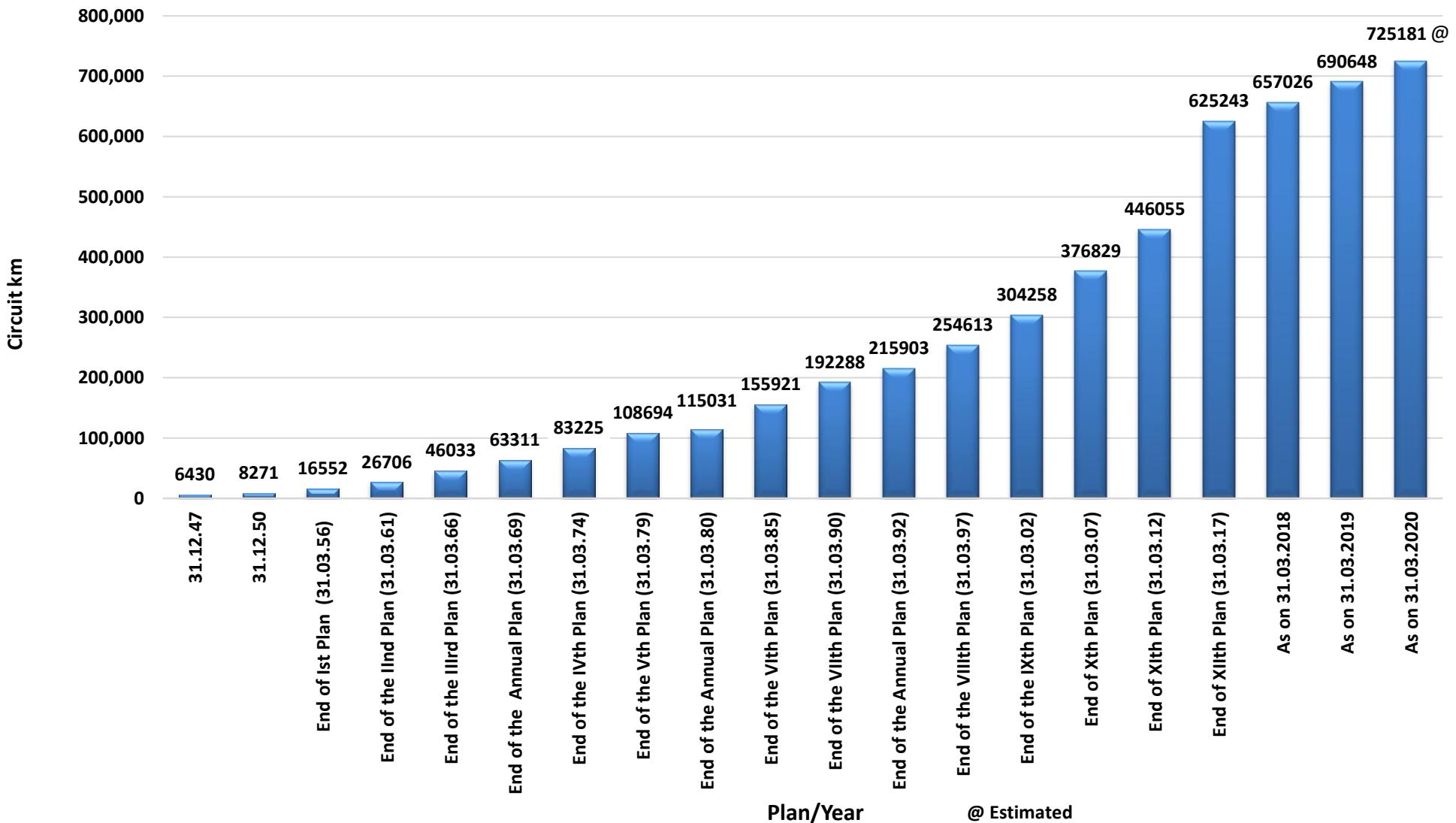
**Chart : 1**

### **Planwise Growth of Installed Capacity in the Country (Utilities)**



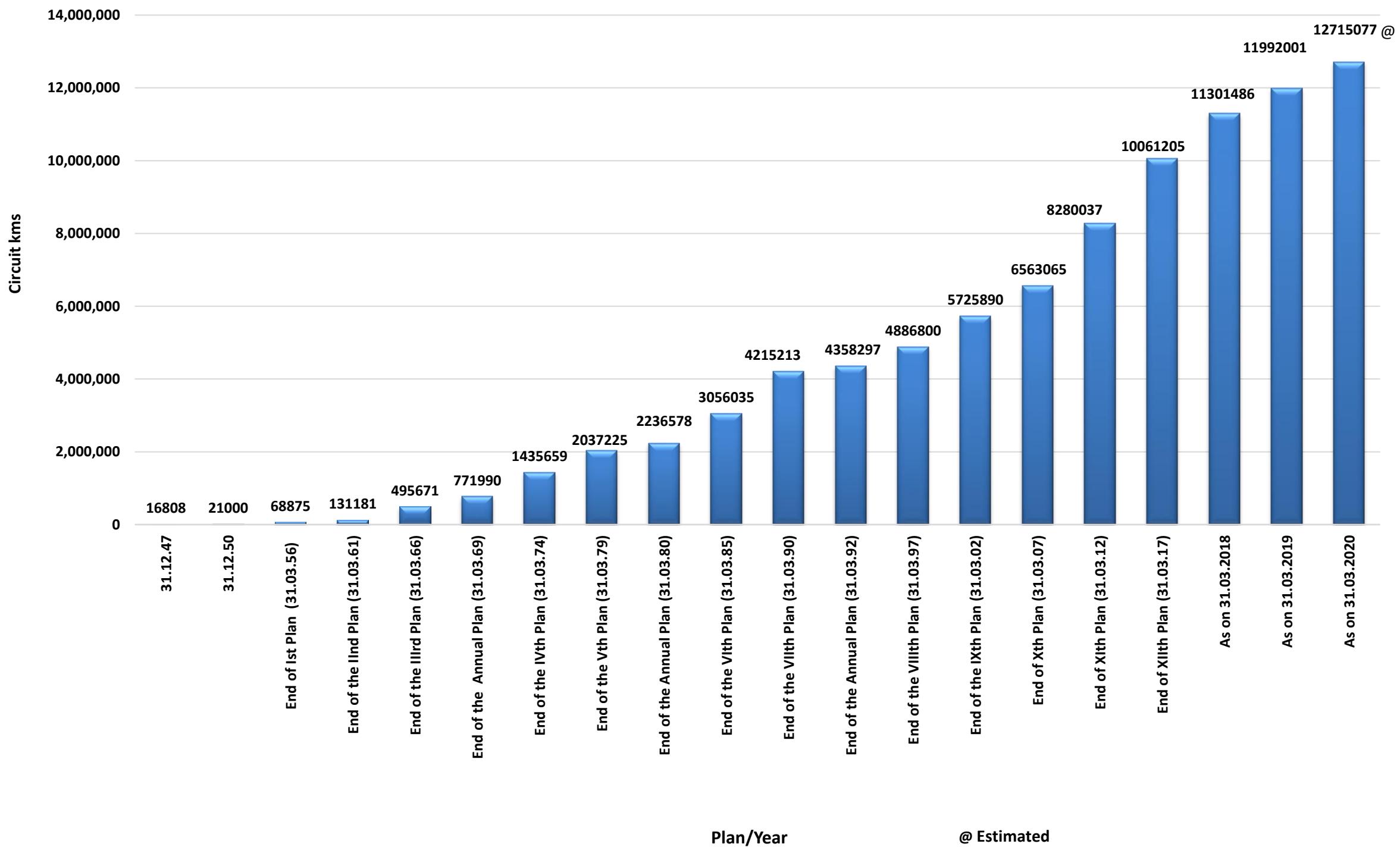
**Chart : 2A**

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



**Chart : 2B**

**Planwise Growth of Transmission Lines in the Country  
below 66 kV**



## Planwise Growth of Number of Villages Electrified in the Country

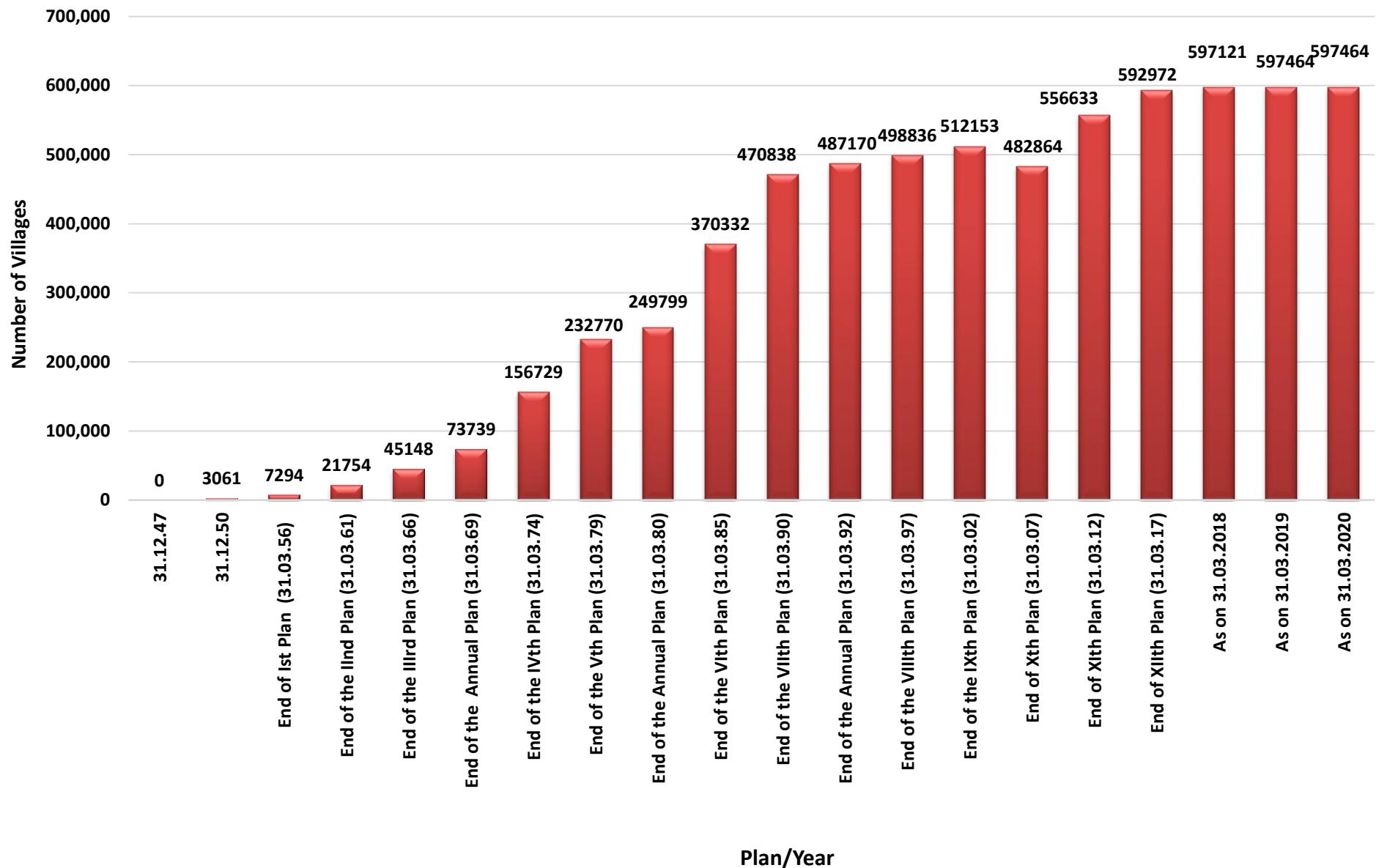


Chart : 4

## Planwise Growth of Per Capita Consumption of Electricity in the Country

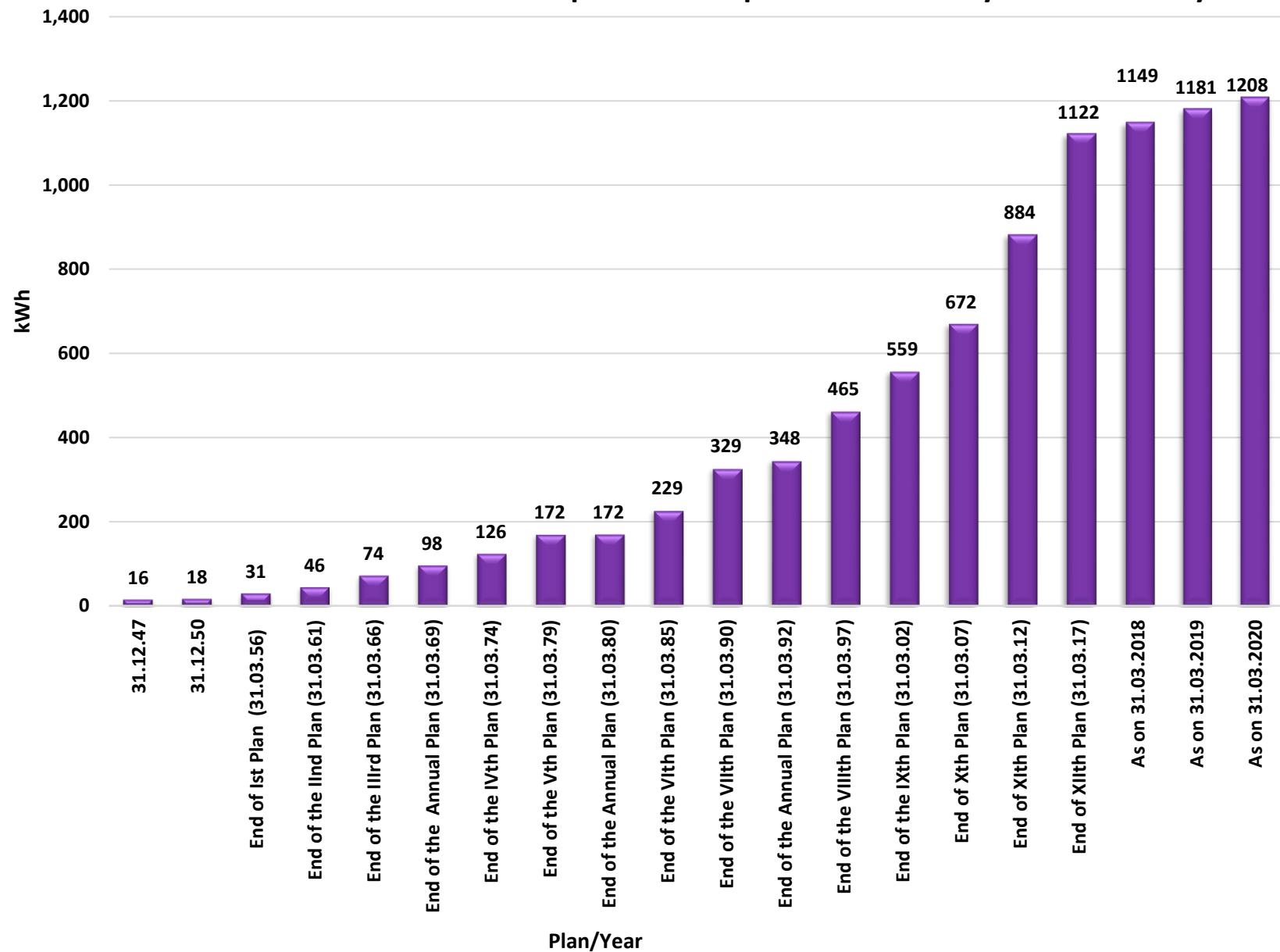
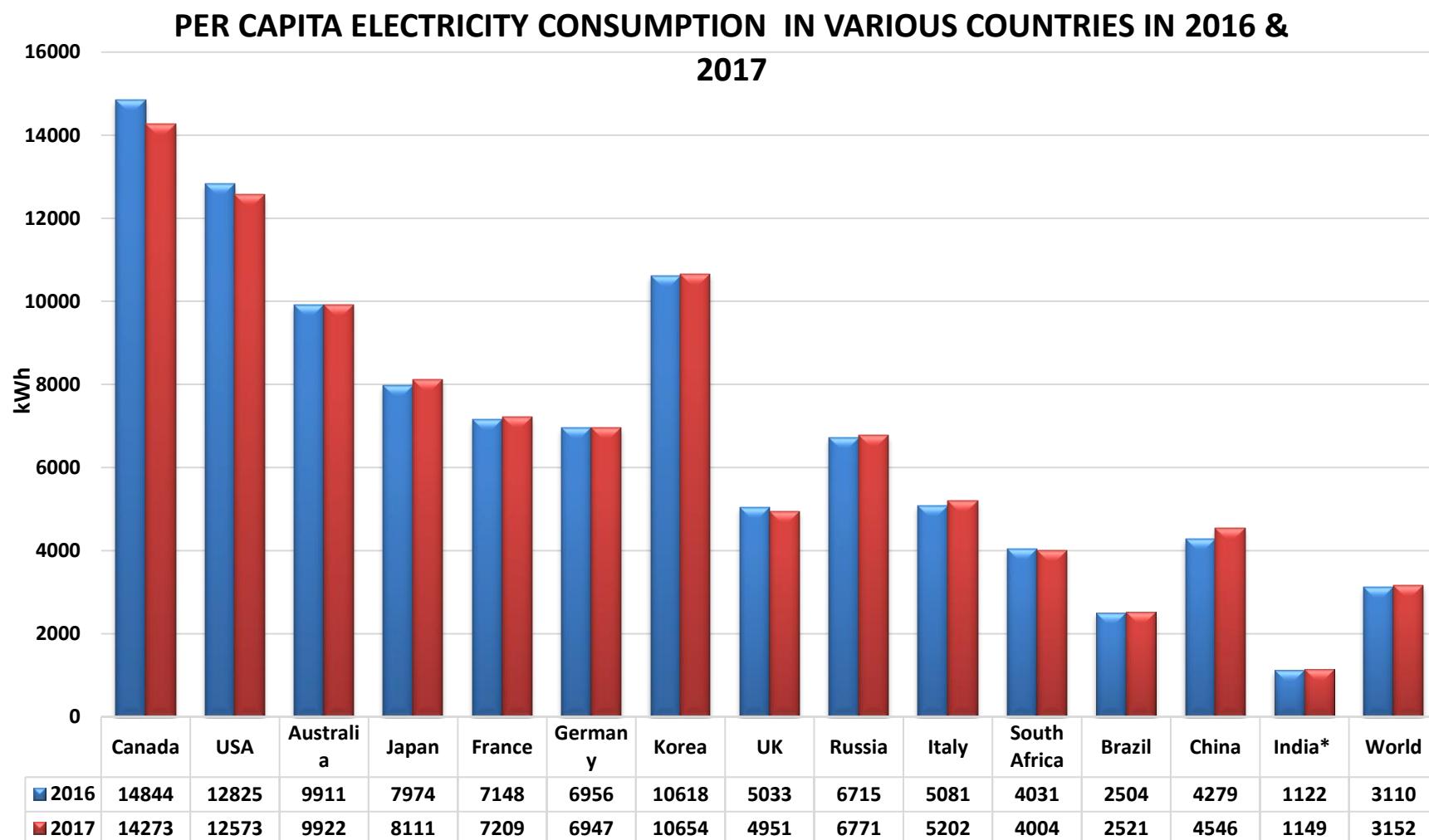


Chart : 5



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

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

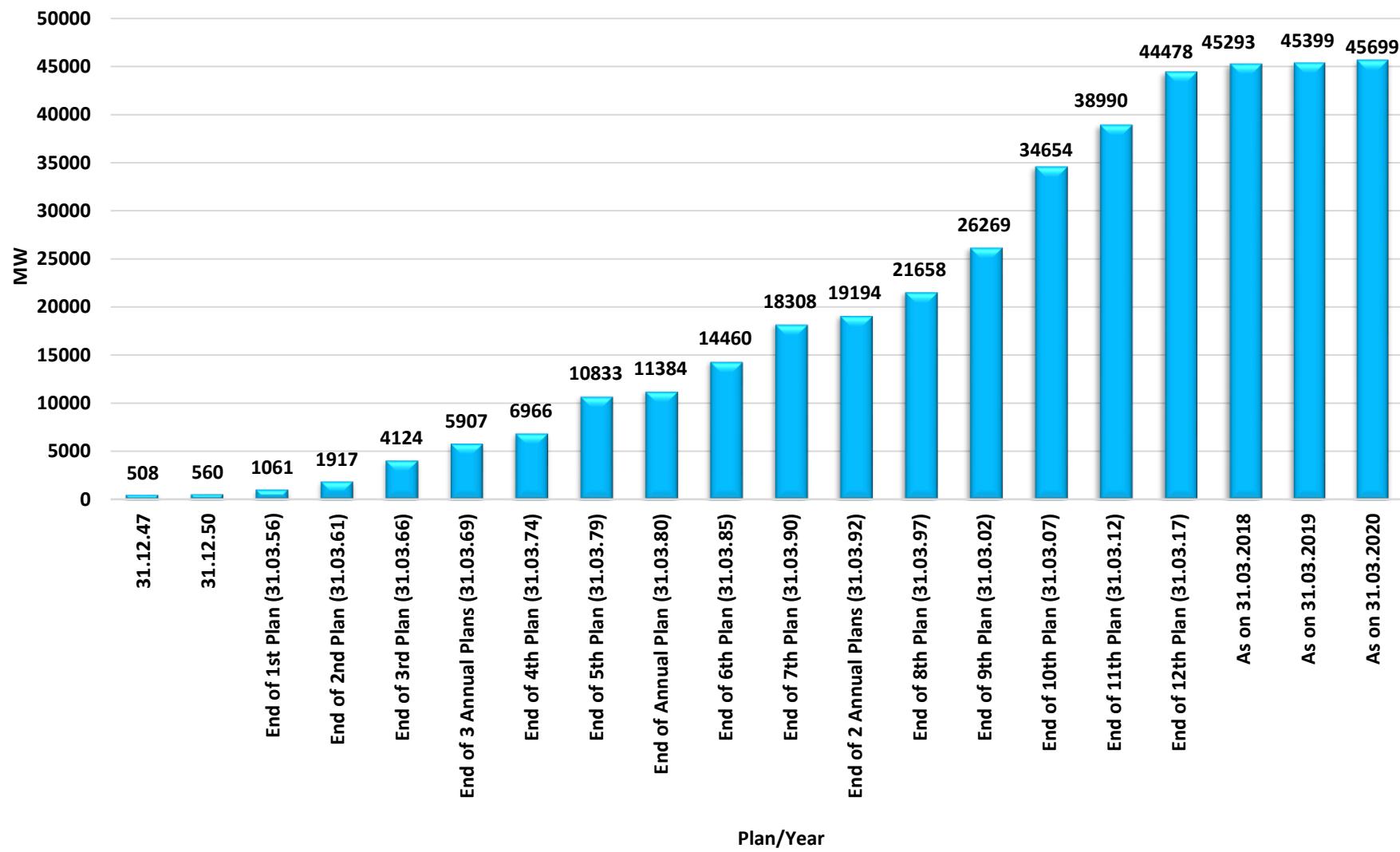
**Table 2**  
**Plan wise Growth of Installed Capacity in India - Mode wise**  
**(Utilities)**

Sl. No.	As on	Thermal				Hydro	Nuclear	RES	(MW) 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
20	31.03.2020	205135	24955	510	230600	45699	6780	87028	370106

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

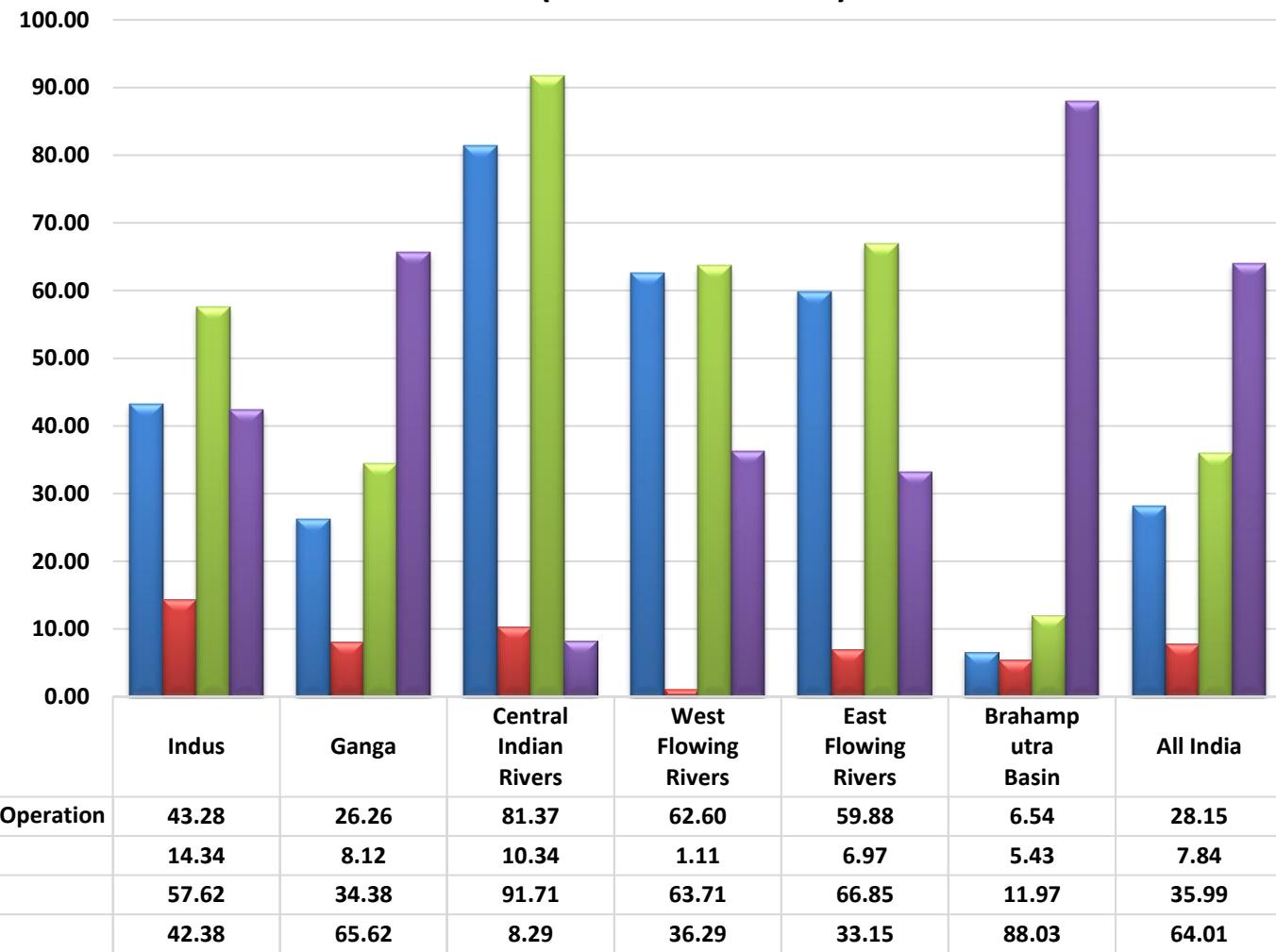
Chart : 6

## 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 31.03.2020)**

Chart : 6A



**Regionwise Status of Hydro Electric Potential Development    Chart : 6B**  
**In terms of Installed Capacity above 25 MW**  
**% wise (As on 31.03.2020)**

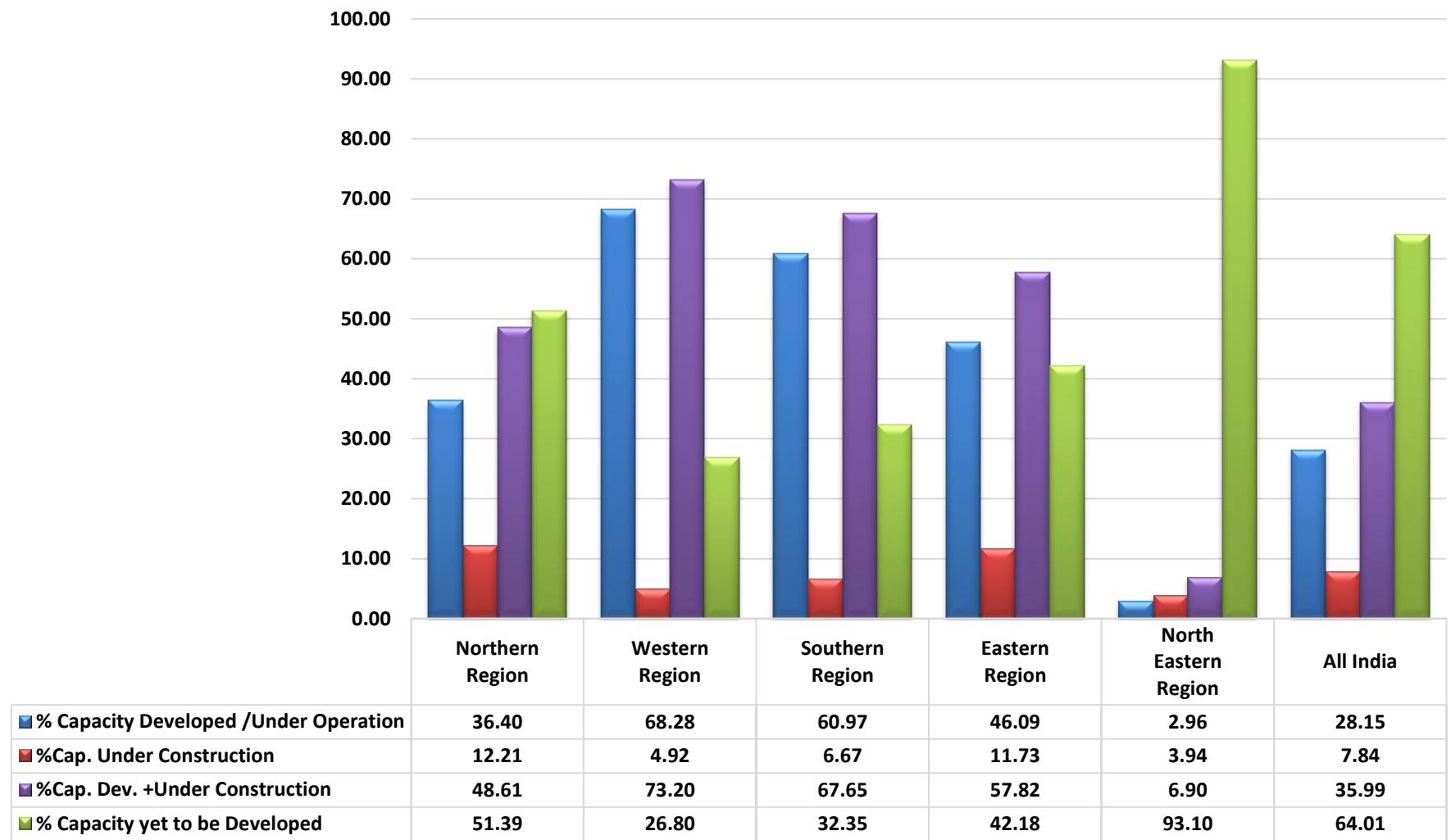
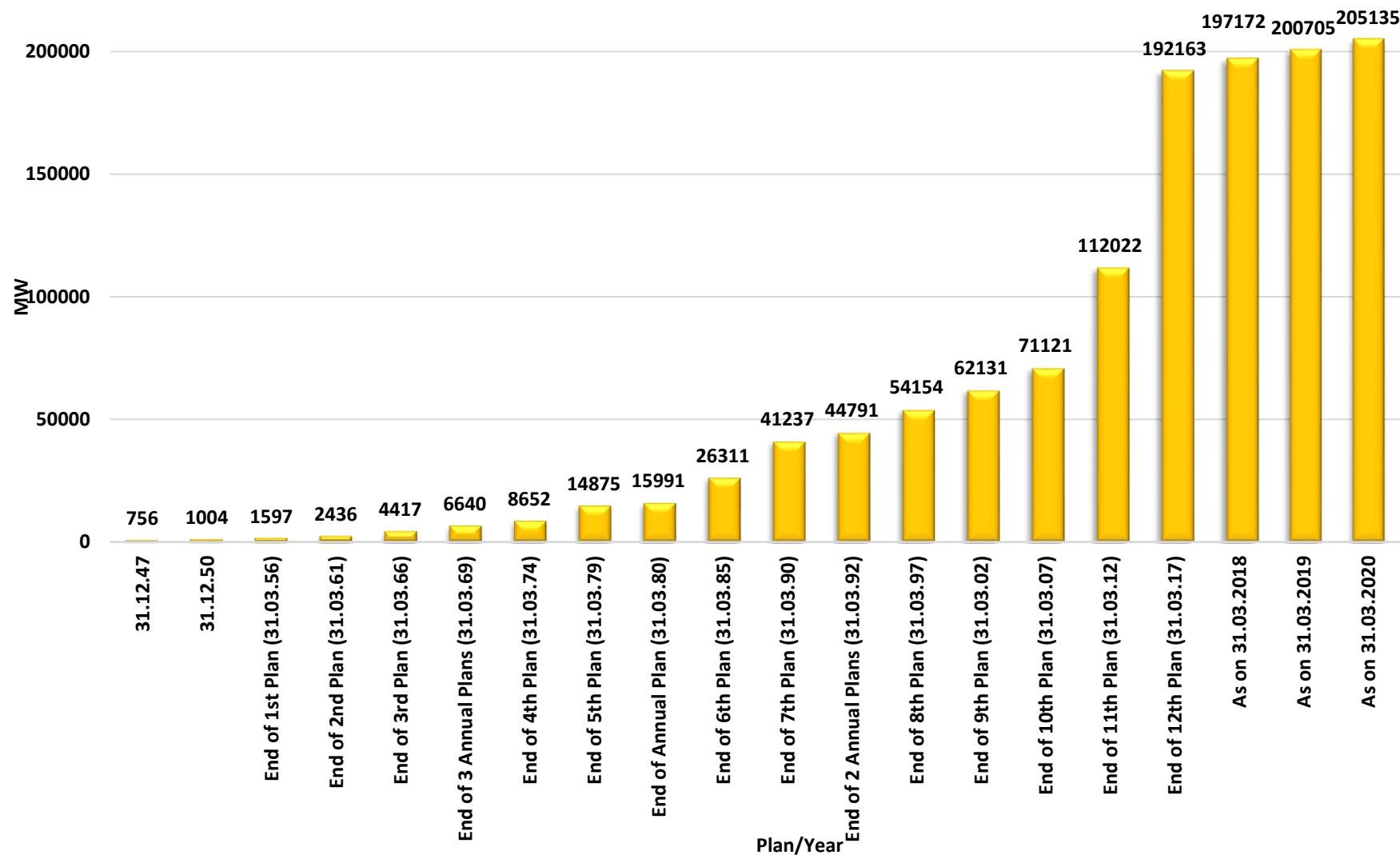


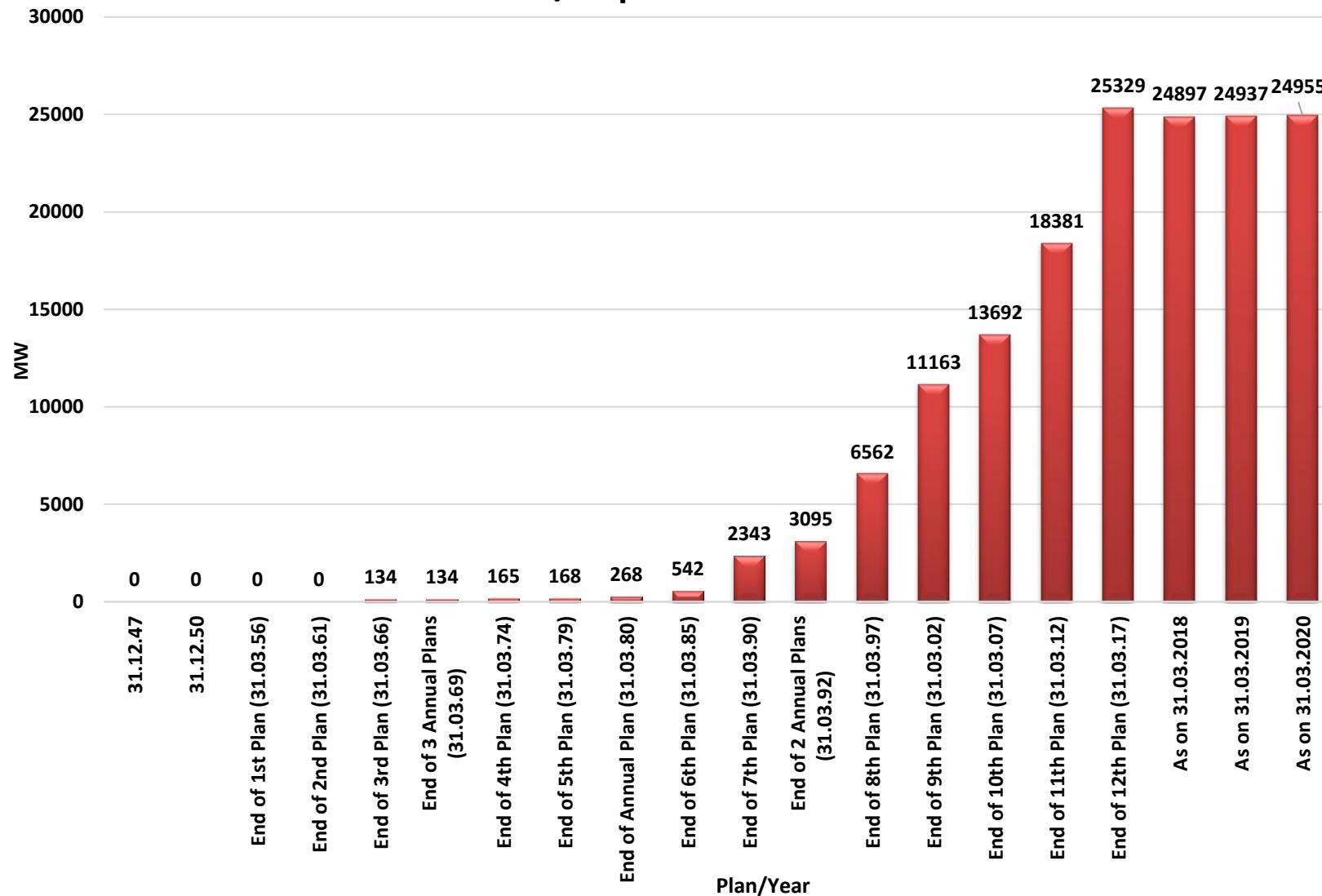
Chart : 7A

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



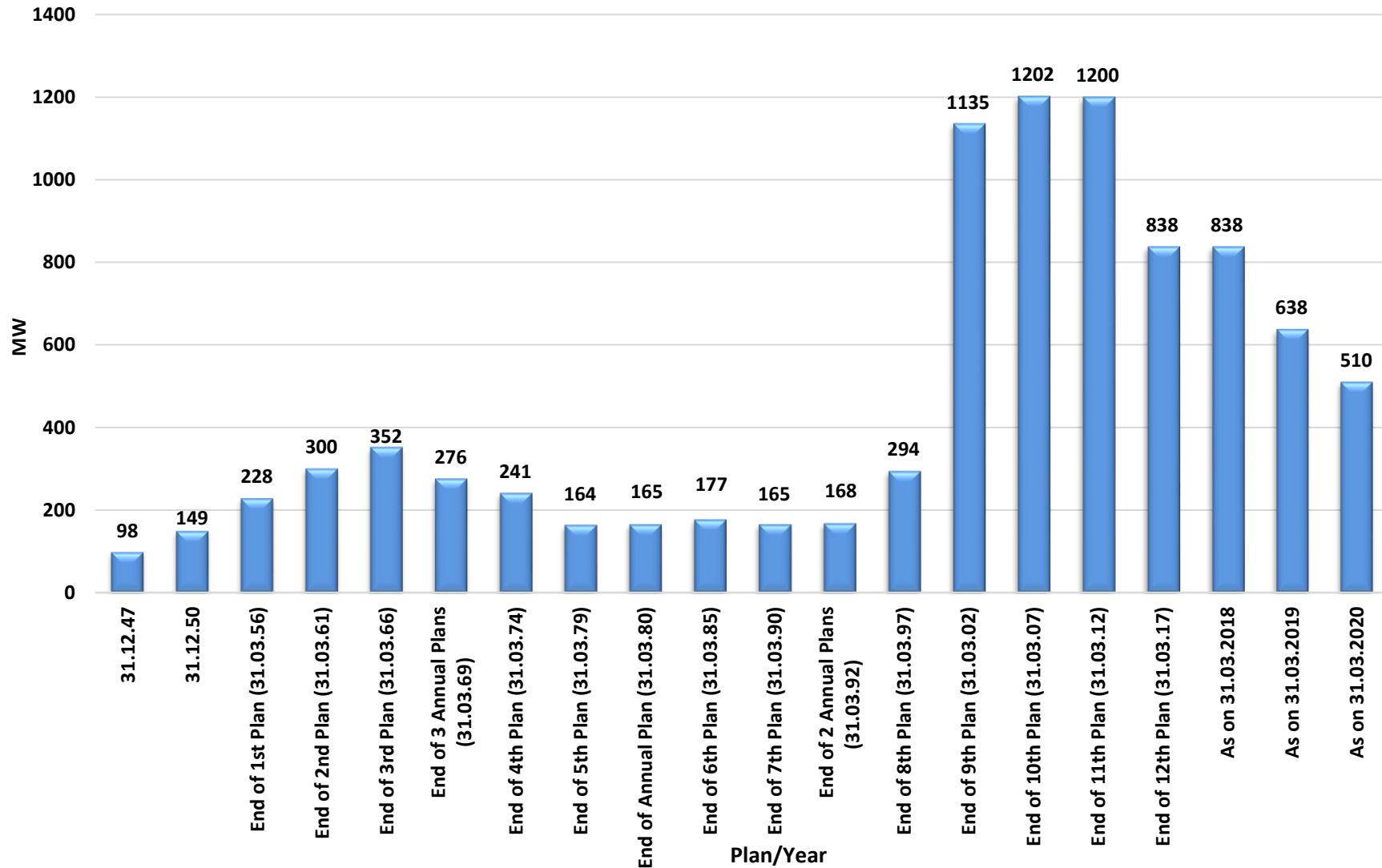
## Plan wise Growth of Installed Capacity in India Gas/ Liquid based Plants

Chart : 7B



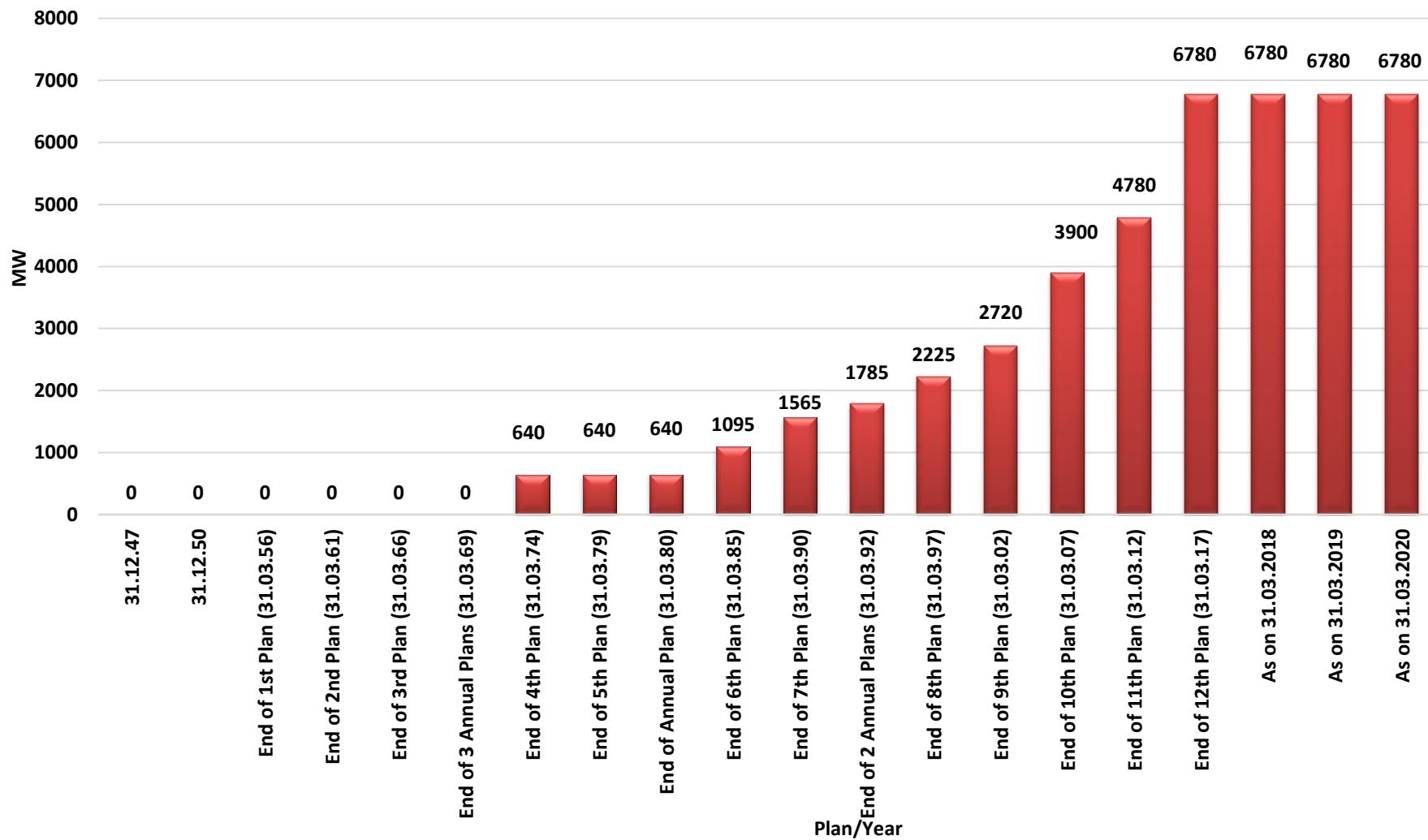
## Plan wise Growth of Installed Capacity in India Diesel based Plants

Chart : 7C

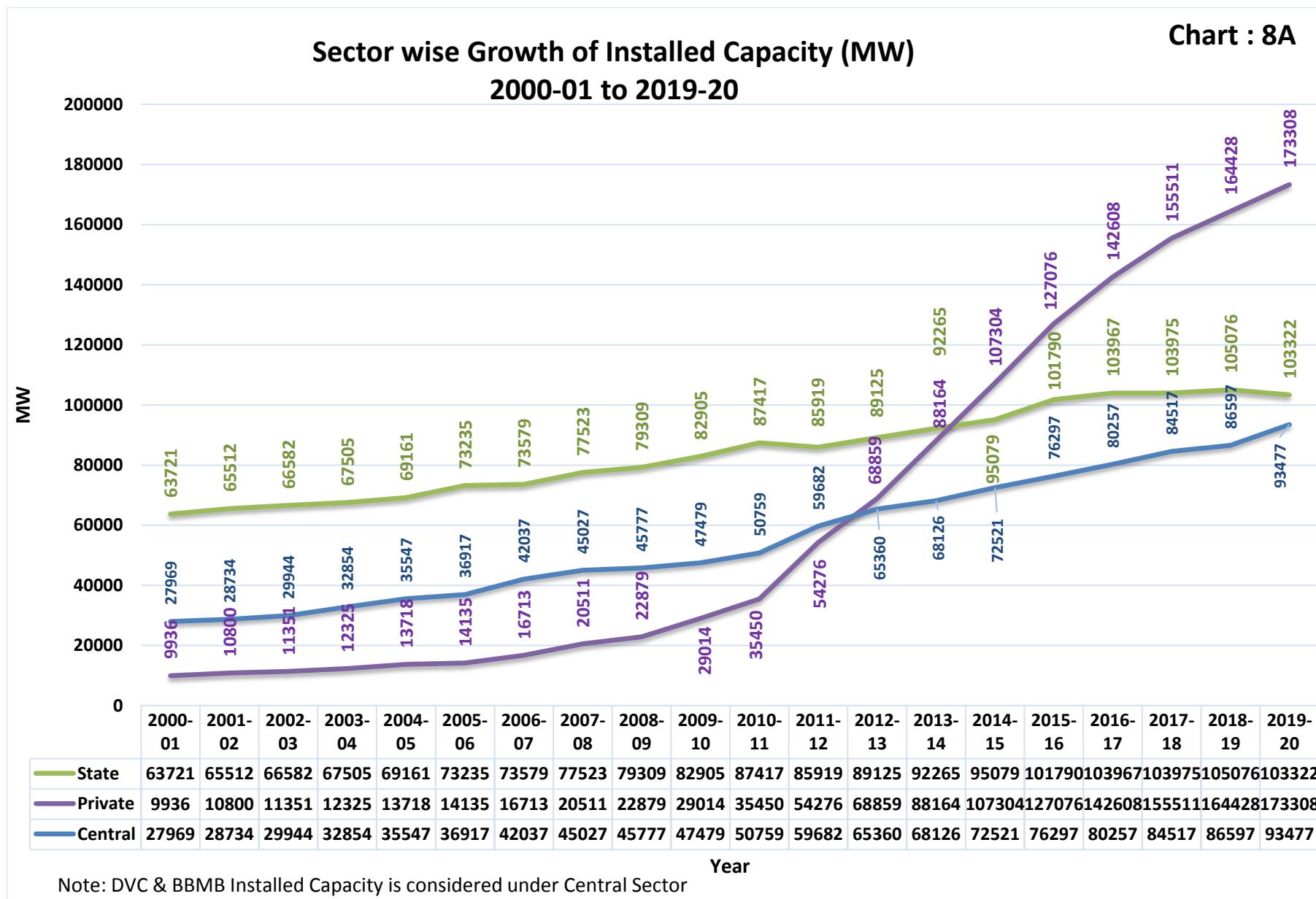


## Plan wise Growth of Installed Capacity in India Nuclear based Plants

Chart : 8

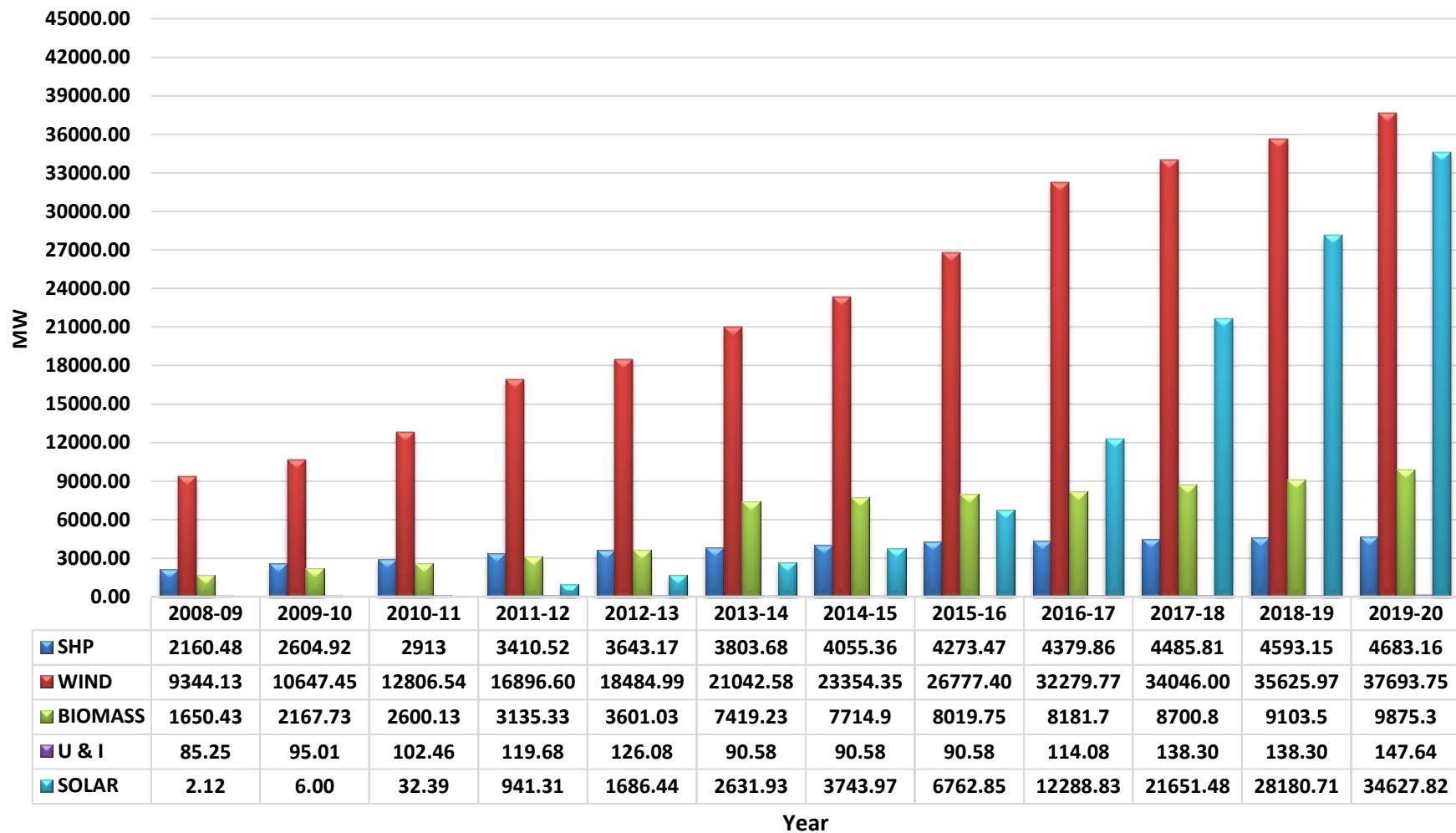


**Chart : 8A**



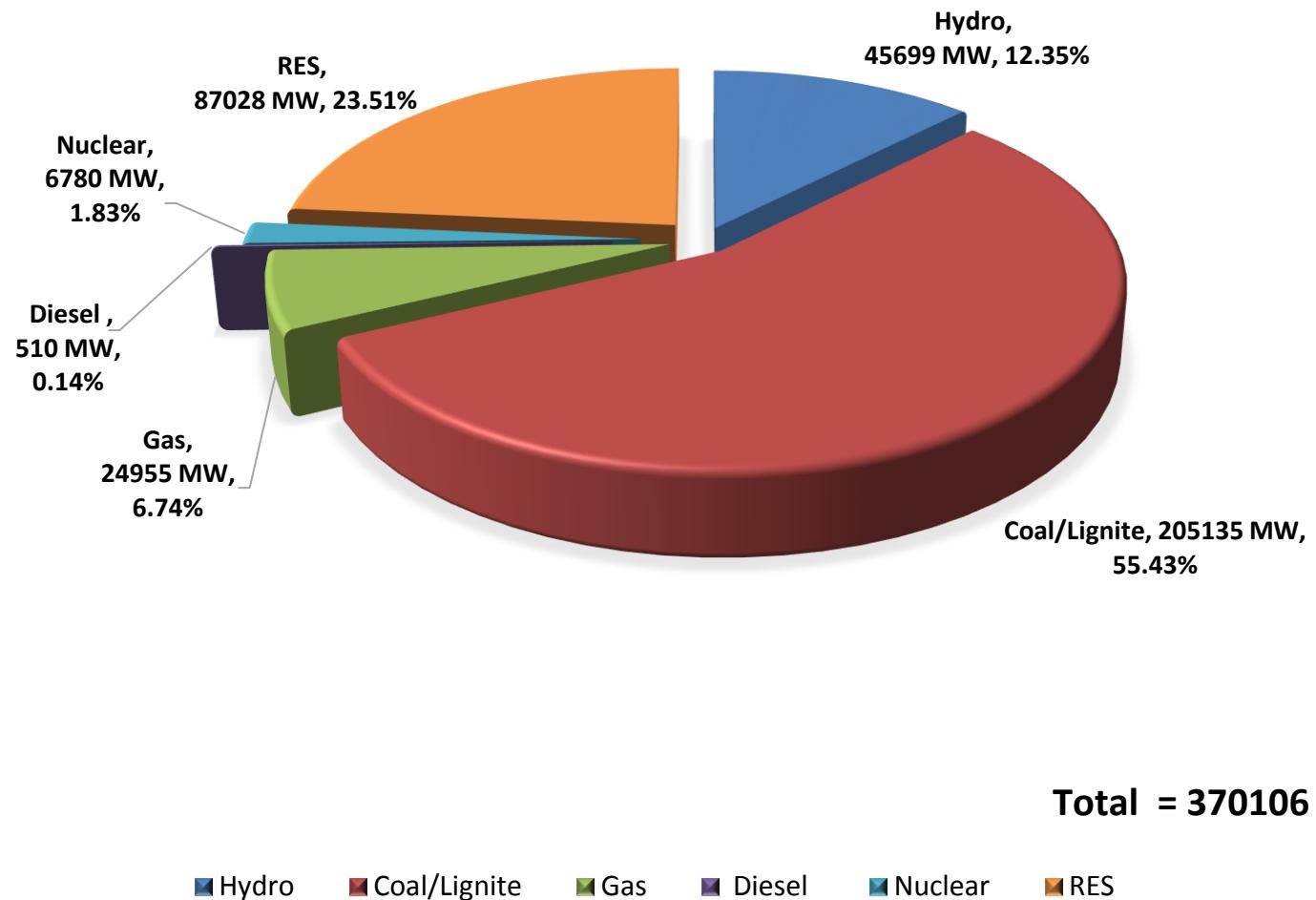
**Chart :8 B**

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



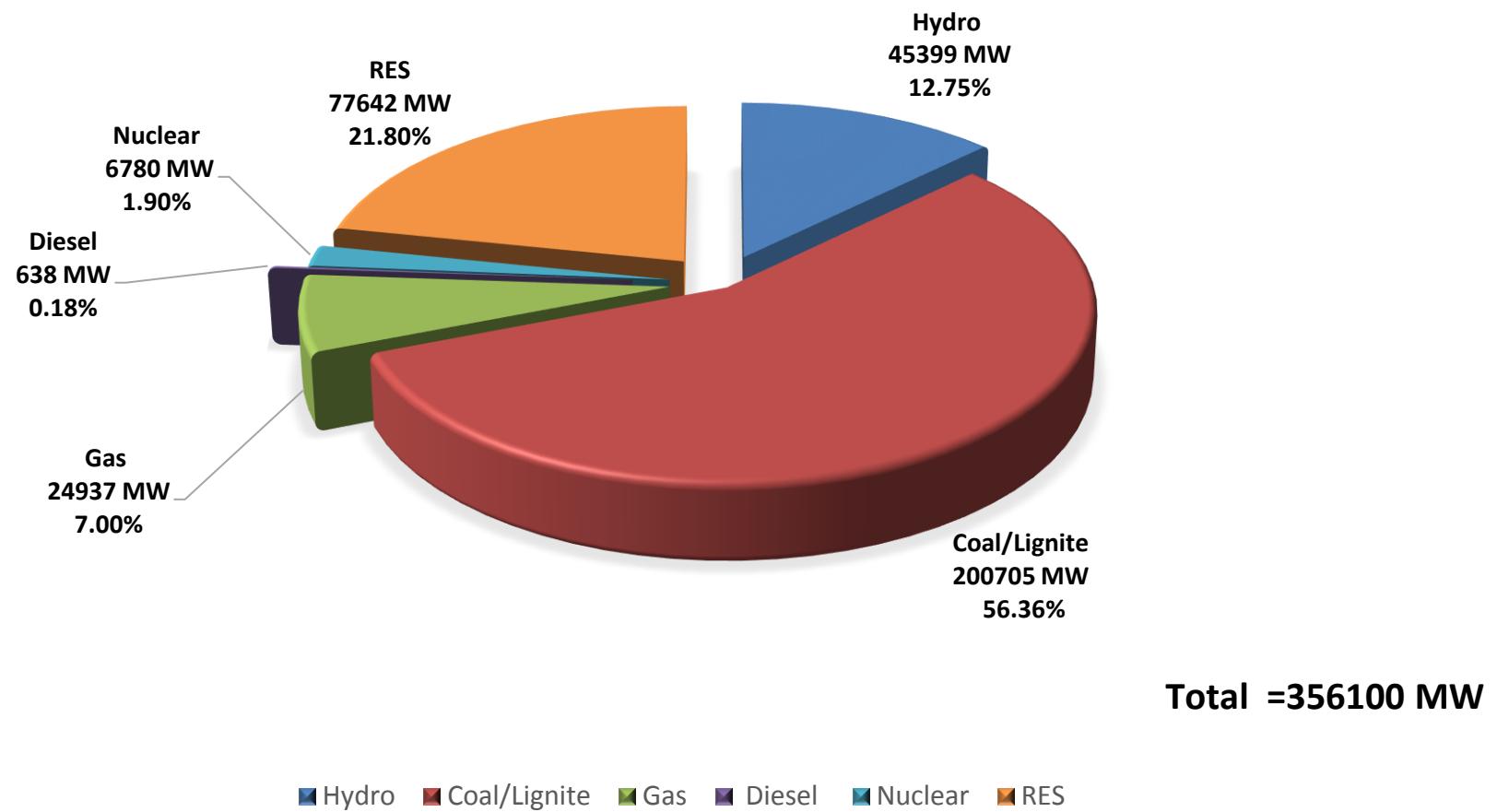
**Pie Chart : 9**

**ALL INDIA INSTALLED CAPACITY  
(UTILITIES)  
AS ON 31.03.2020**



**Pie Chart : 9A**

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



**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	(GWh) 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	215	1072314	134894	37813	126759	1371779
20	2019-20	994197	48443	199 *	1042838	155769	46472	138337	1383417

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.

Chart : 10

**Specific Generation by All India Power Stations- Mode wise  
(Utilities)**  
**1994 - 95 to 2019-20**

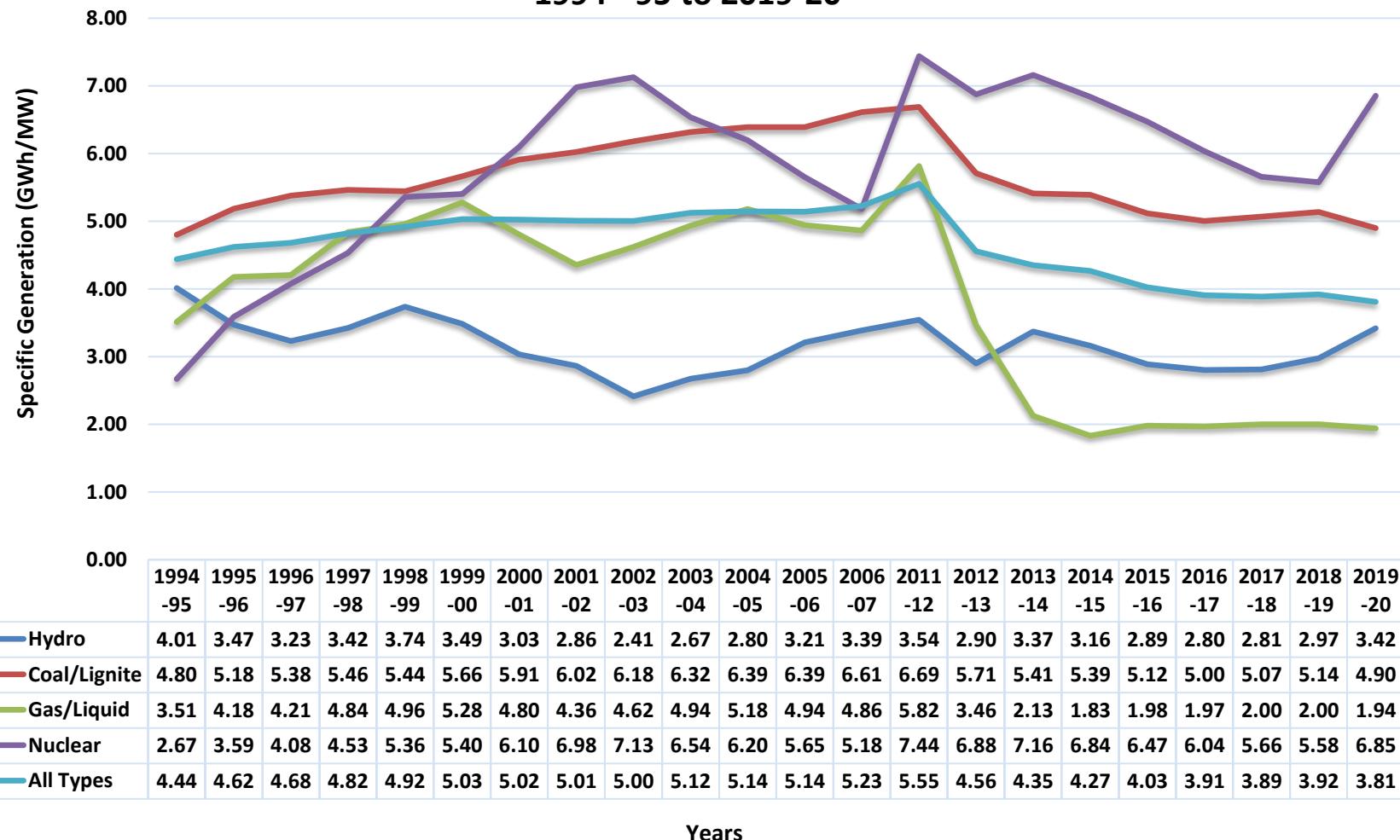
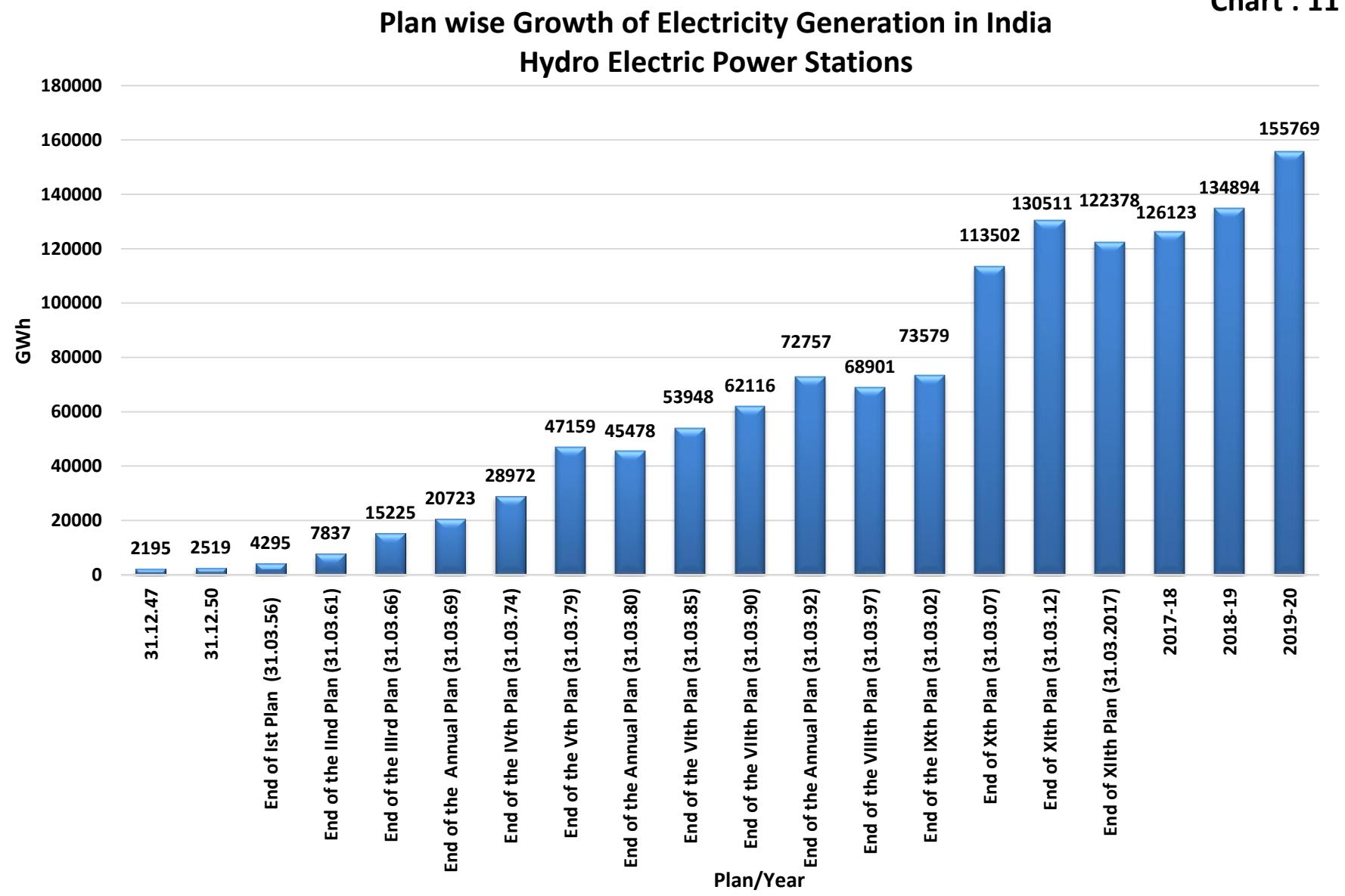
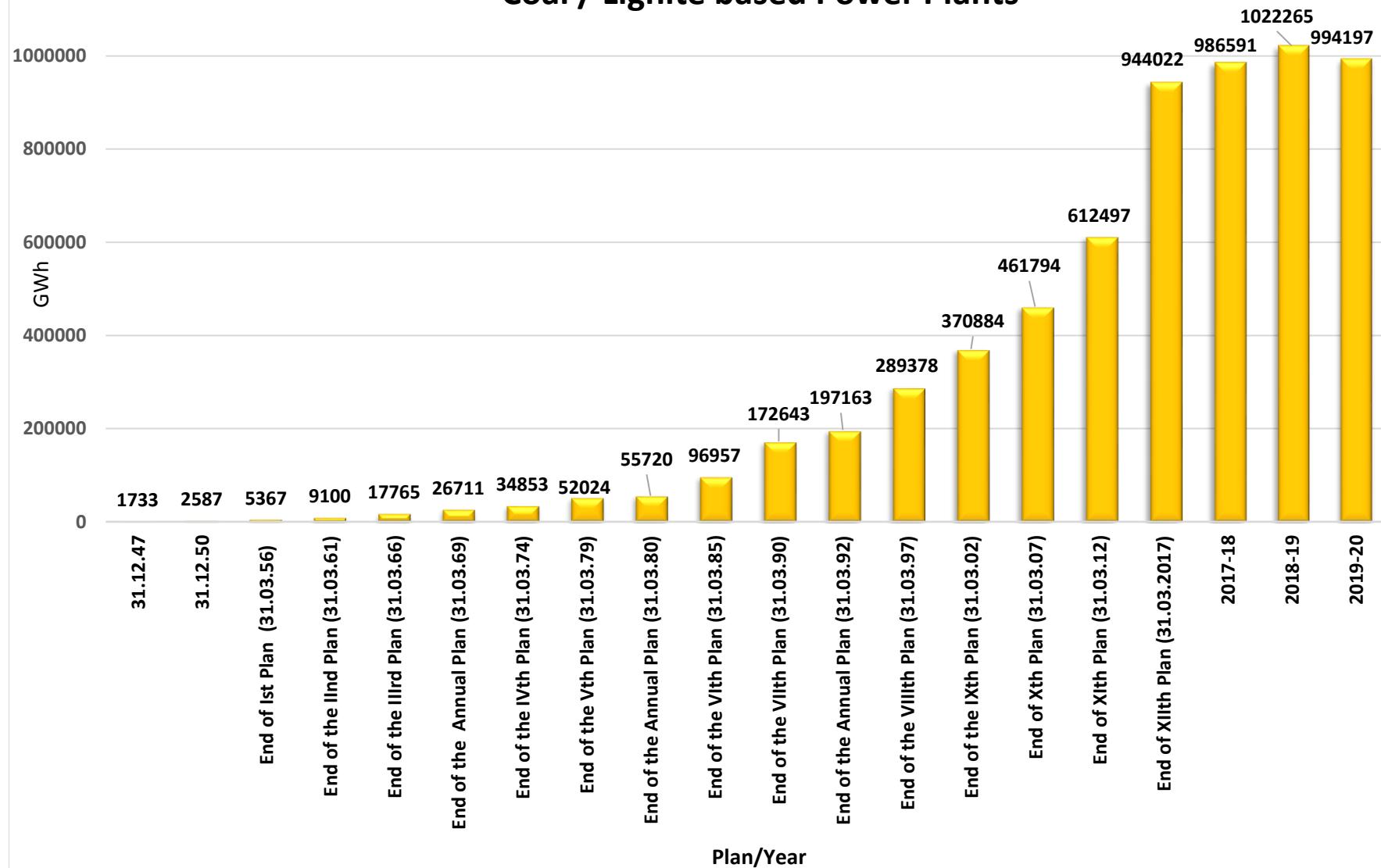


Chart : 11



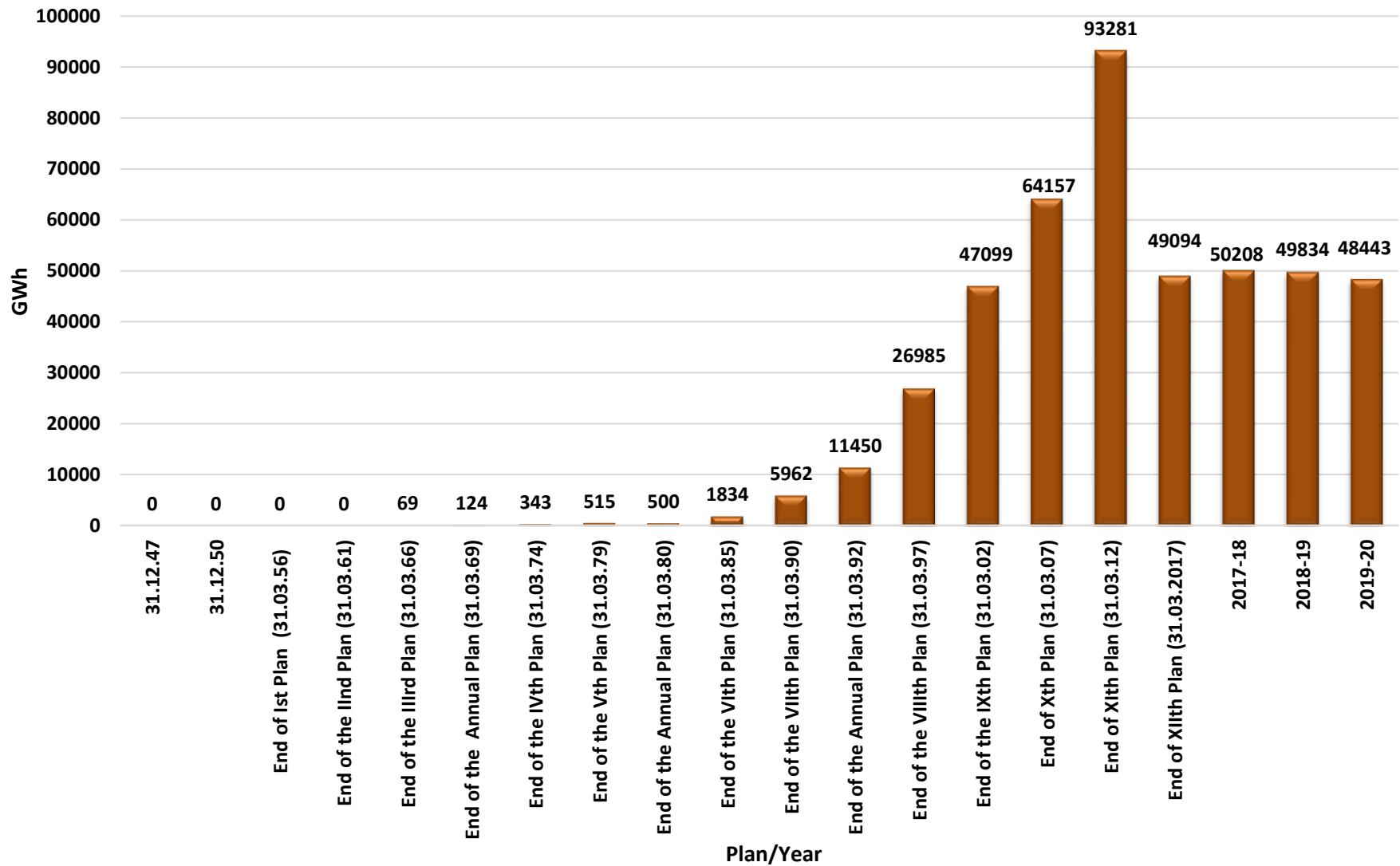
## Plan wise Growth of Electricity Generation in India Coal / Lignite based Power Plants

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

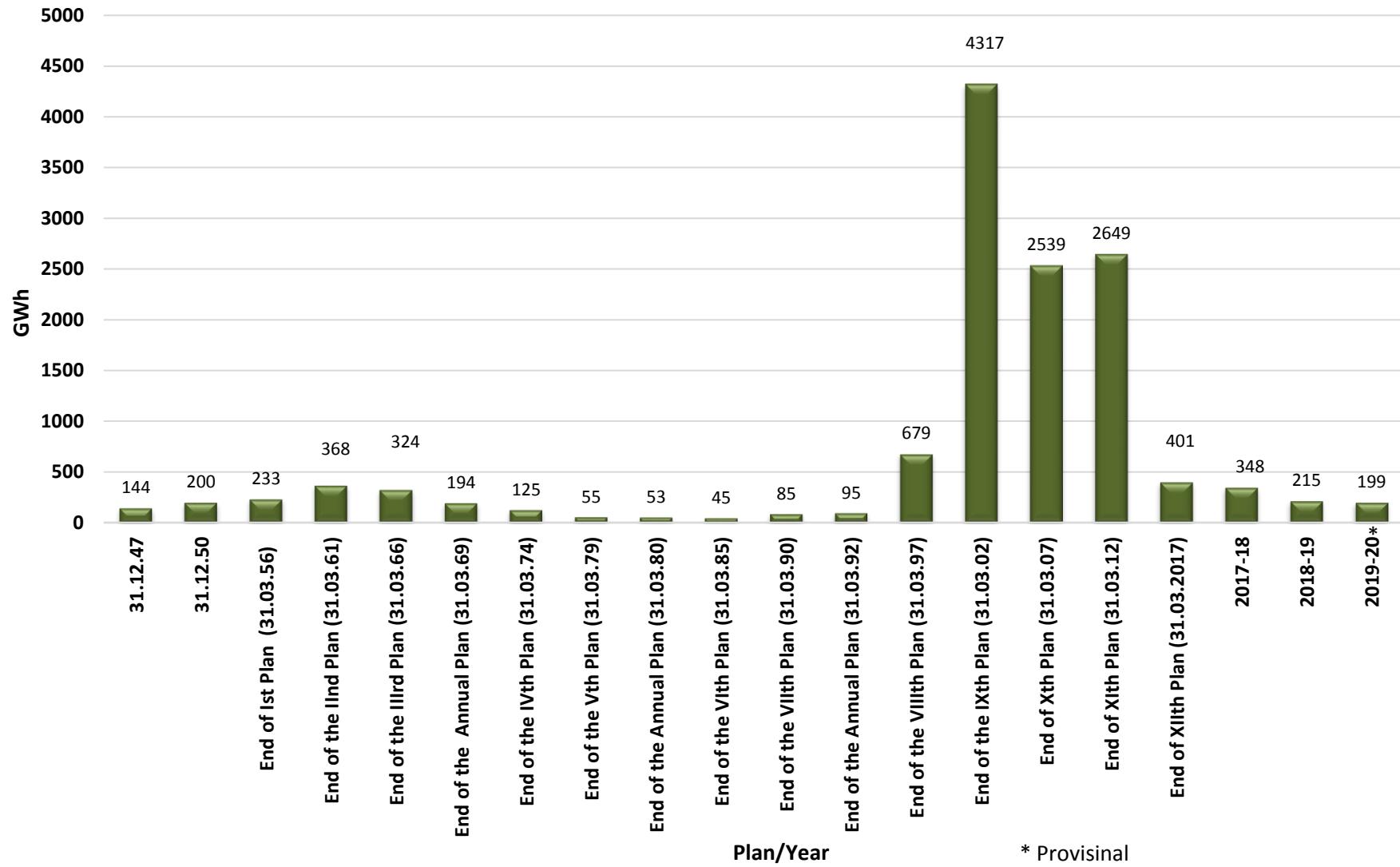


Chart : 13

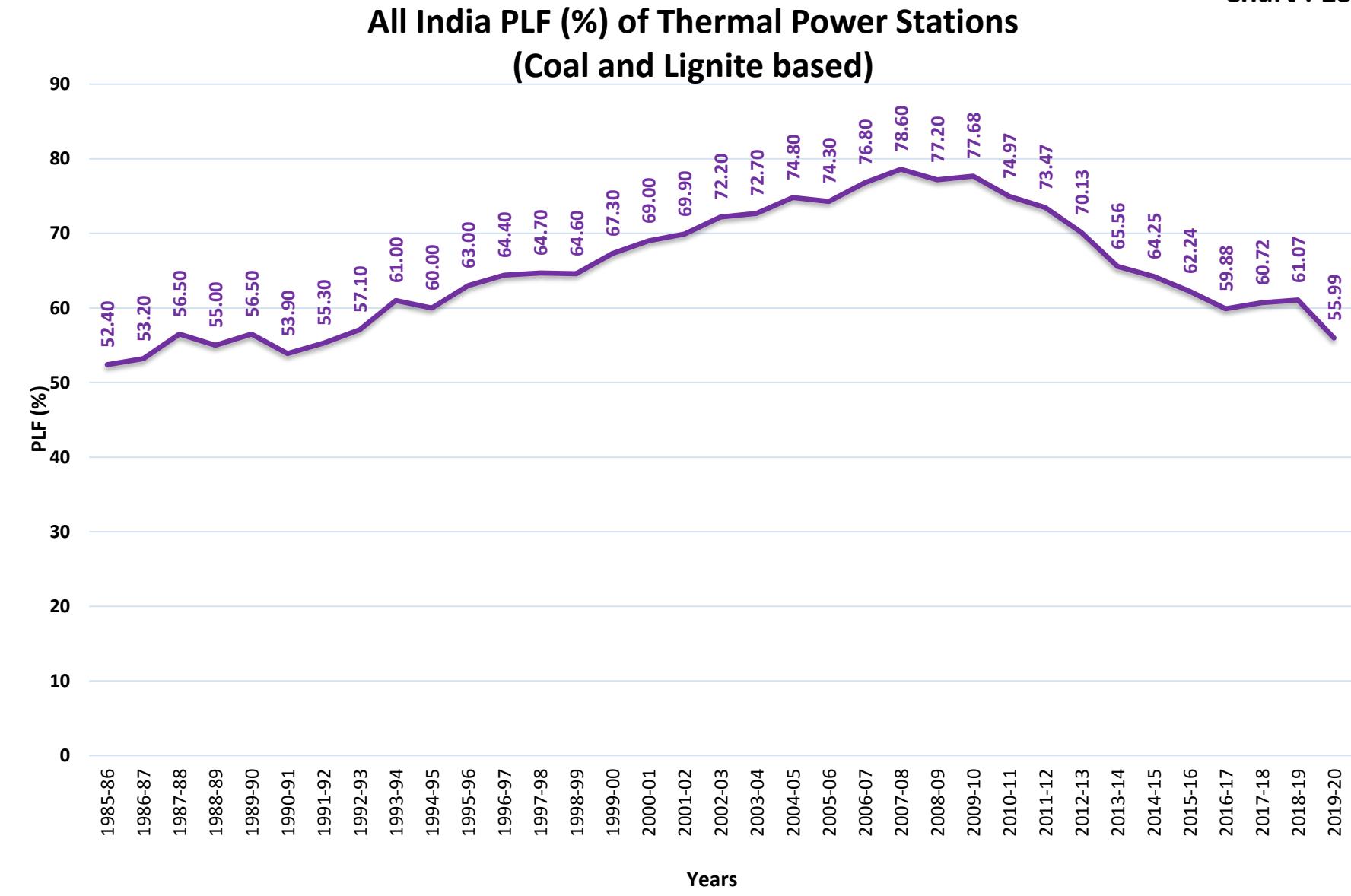
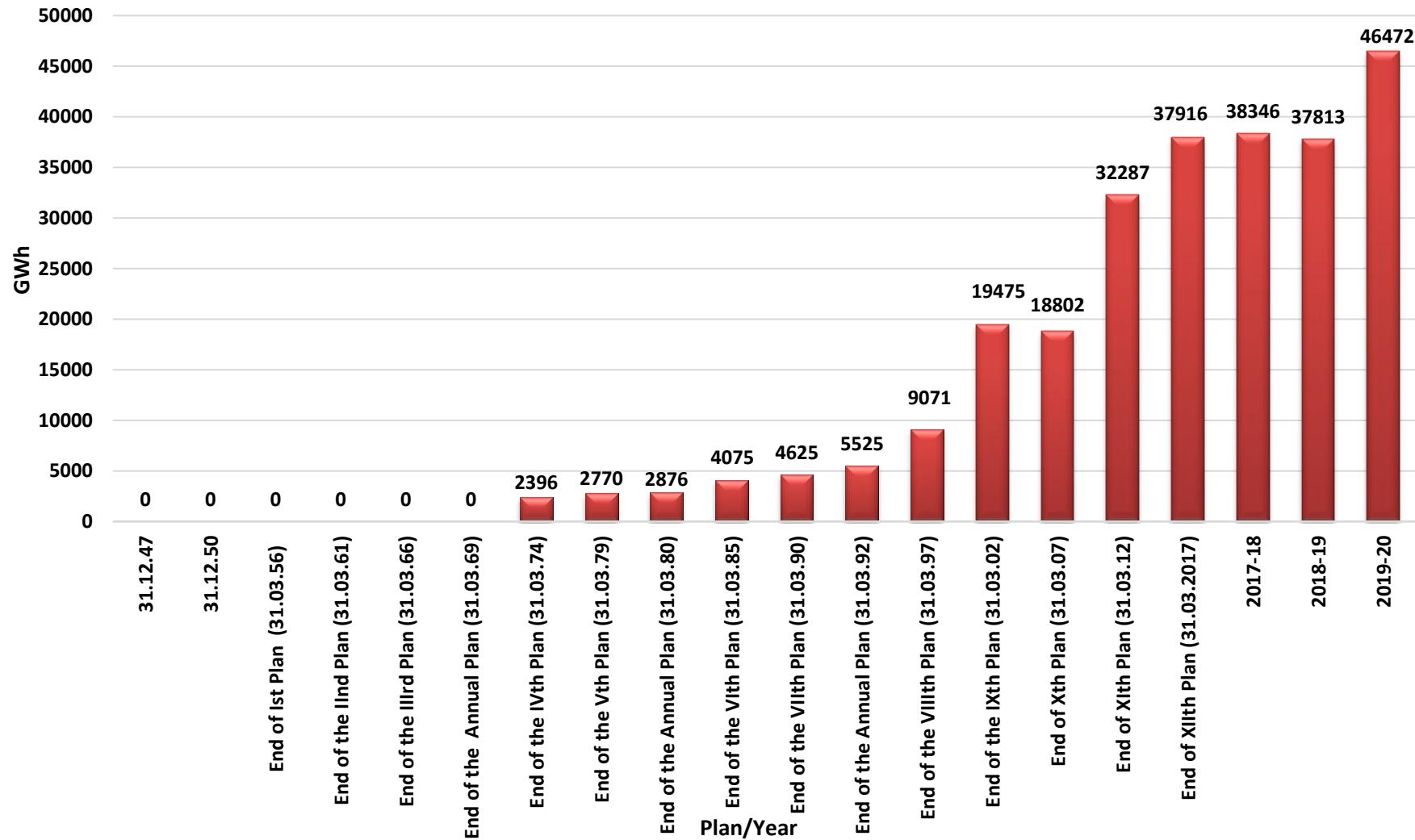


Chart : 14

## Plan wise Growth of Electricity Generation in India Nuclear Power Plants



## Plan wise Growth of All India Electricity Generation (Utilities)

Chart : 15

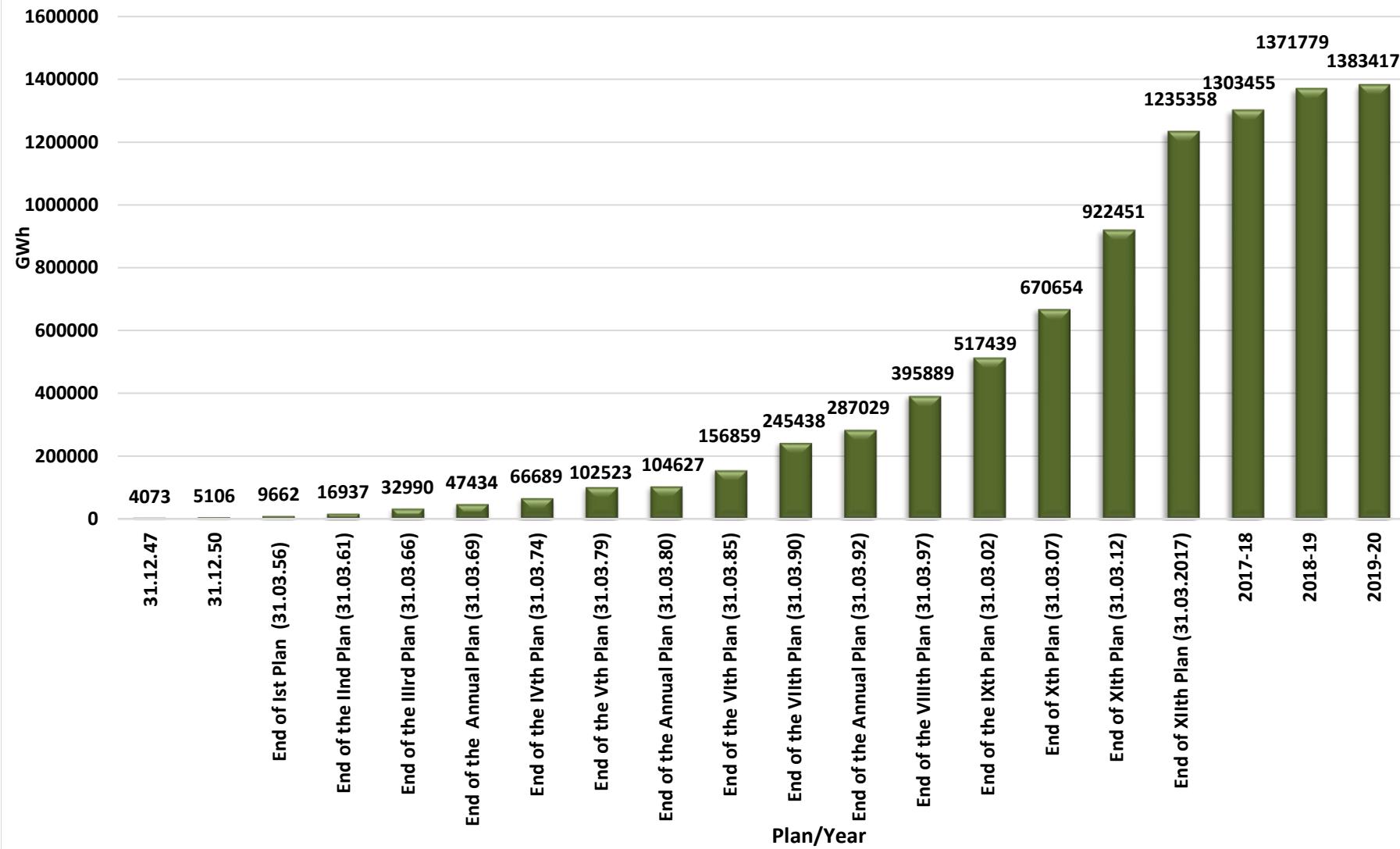
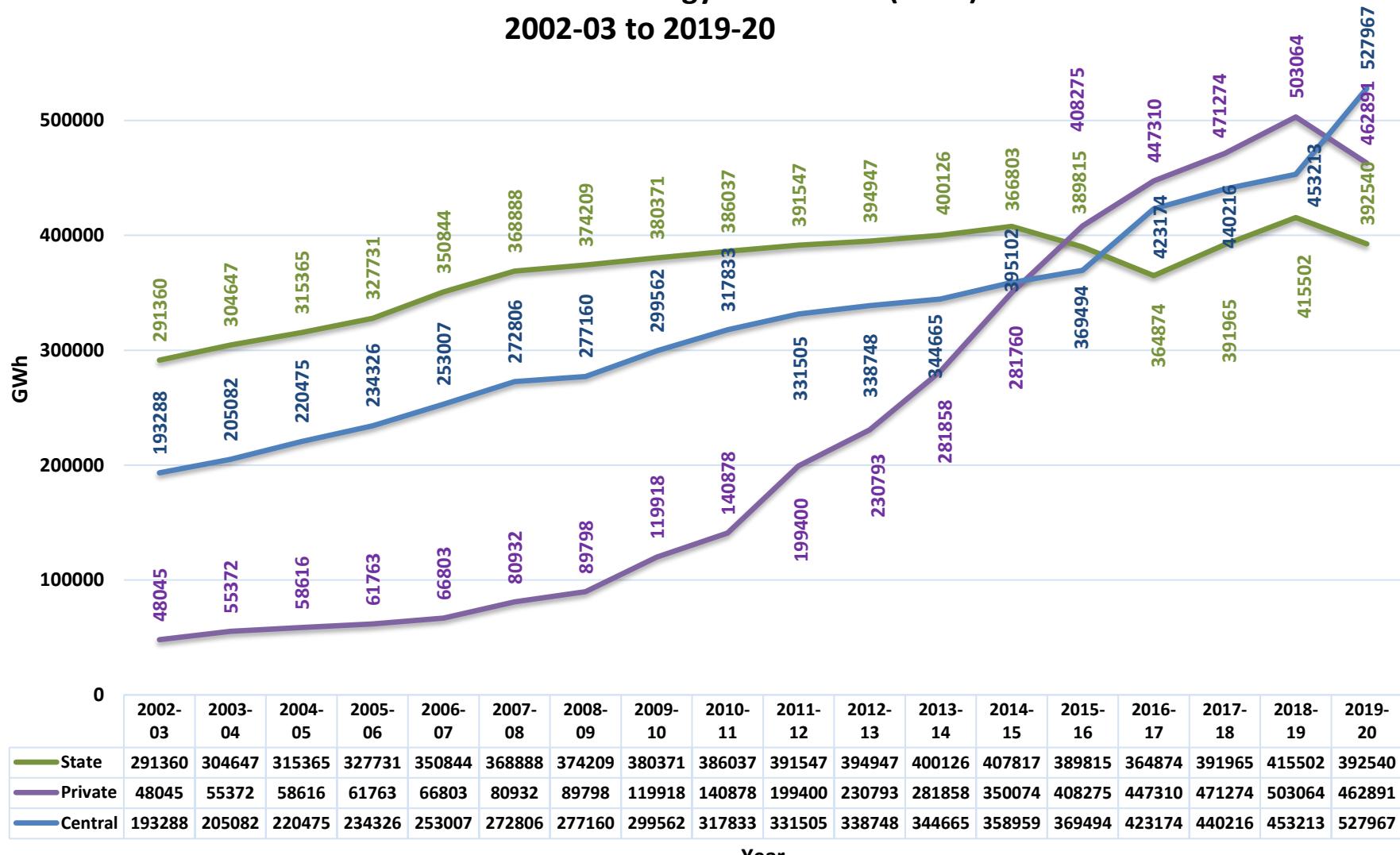


Chart : 15A

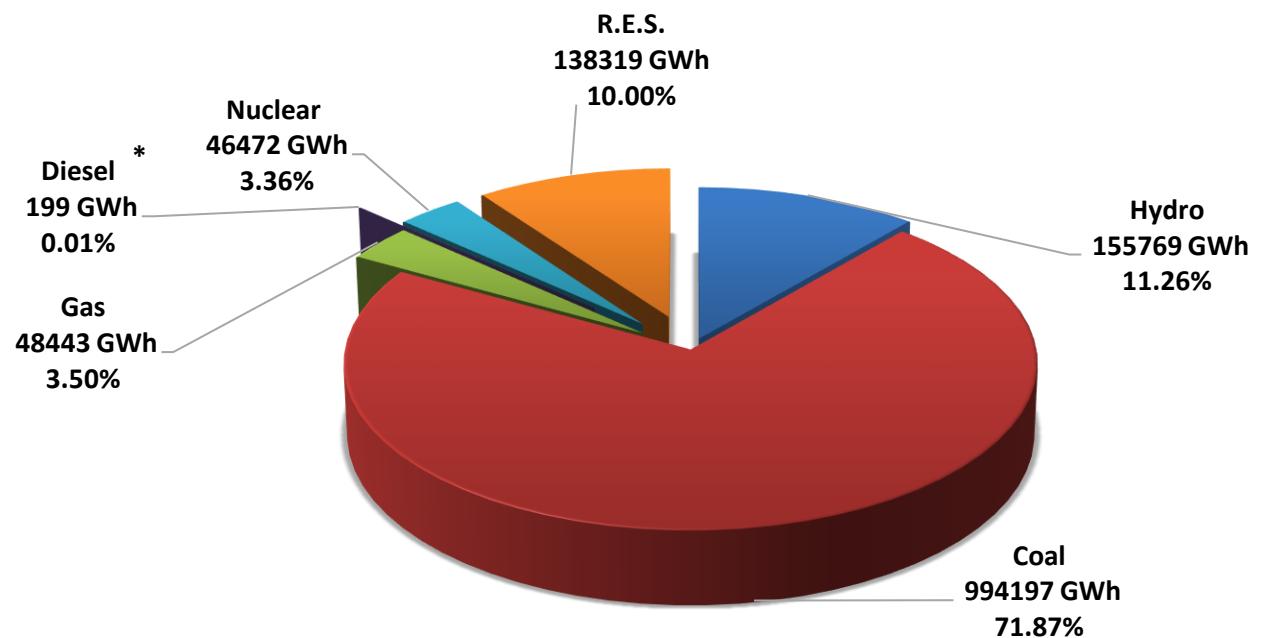
**Sector wise Growth of Energy Generation (GWh)**  
**2002-03 to 2019-20**



Note: DVC & BBMB Generation is considered under Central Sector

**Gross Electricity Generation in India  
Modewise -Utilities  
2019-20**

**Pie Chart : 16**



\* Provisional

**TOTAL 1383398 GWh**

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

**Gross Electricity Generation in India  
Mode wise-Utilities  
2018-19**

**Pie Chart : 16A**

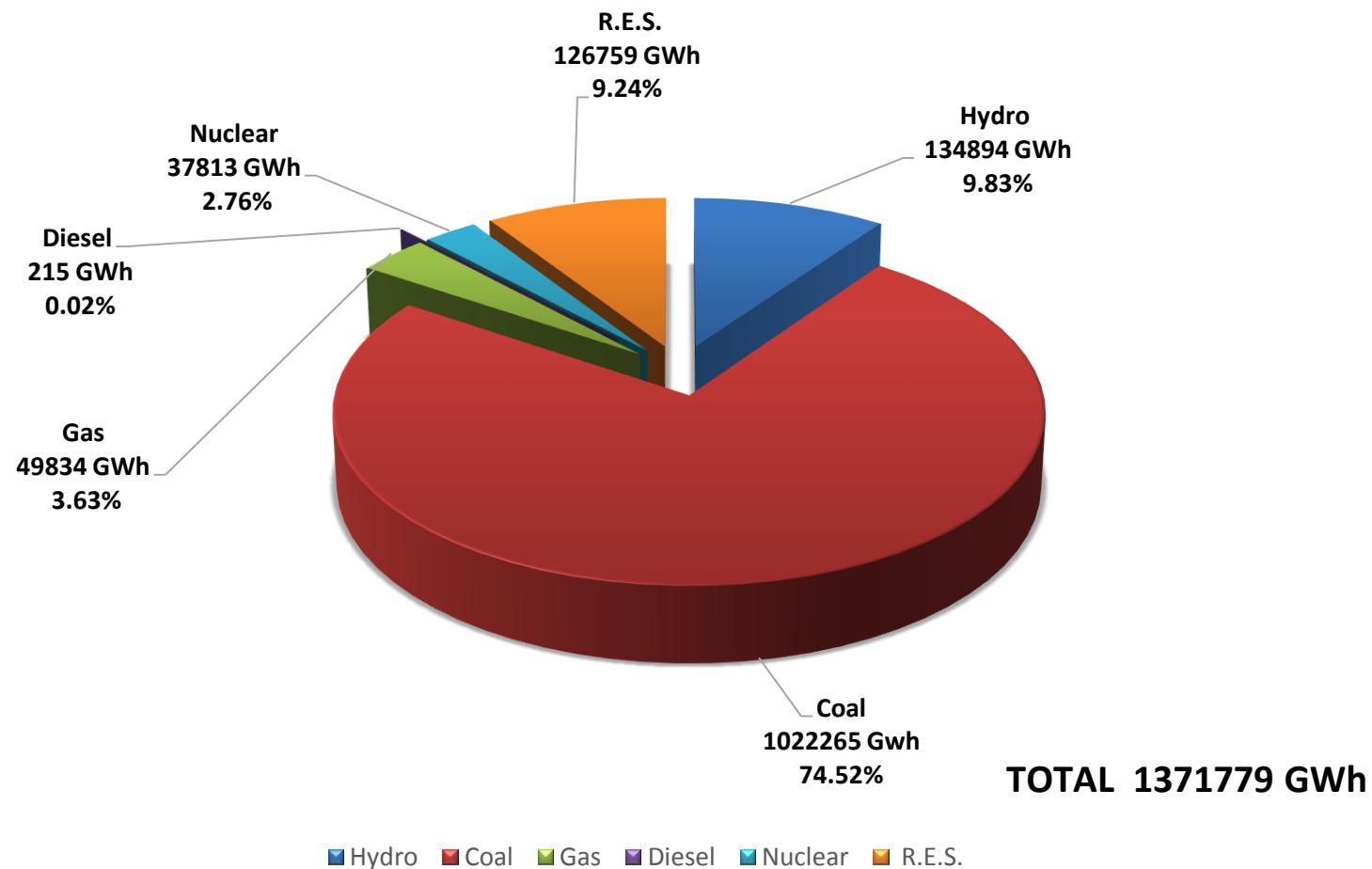
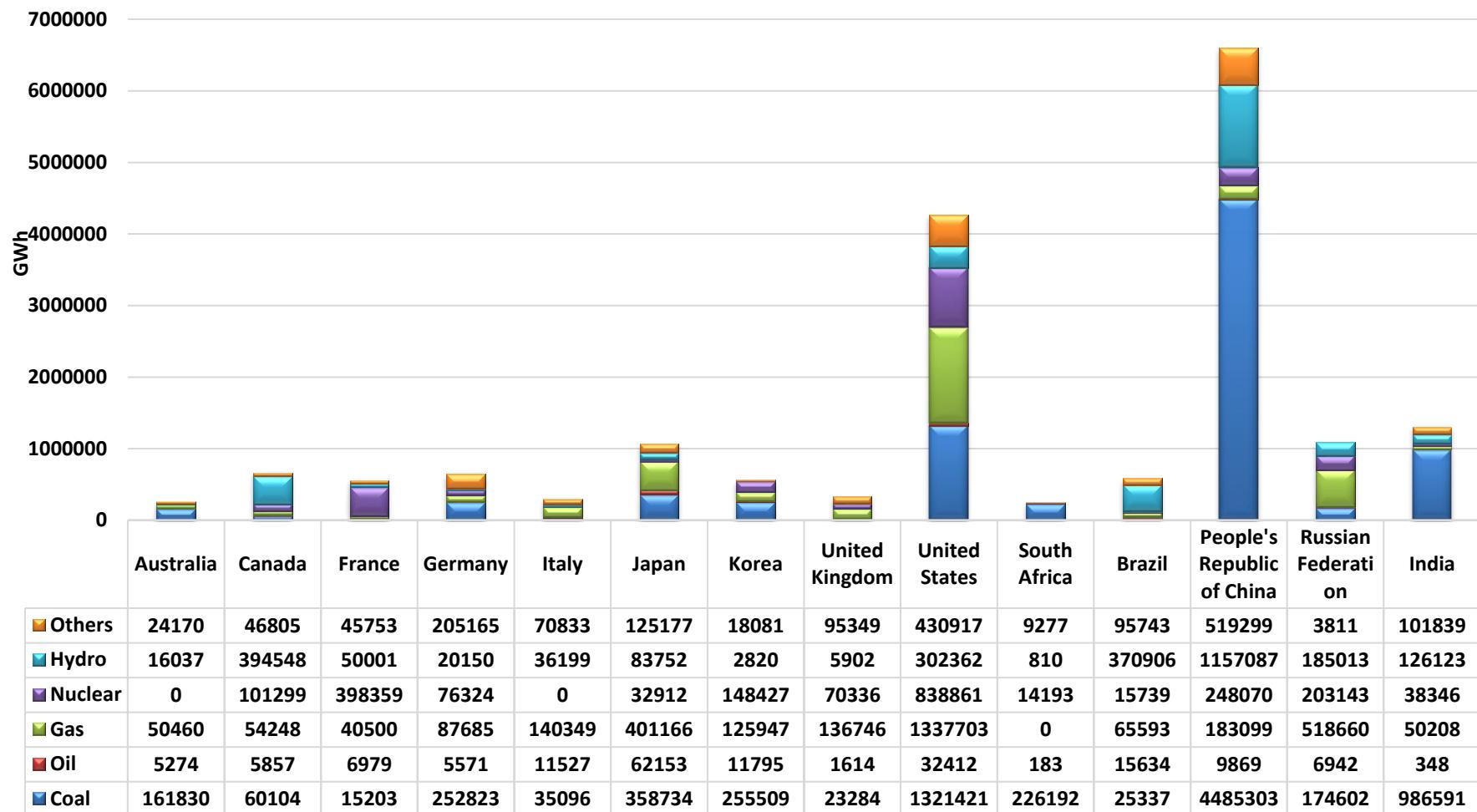


Chart : 17

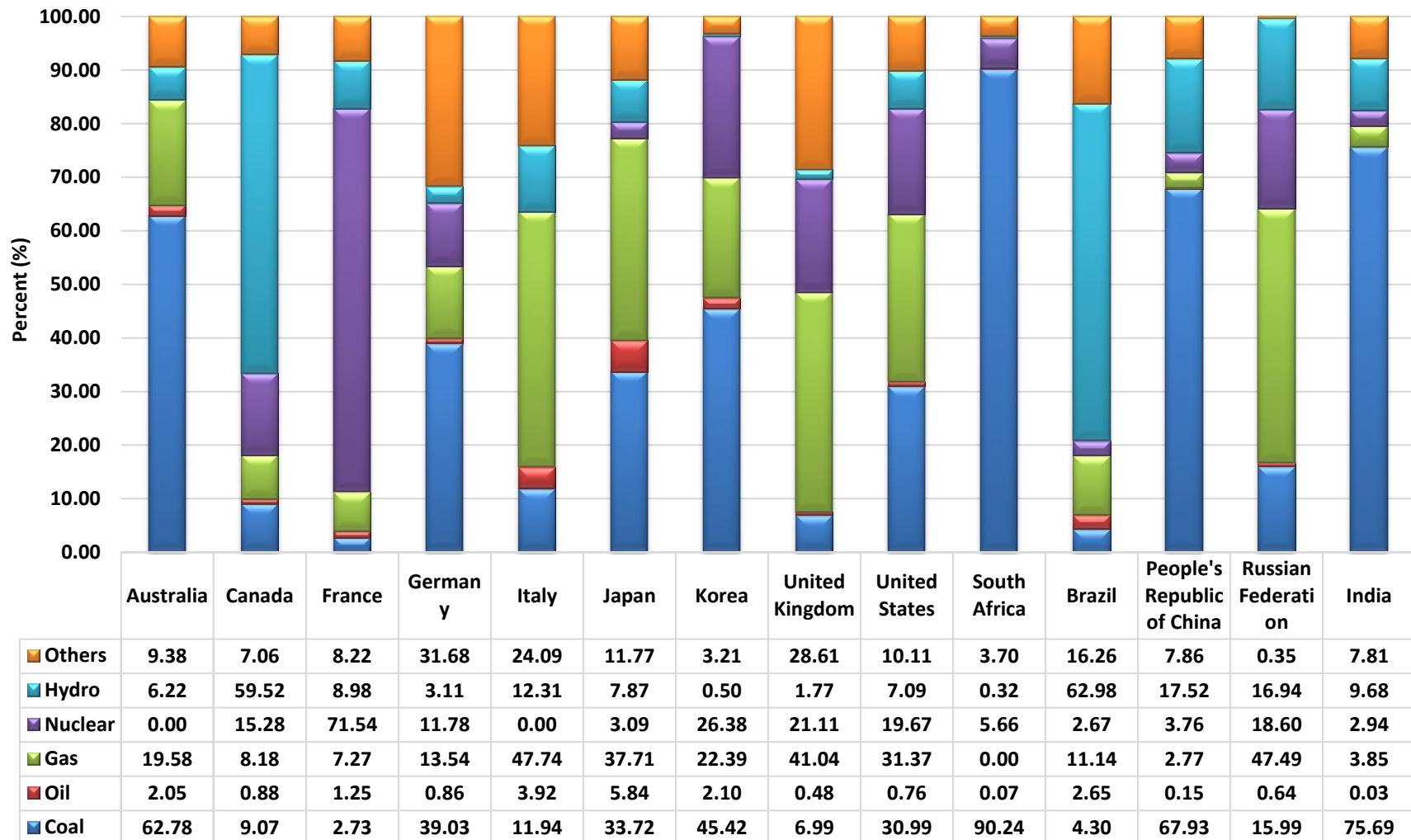
### Gross Electricity Generation in various Countries Mode- Wise in 2017



Source : - International Energy Agency (IEA) except India

Chart : 18

### Mode wise % Share in Electricity Generation in various Countries in 2017



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

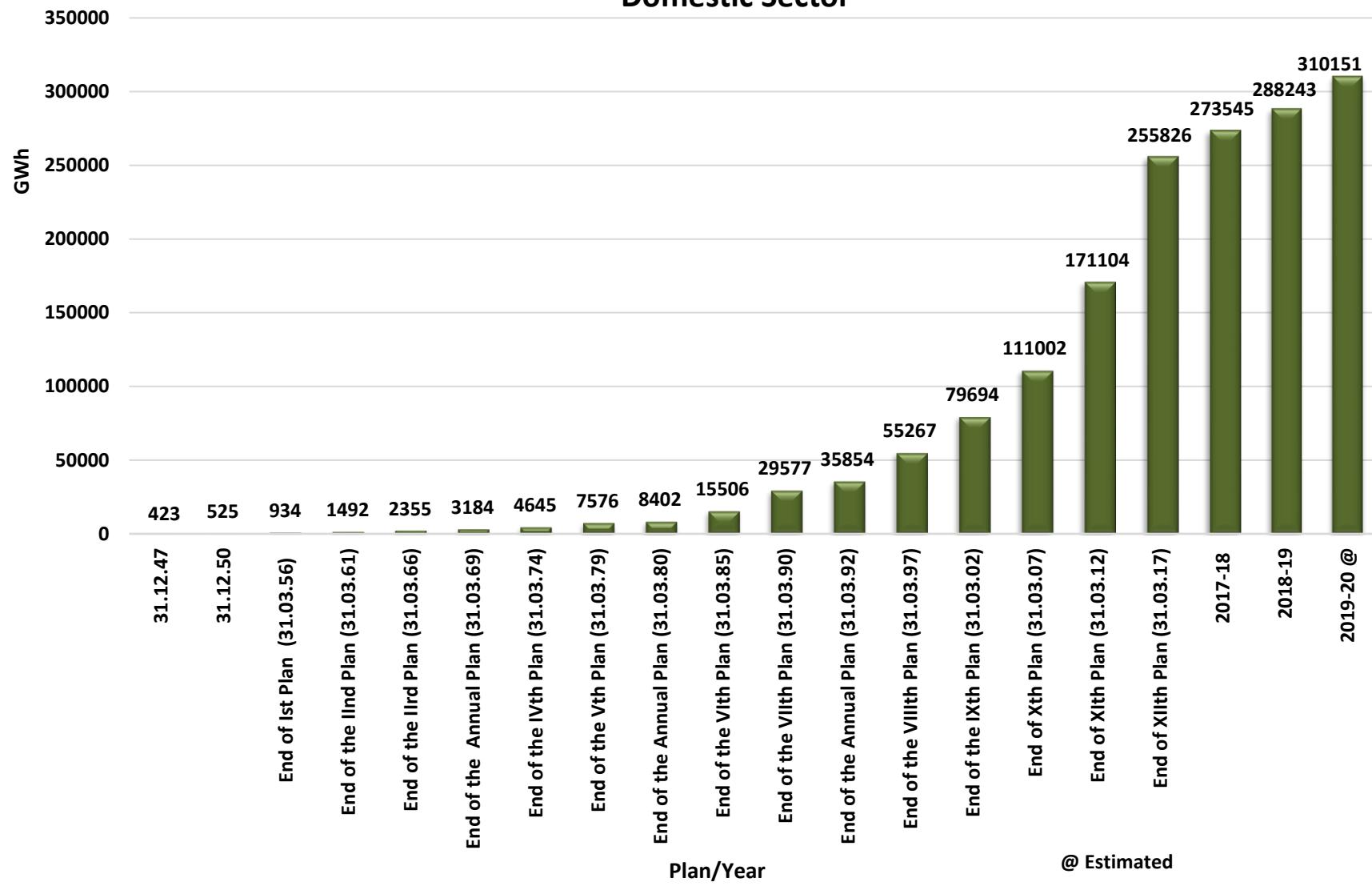
**Table: 4**  
**Plan wise / Category wise Growth of Electricity Consumption in India**  
**(Utilities & Non- Utilities)**

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 (GWh)
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	288243	23.82	98228	8.12	519196	42.91	18837	1.56	213409	17.64	72058	5.96	1209972
20	2019-20 @	310151	24.01	103883	8.04	551362	42.69	19577	1.52	228172	17.67	78348	6.07	1291494

(@) Estimated

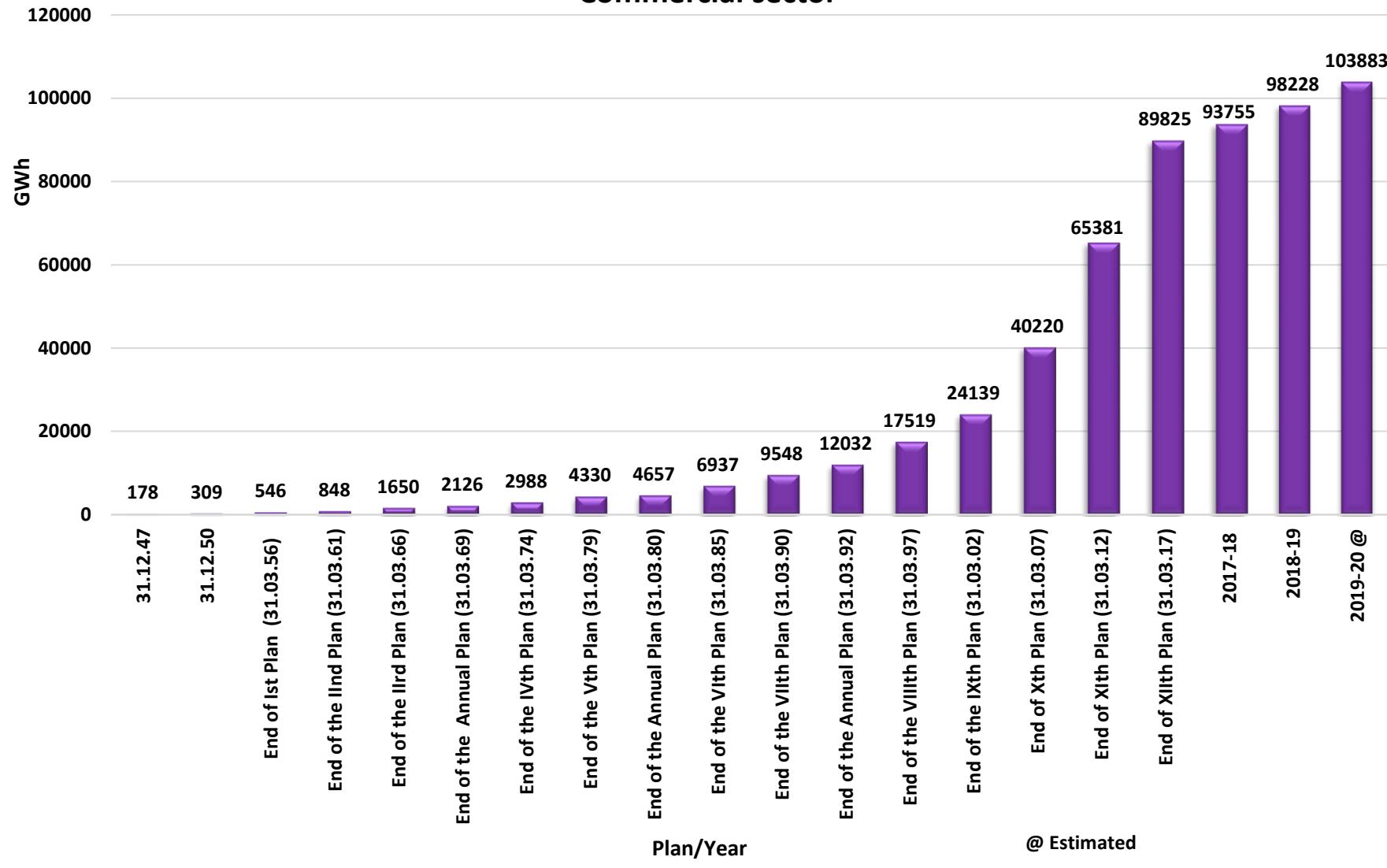
## Plan wise Growth of Electricity Consumption in India Domestic Sector

**Chart : 19**



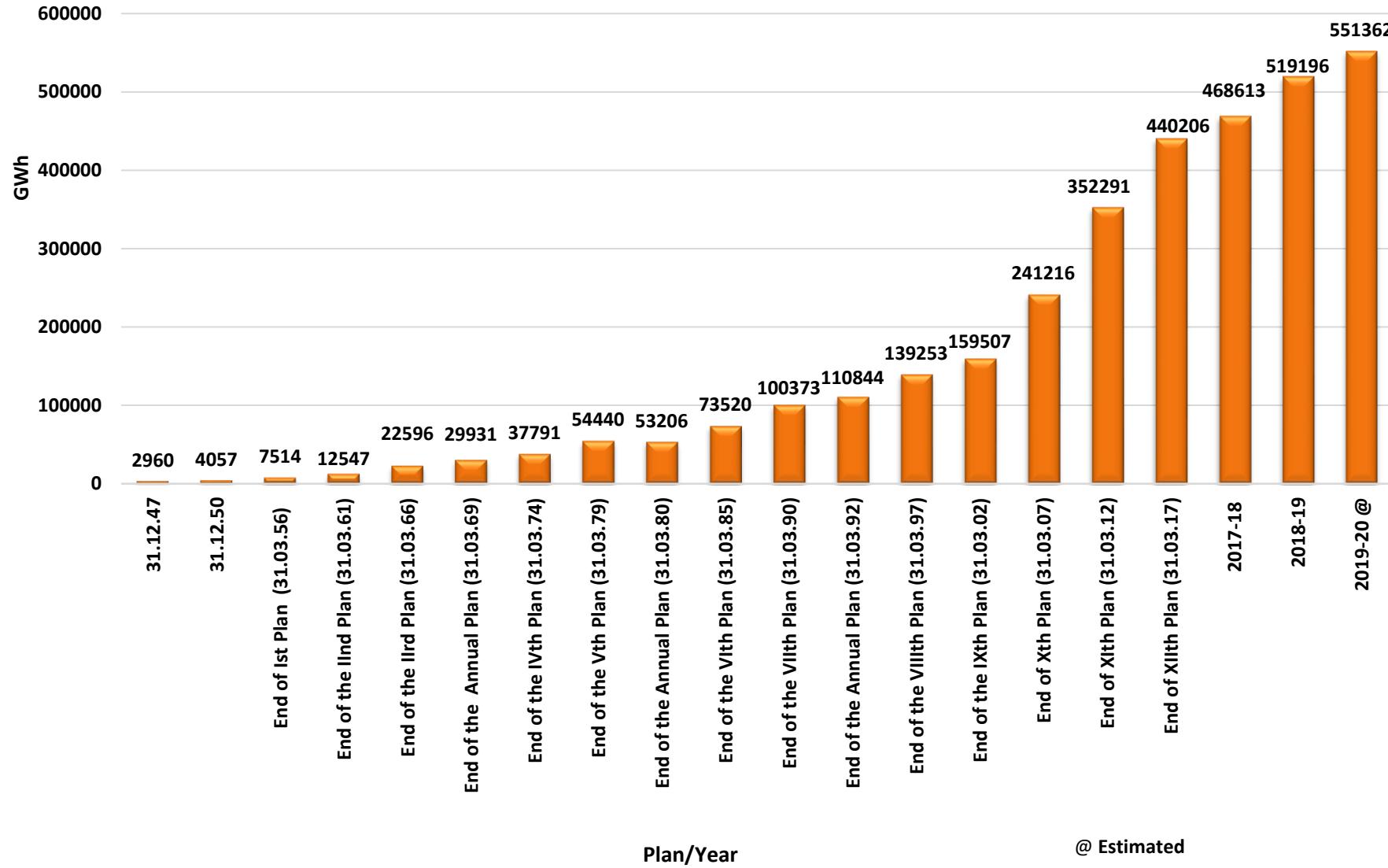
## Plan wise Growth of Electricity Consumption in India Commercial sector

**Chart : 20**



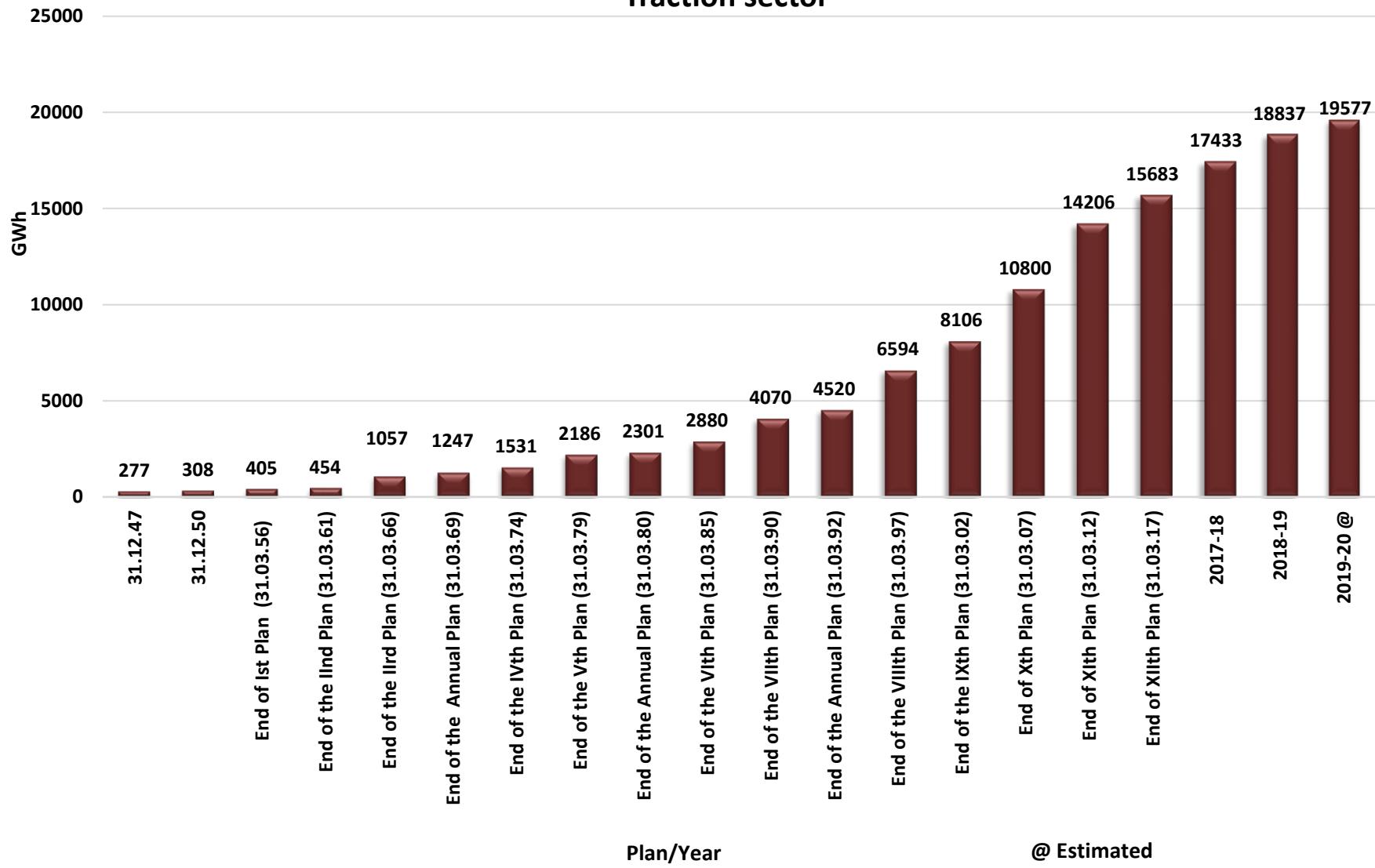
## Plan wise Growth of Electricity Consumption in India Industrial sector

Chart : 21



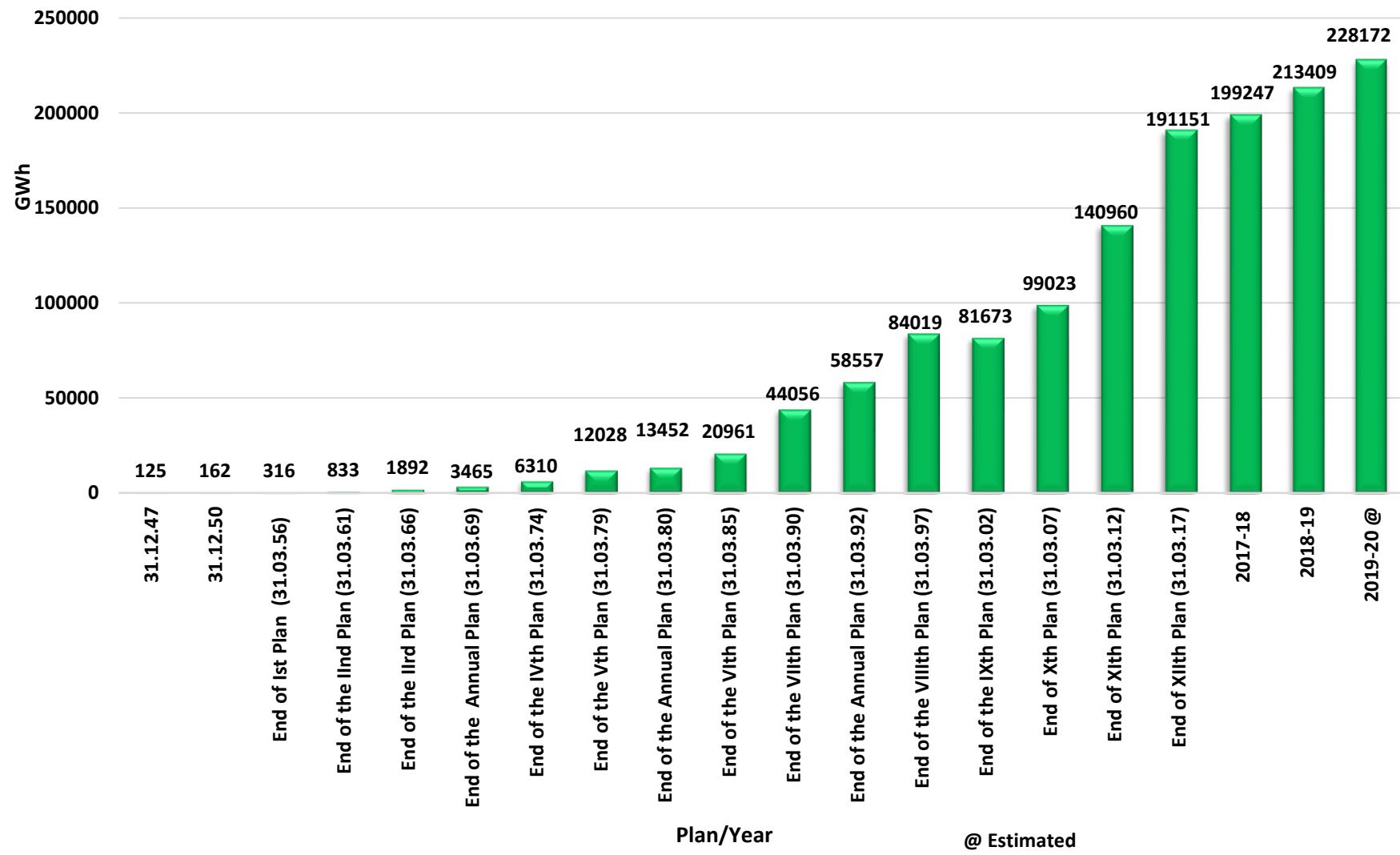
## Plan wise Growth of Electricity Consumption in India Traction sector

**Chart : 22**



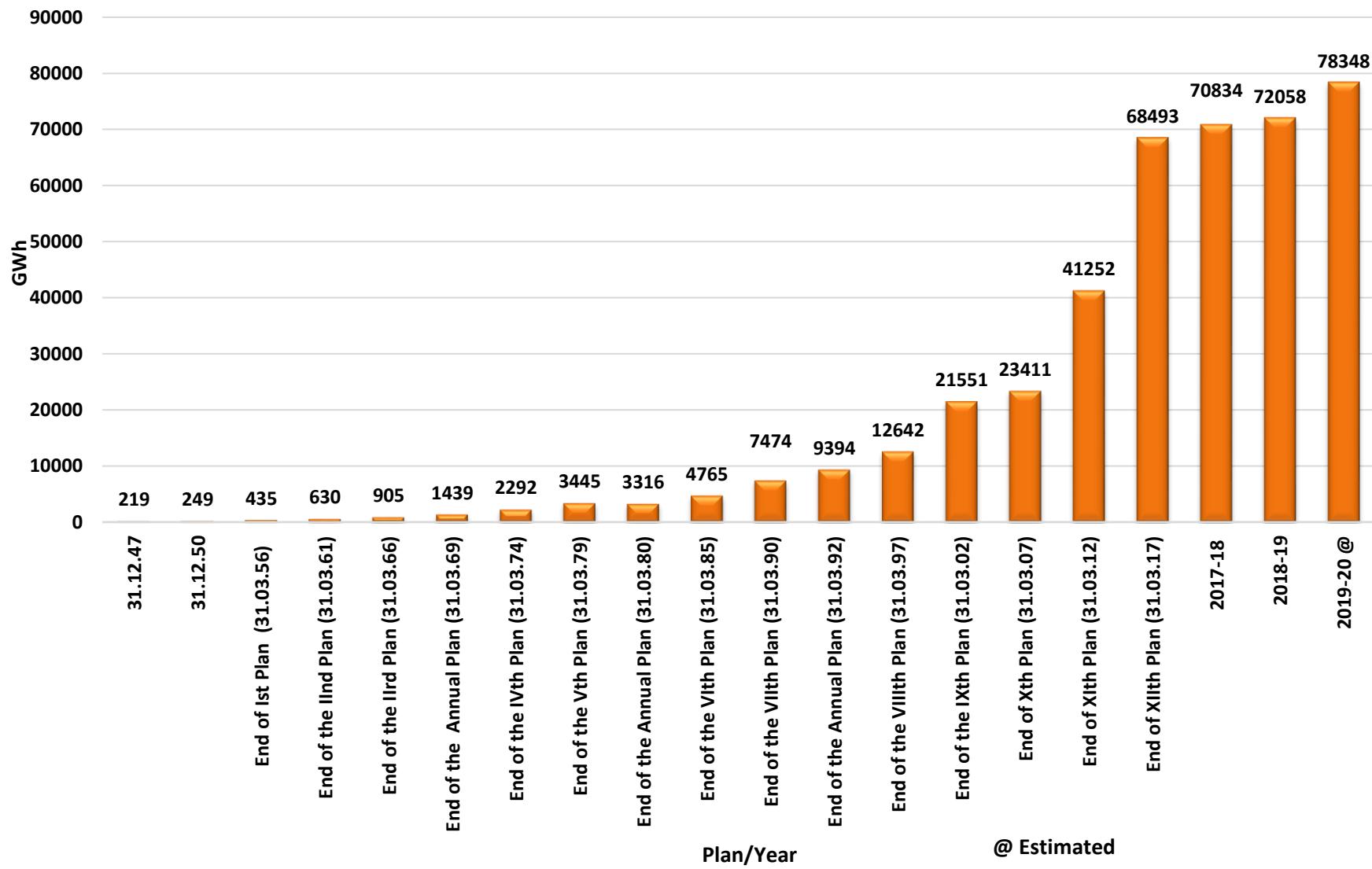
## Plan wise Growth of Electricity Consumption in India Agriculture scetor

Chart : 23



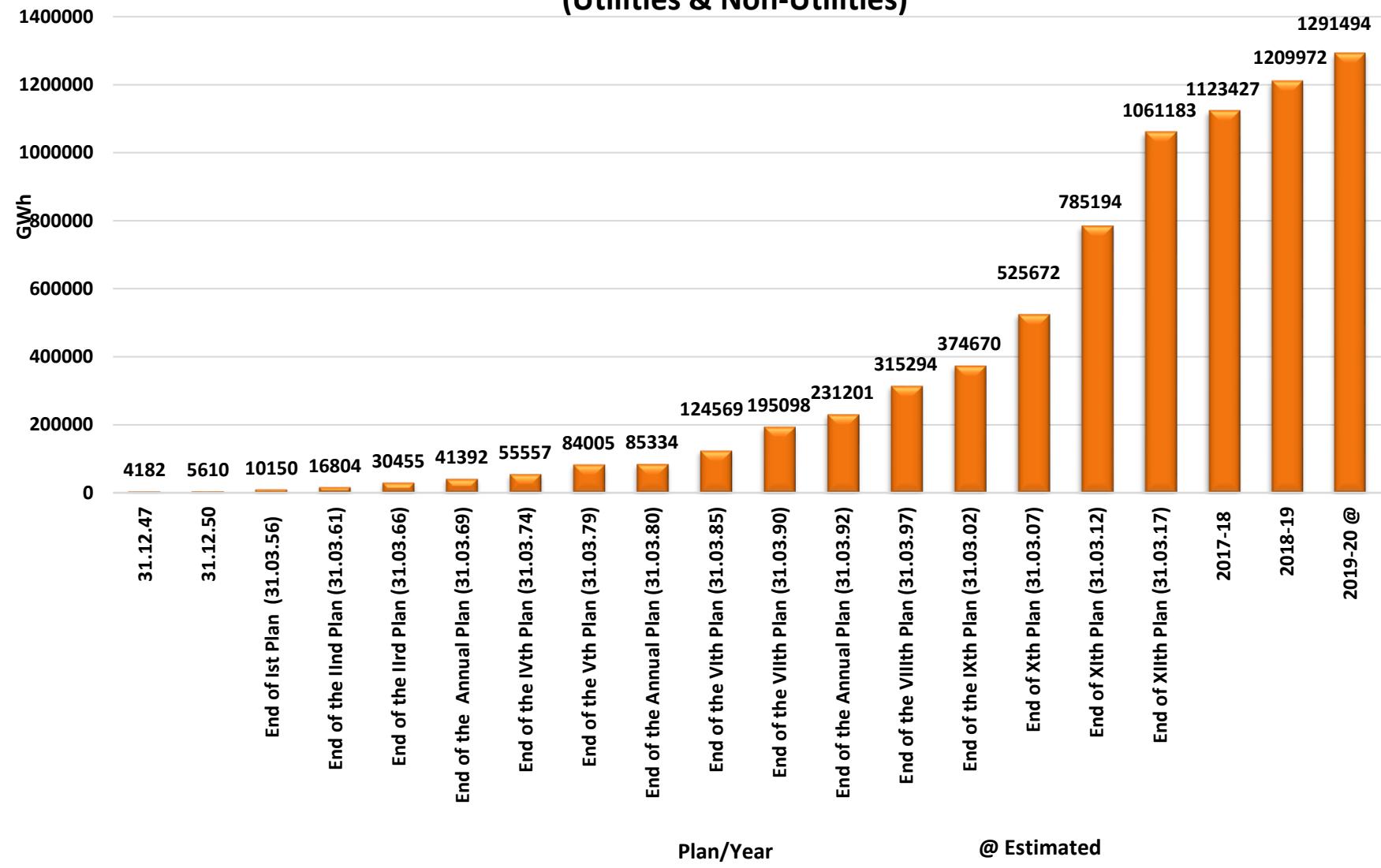
## Plan wise Growth of Electricity Consumption in India Miscellaneous sector

**Chart : 24**



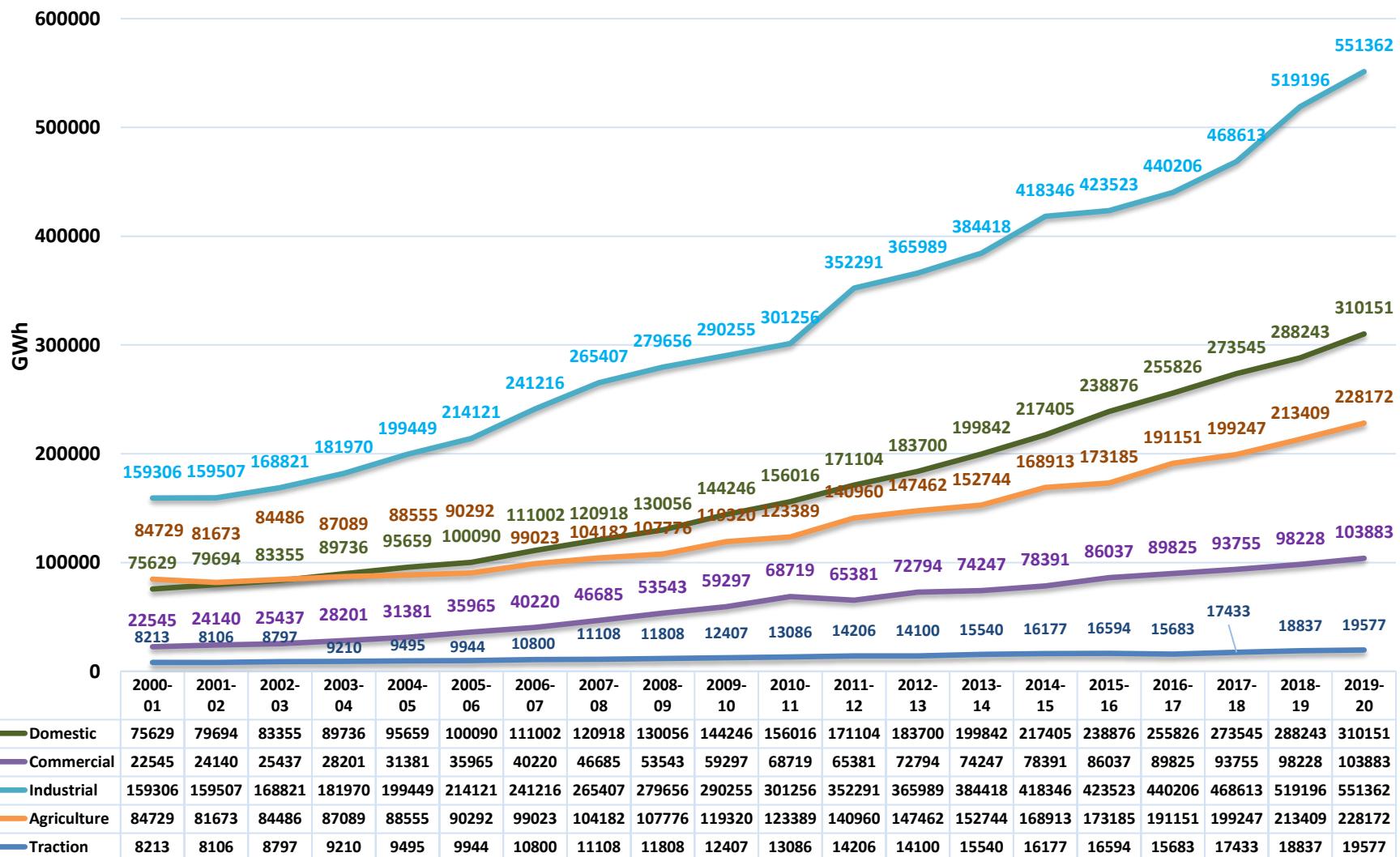
## Planwise Growth of All India Total Electricity Consumption (Utilities & Non-Utilities)

Chart : 25



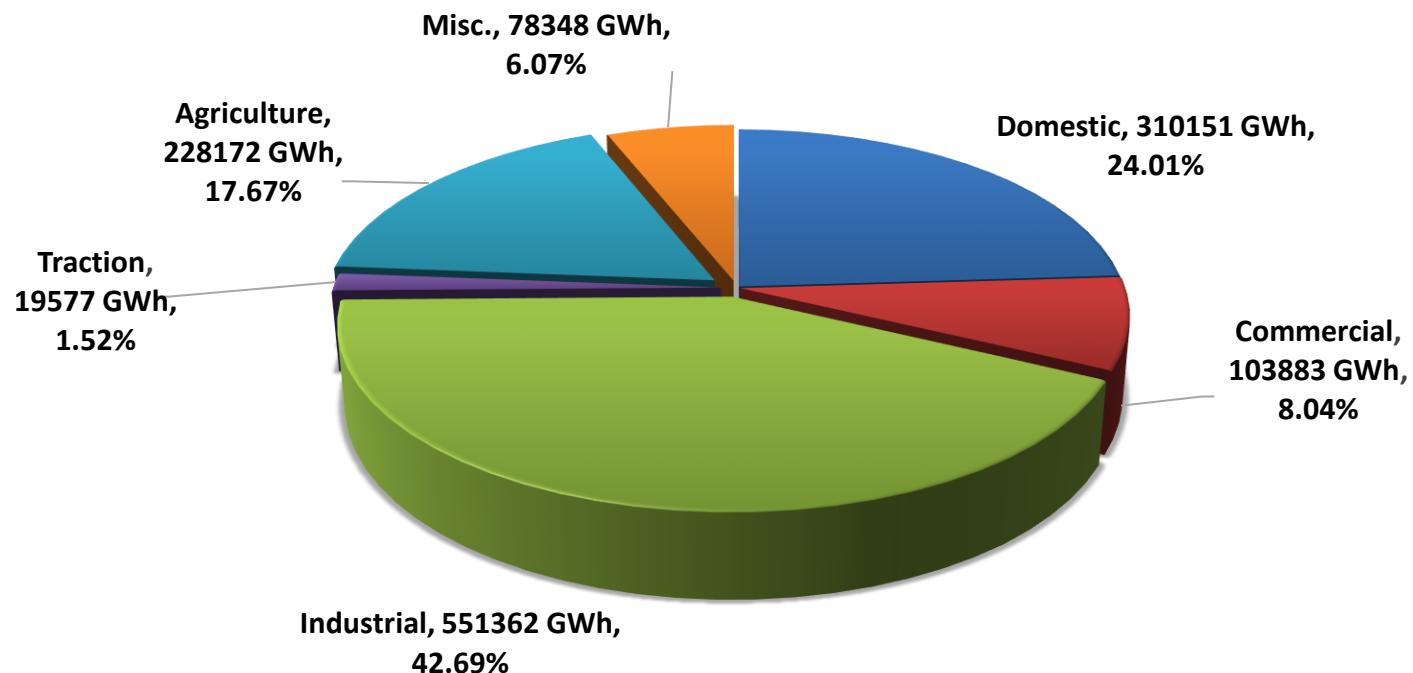
## Trend of Categorywise Energy Consumption 2000-01 TO 2019-20

Chart : 25A



Pie Chart : 26

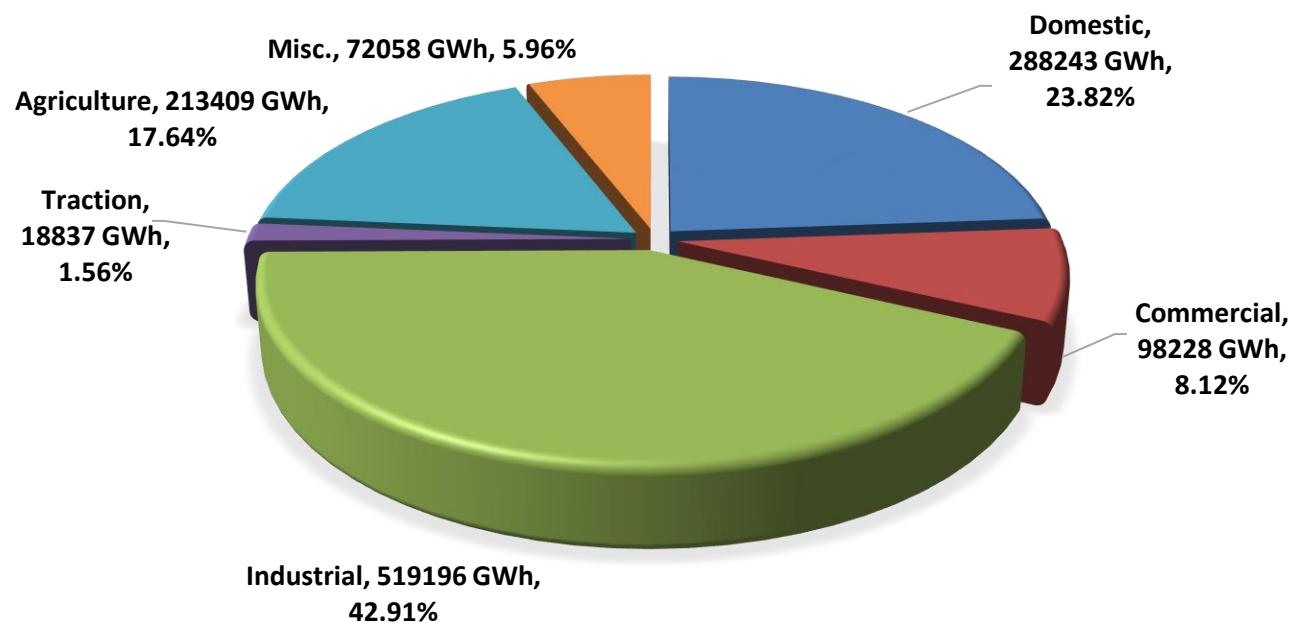
All India Electricity Consumption Sector Wise  
(Utilities & Non- Utilities)  
2019-20@



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

Pie Chart : 26A

All India Electricity Consumption Sector wise  
Utilities & Non-Utilities  
2018-19

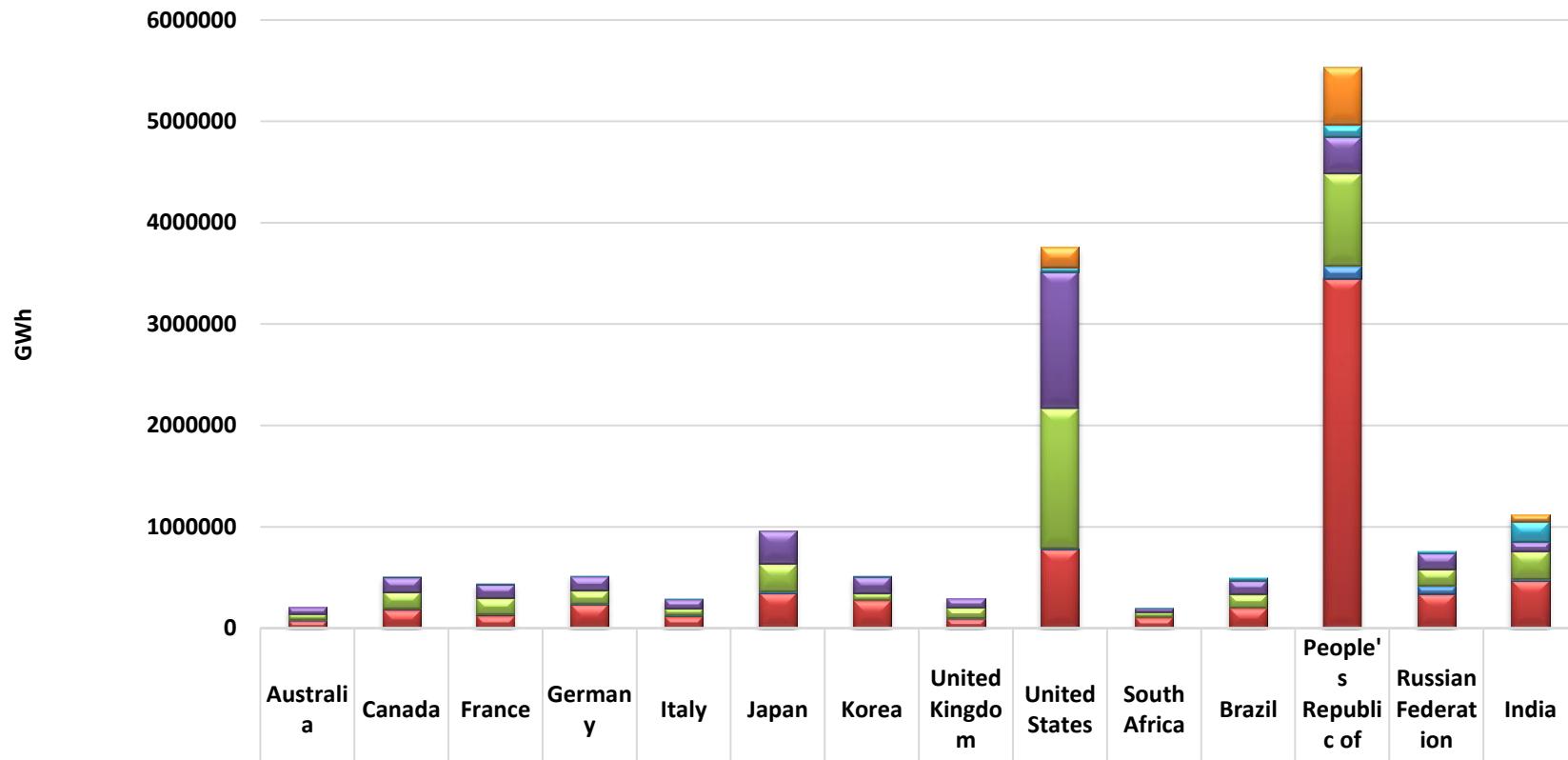


**TOTAL = 1209972 GWh**

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

Chart : 27

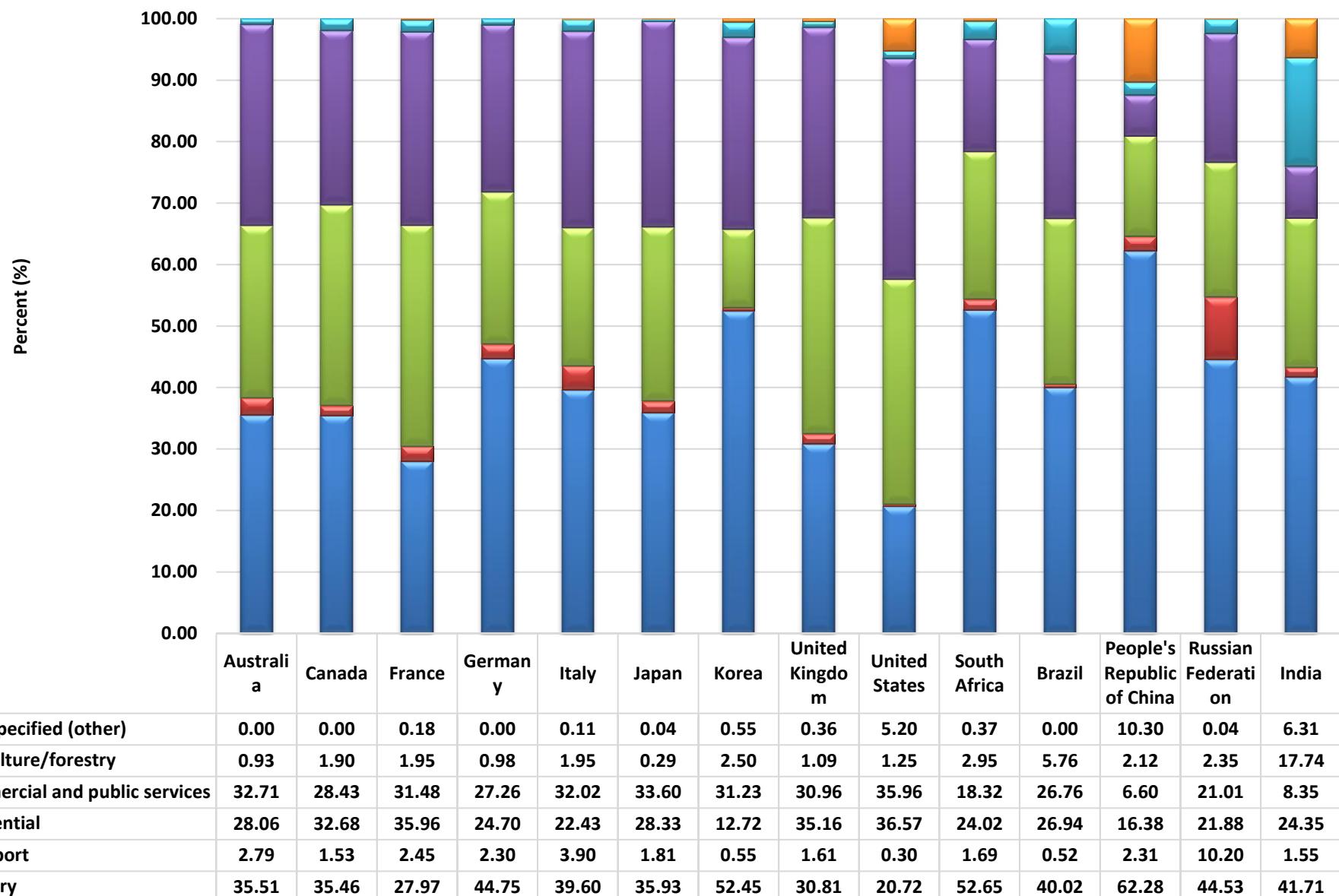
### Category-wise Electricity Consumption in various Countries -2017



Source: - International Energy Agency (IEA) except India

Chart : 28

## Category-wise % Shares in Electricity Consumption in various Countries -2017



Source: - International Energy Agency (IEA) except India

**Table 5**  
**Per Capita Electricity Consumption and T&D Losses**  
**of various Countries in 2016 & 2017**

Sl. No.	Per Capita Consumption (kWh)			Sl. No.	T & D Losses (%)		
	Name of the Country	2016	2017		Name of the Country	2016	2017
1	Canada	14844	14273	1	Korea	3.45	3.47
2	USA	12825	12573	2	Japan	4.51	4.04
3	Australia	9911	9922	3	Germany	4.74	4.95
4	Japan	7974	8111	4	Italy	6.15	6.01
5	France	7148	7209	5	Australia	6.02	5.89
6	Germany	6956	6947	6	South Africa	9.99	9.53
7	Korea	10618	10654	7	France	7.68	8.02
8	UK	5033	4951	8	China	5.59	5.46
9	Russia	6715	6771	9	USA	5.81	5.68
10	Italy	5081	5202	10	Canada	12.04	6.45
11	South Africa	4031	4004	11	UK	8.03	8.21
12	Brazil	2504	2521	12	Russia	12.59	12.15
13	China	4279	4546	13	Brazil	16.87	16.36
14	India*	1122	1149	14	India	21.42	21.04
15	World	3110	3152	15	World	8.64	8.64

Note :-

Basic data obtained from IEA Website (except) India.

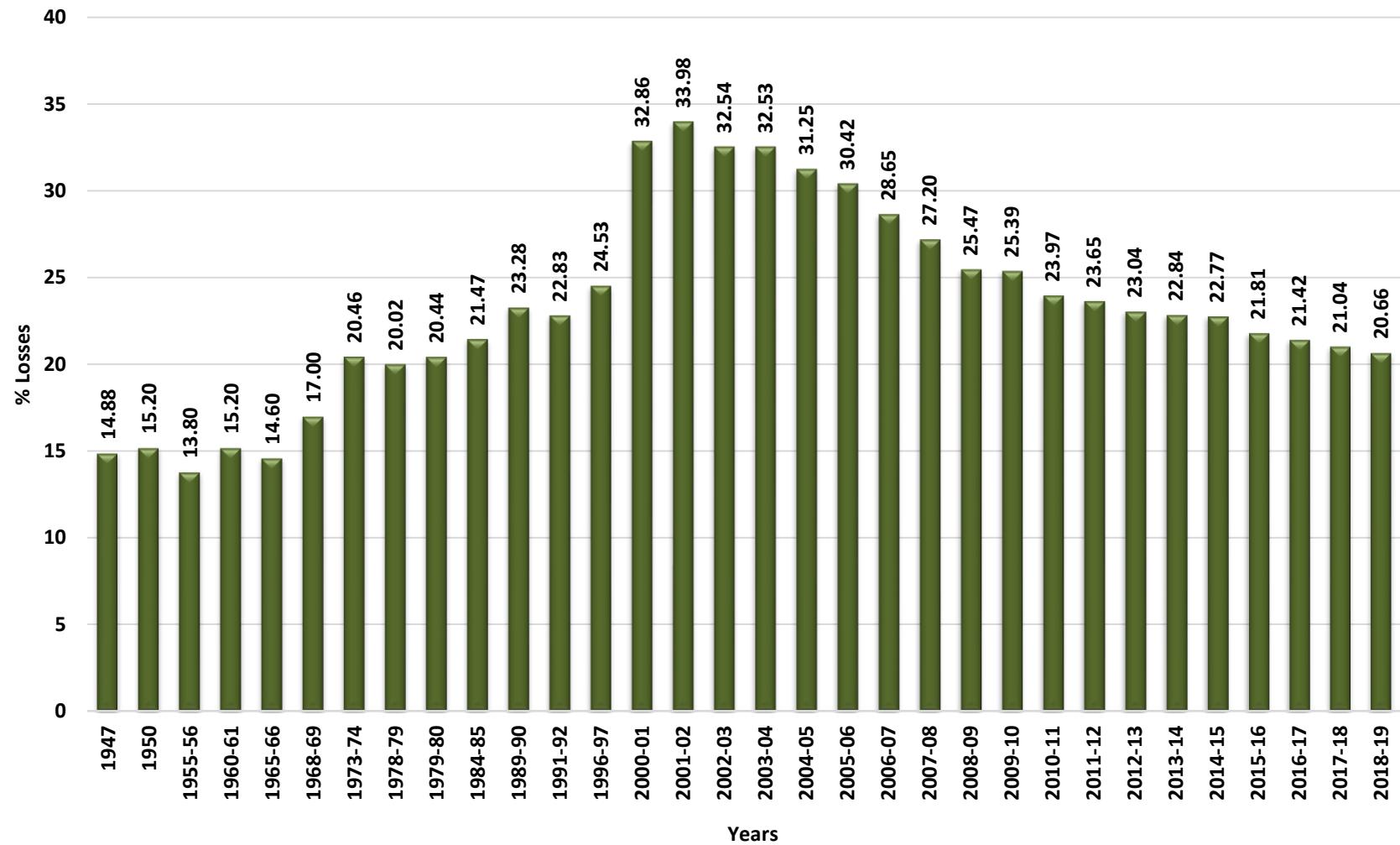
\* Per Capita Consumption= (Gross Electrical Energy Availability/Midyear Population).

Per Capita Consumption of India during the year 2018-19 & 2019-20 is 1181 & 1208 respectively.

T&D Losses of India during the year 2018-19 is 20.66%

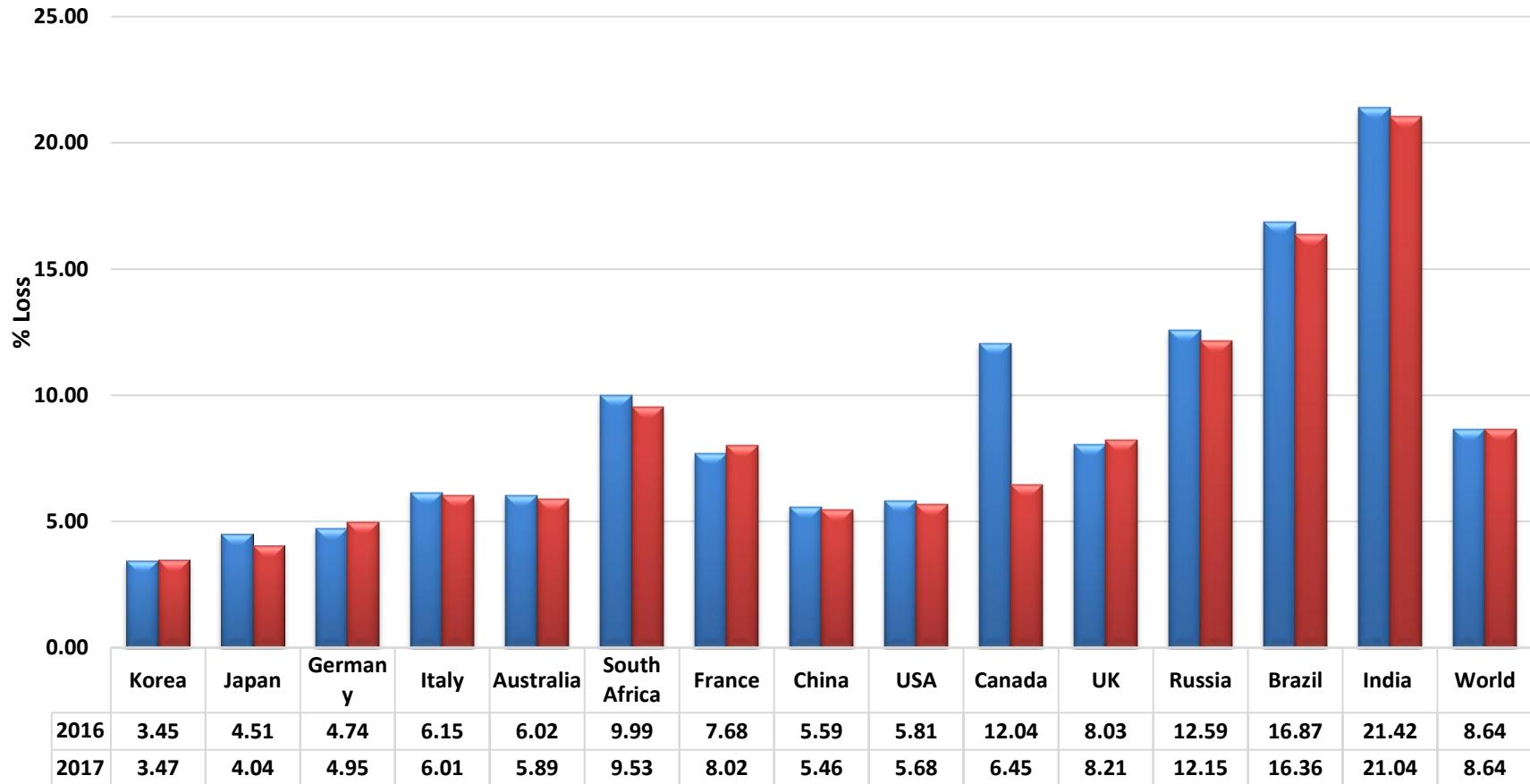
Chart : 29

### All India Transmission and Distribution Losses (%)



## T & D Losses of Various Countries in 2016 & 2017 (%)

Chart : 30



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

■ 2016 ■ 2017

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

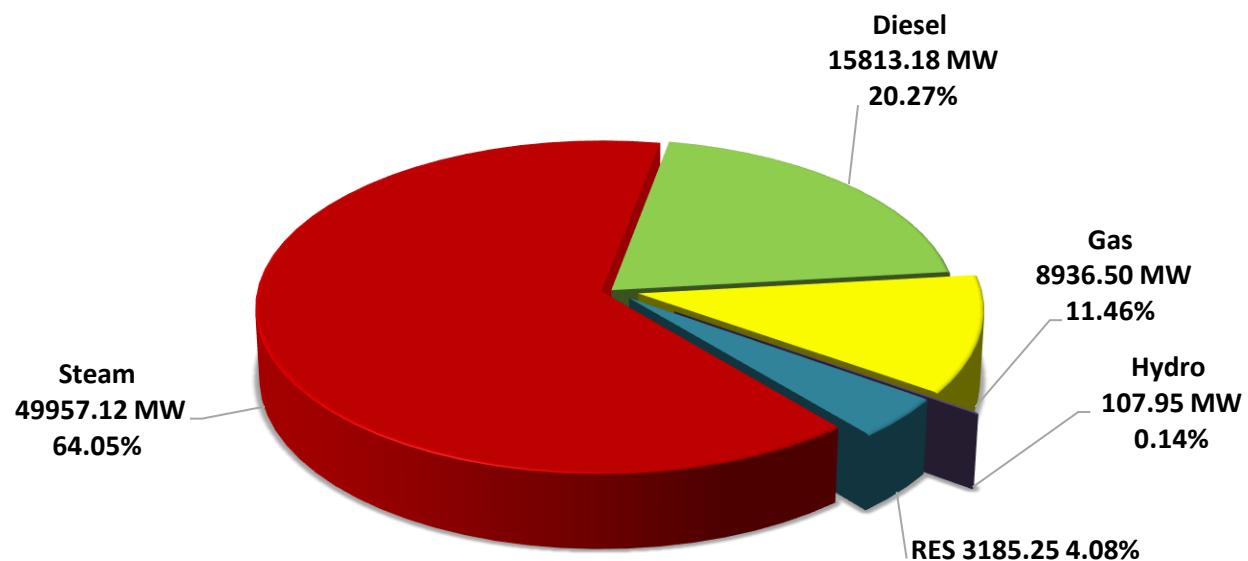
Sl. No.	As on	Steam	Diesel	Gas	Hydro	RES	Railways	Total (MW)
1	2	3	4	5	6	7	8	9 (3+4+5+6+7+8)
1	31.12.1947	**	**	**	**	**	0.00	410.00
2	31.12.1950	**	**	**	**	**	0.00	587.85
3	31.03.1956 (End of the 1st Plan)	**	**	**	**	**	0.00	759.65
4	31.03.1961 (End of the 2nd Plan)	**	**	**	**	**	0.00	1001.37
5	31.03.1966(End 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	47679.04	15570.97	8787.13	103.39	3066.59	0.00	75207.13
20	31.03.20 @	49957.12	15813.18	8936.50	107.95	3185.25	0.00	78000.00

\*\* Breakup Not Available

@ Estimated

Pie Chart : 31

**Installed Generating Capacity of Captive Power Plants in Industries having  
Demand of 1MW & Above - Modewise  
(As on 31.03.2020)@**



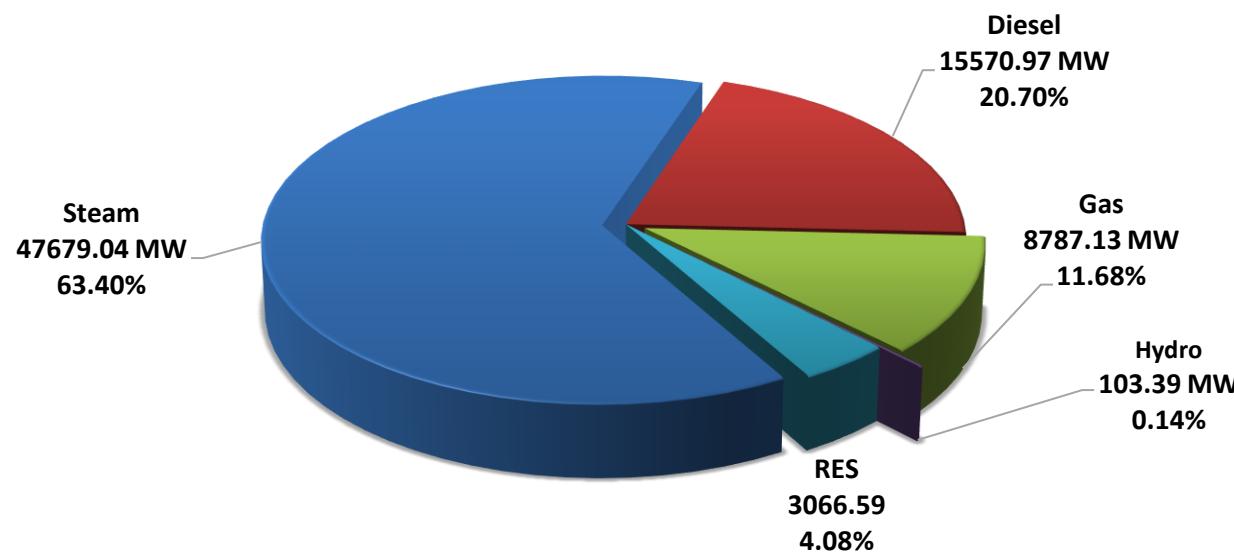
@-Estimated

**TOTAL = 78000 MW**

■ Steam ■ Diesel ■ Gas ■ Hydro ■ RES

Pie Chart : 31A

Installed Generating Capacity of Captive Power Plants in Industries having  
Demand of 1MW & Above - Mode wise (31.03.2019)

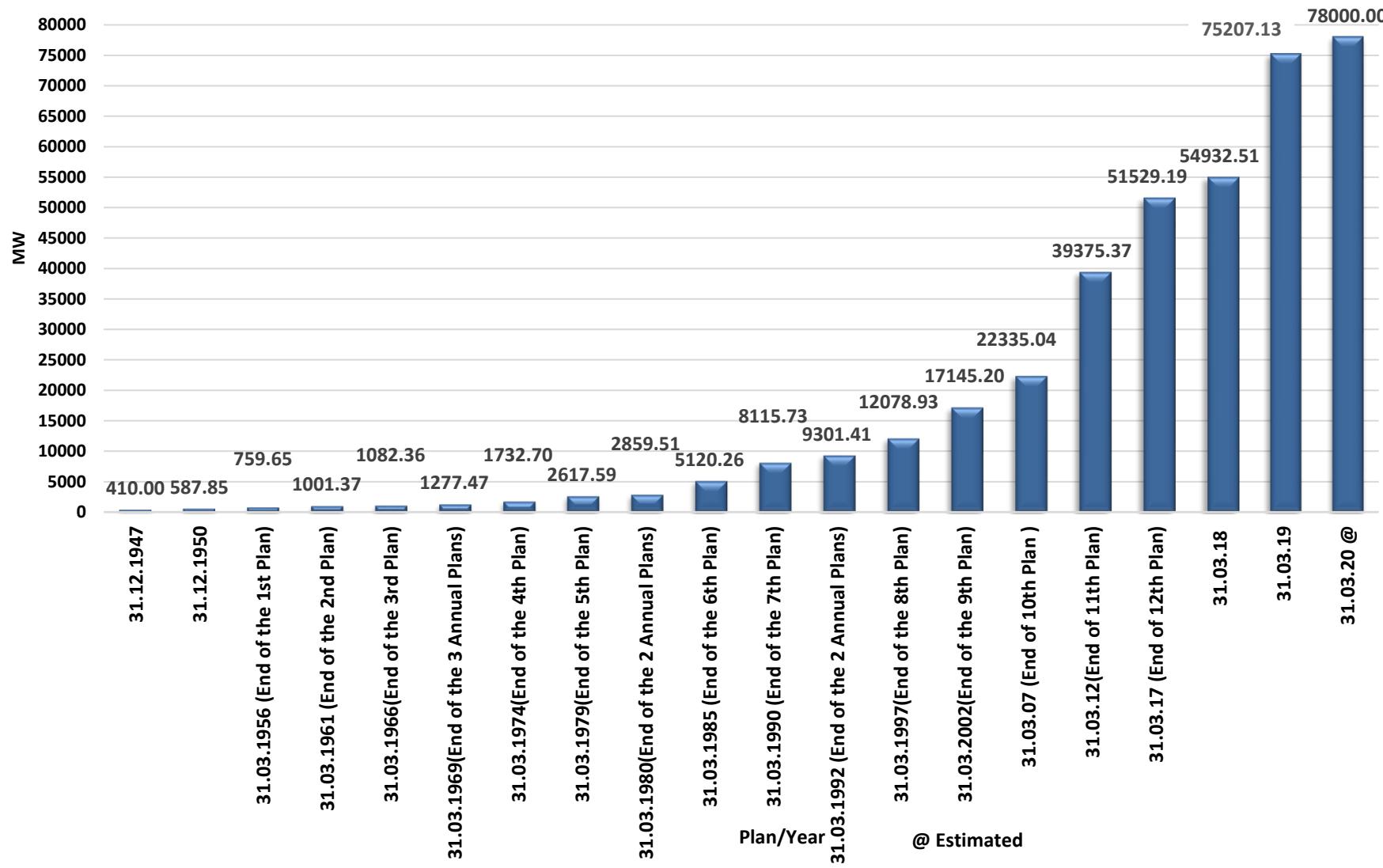


**TOTAL = 75207.13 MW**

■ 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**

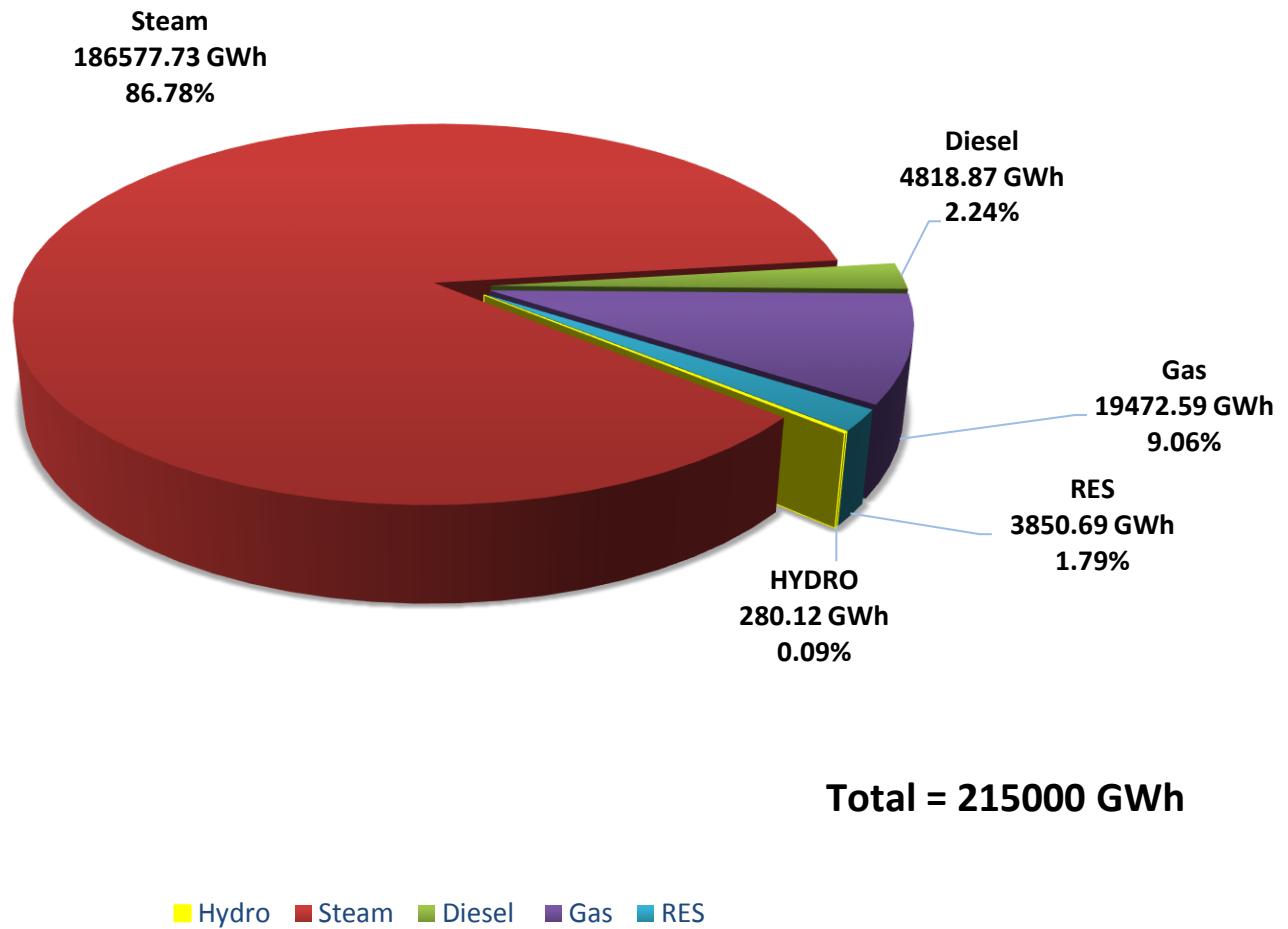
Sl. No.	During financial year ending with	Hydro	Steam	Diesel	Gas	RES	Railways	Total
		3	4	5	6	7	8	(3+4+5+6+7+8)
1	1947	**	**	**	**	**	**	856.91
2	1950	**	**	**	**	**	0.00	1467.81
3	1955-56 (End of the 1st Plan)	**	**	**	**	**	0.00	2184.82
4	1960-61 (End of the 2nd Plan)	**	**	**	**	**	0.00	3186.10
5	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	270.04	184250.36	5334.32	19545.09	3673.92	0.00	213073.73
20	2019-20 @	280.12	186577.73	4818.87	19472.59	3850.69	0.00	215000.00

\*\* Breakup Not Available

@ Estimated

All India Electrical Energy Generated by Captive Power Plants in Industries  
having Demand of 1MW and Above - Mode wise  
2019-20 @

Pie Chart : 33

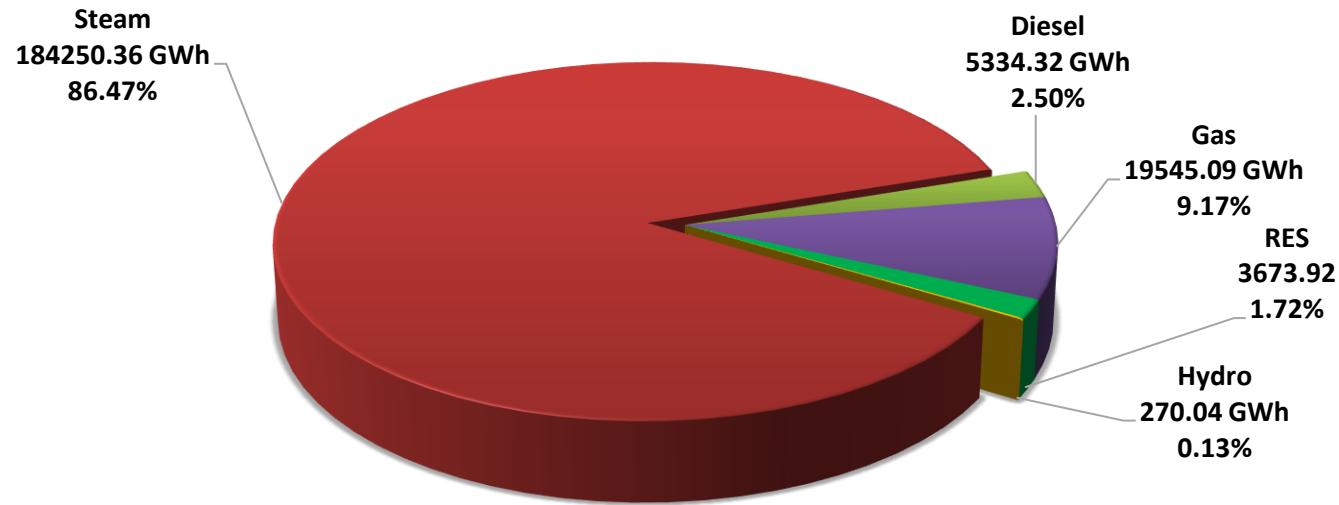


Pie Chart : 33A

All India Electrical Energy Generated by Captive Power Plants in Industries

having Demand of 1MW and Above - Mode wise

2018-19

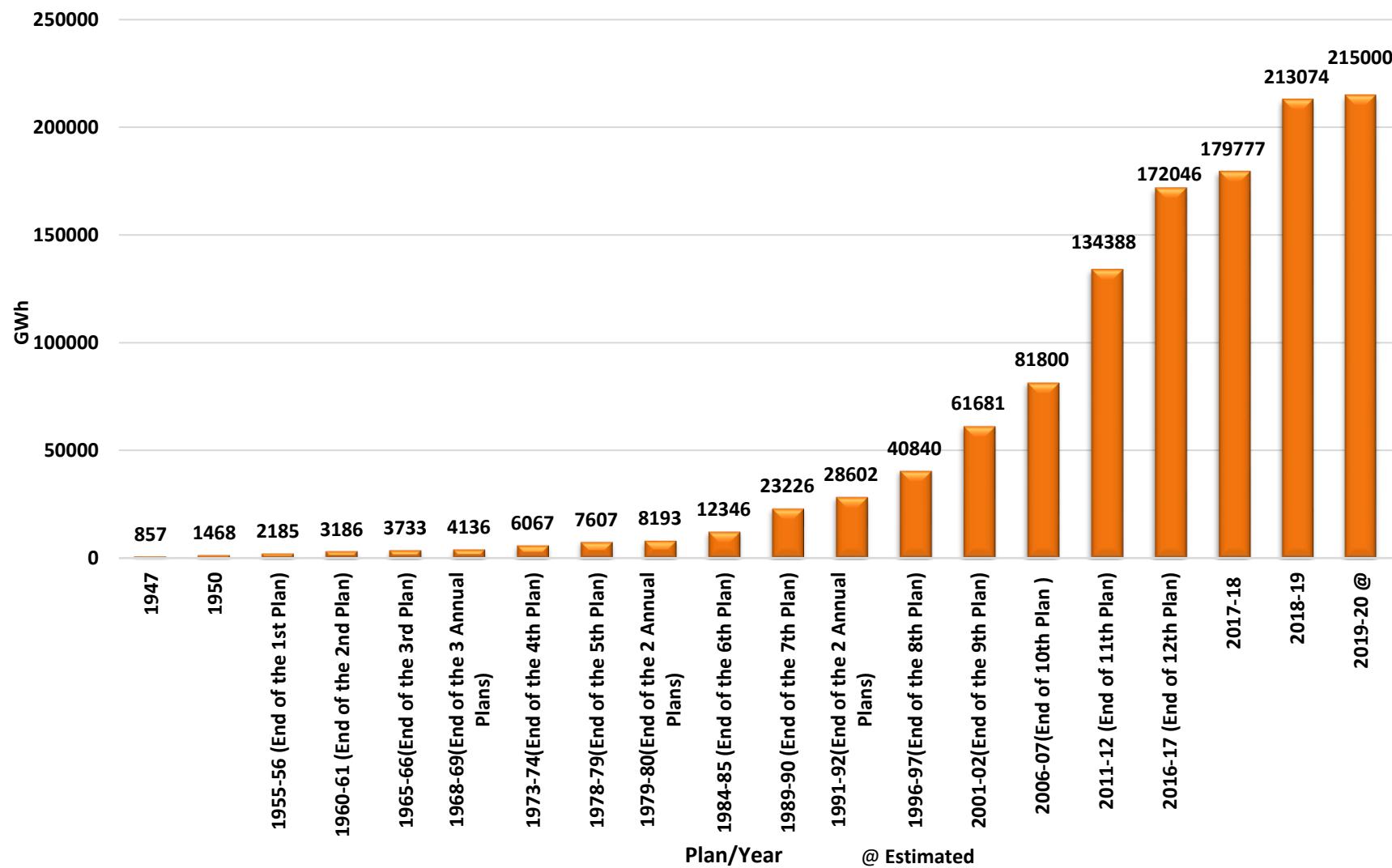


Total = 213073.73 GWh

Hydro Steam Diesel Gas RES

Chart : 34

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



**Chart : 35**

**Capacity Addition Programme  
during 2020-21**



Chart : 36

## Forecast of All India Peak Electricity Demand (Utilities)

As Per 18th & 19th Electric Power Survey  
in MW

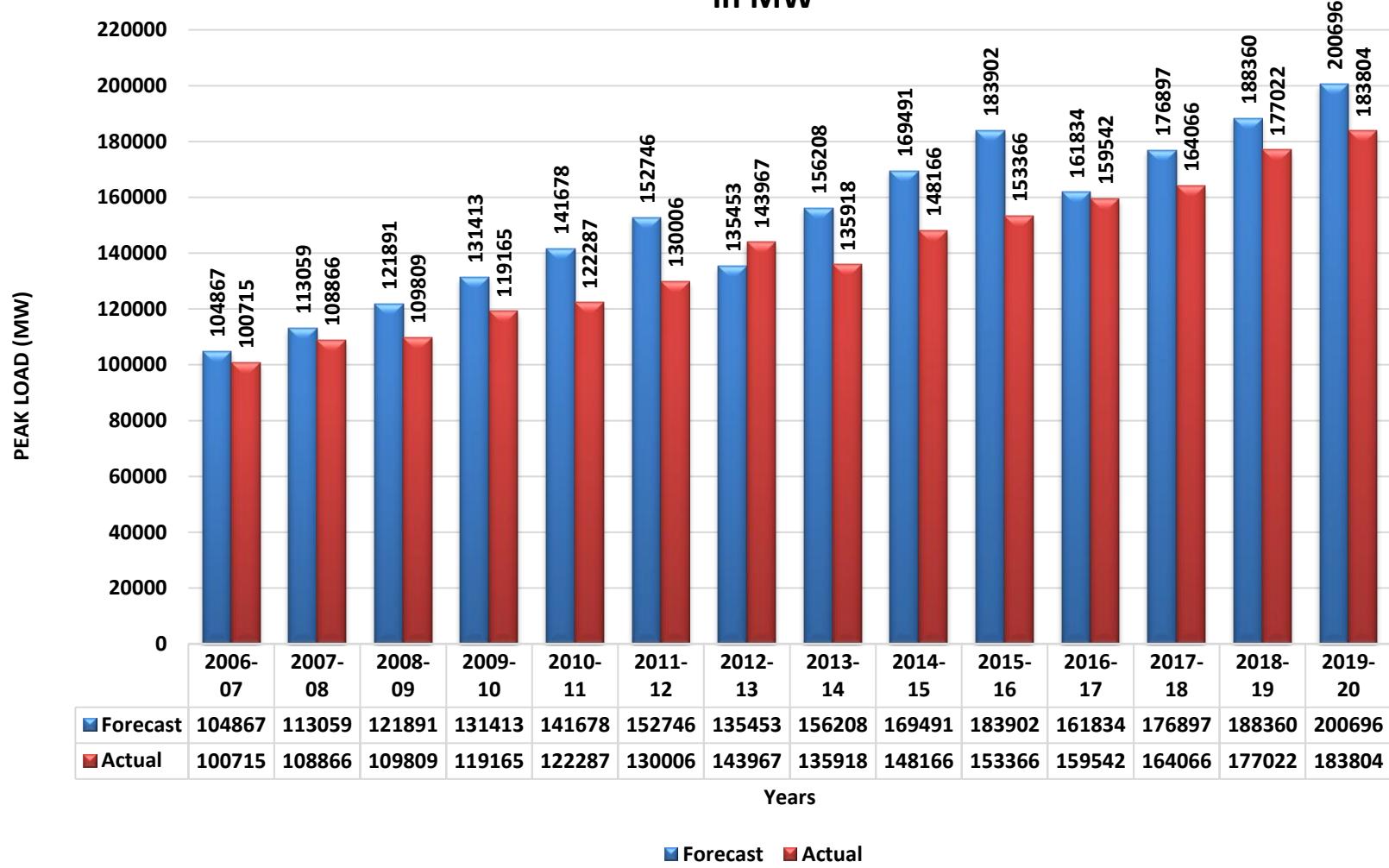
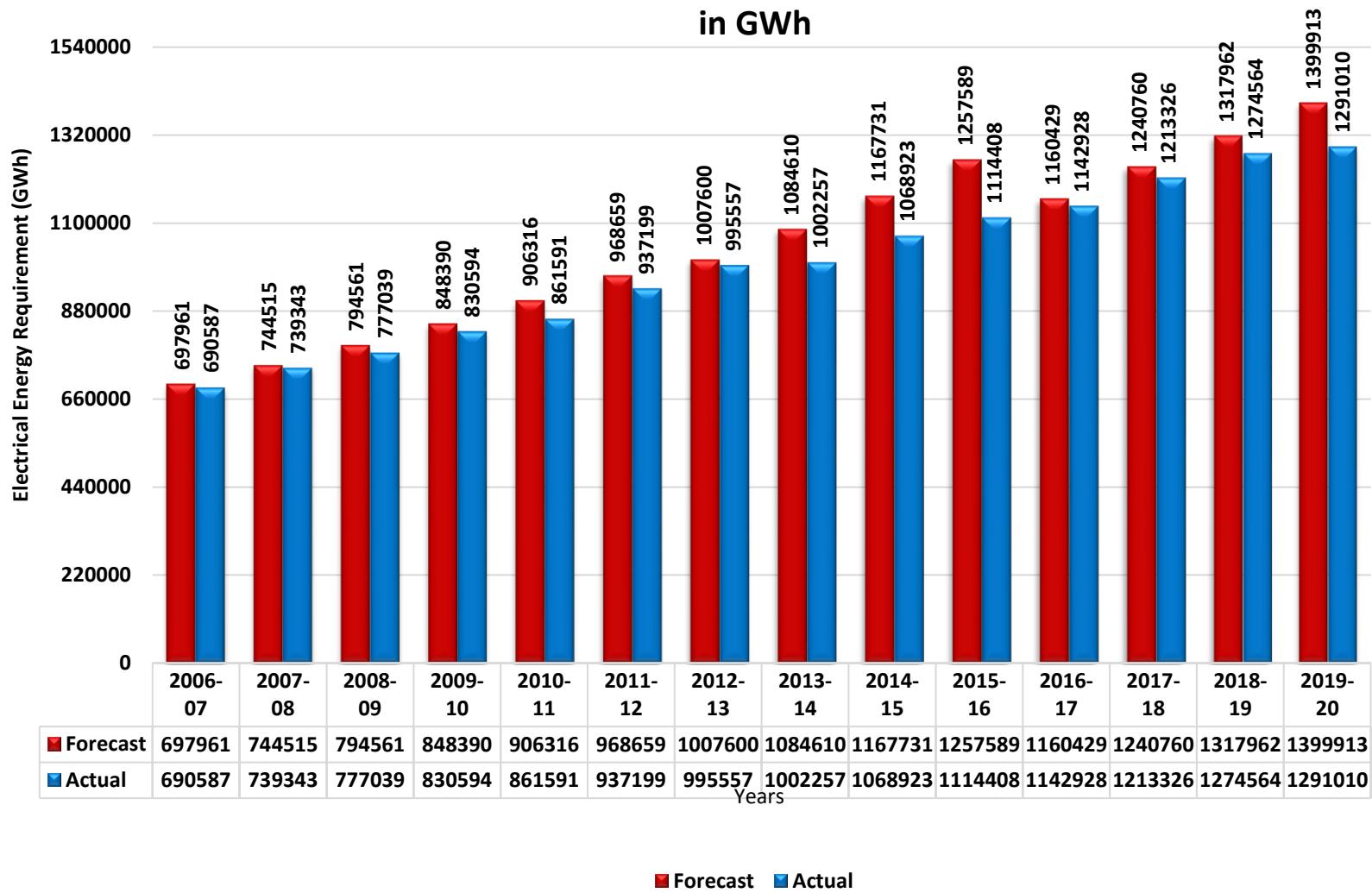


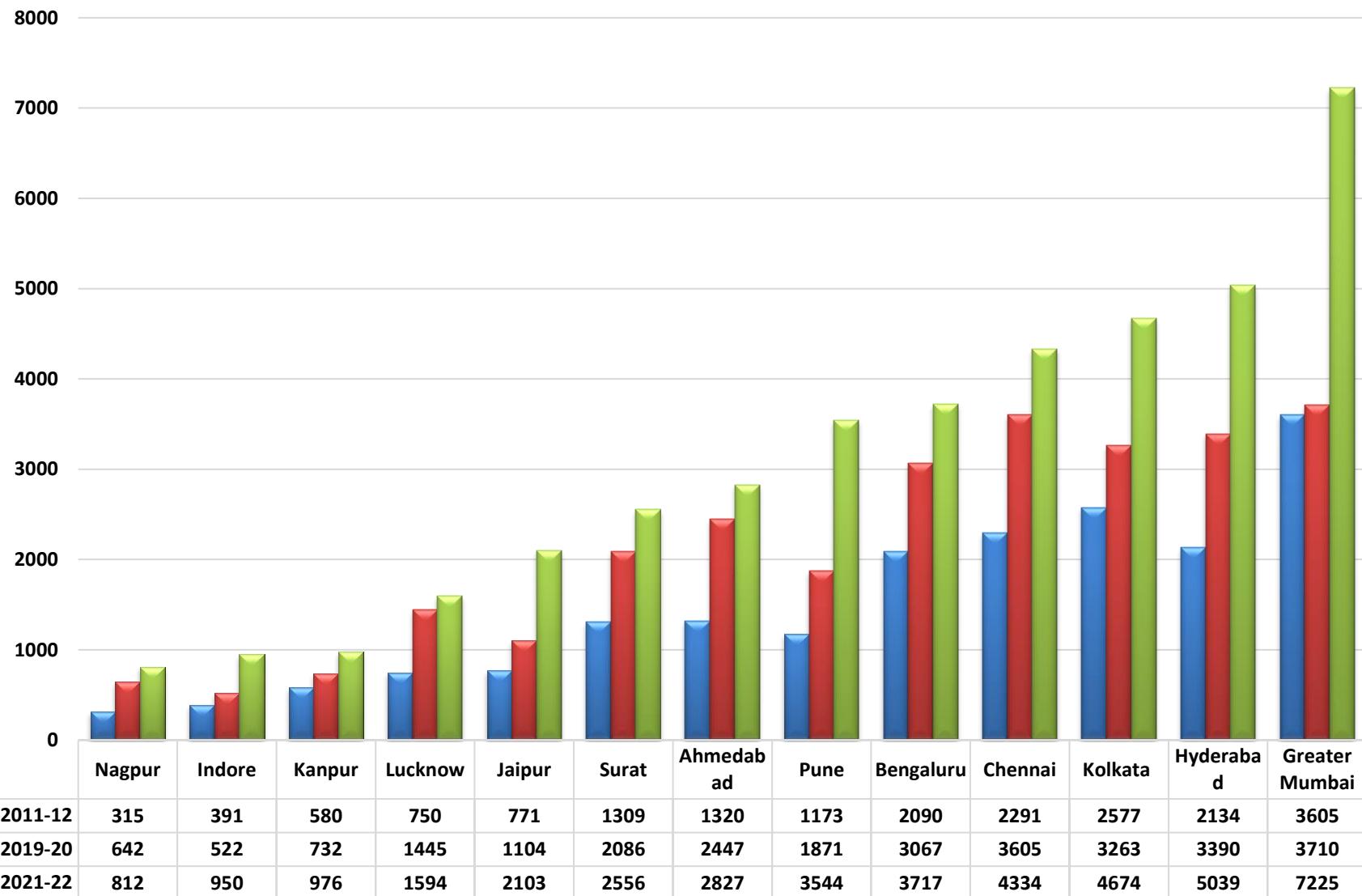
Chart : 37

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



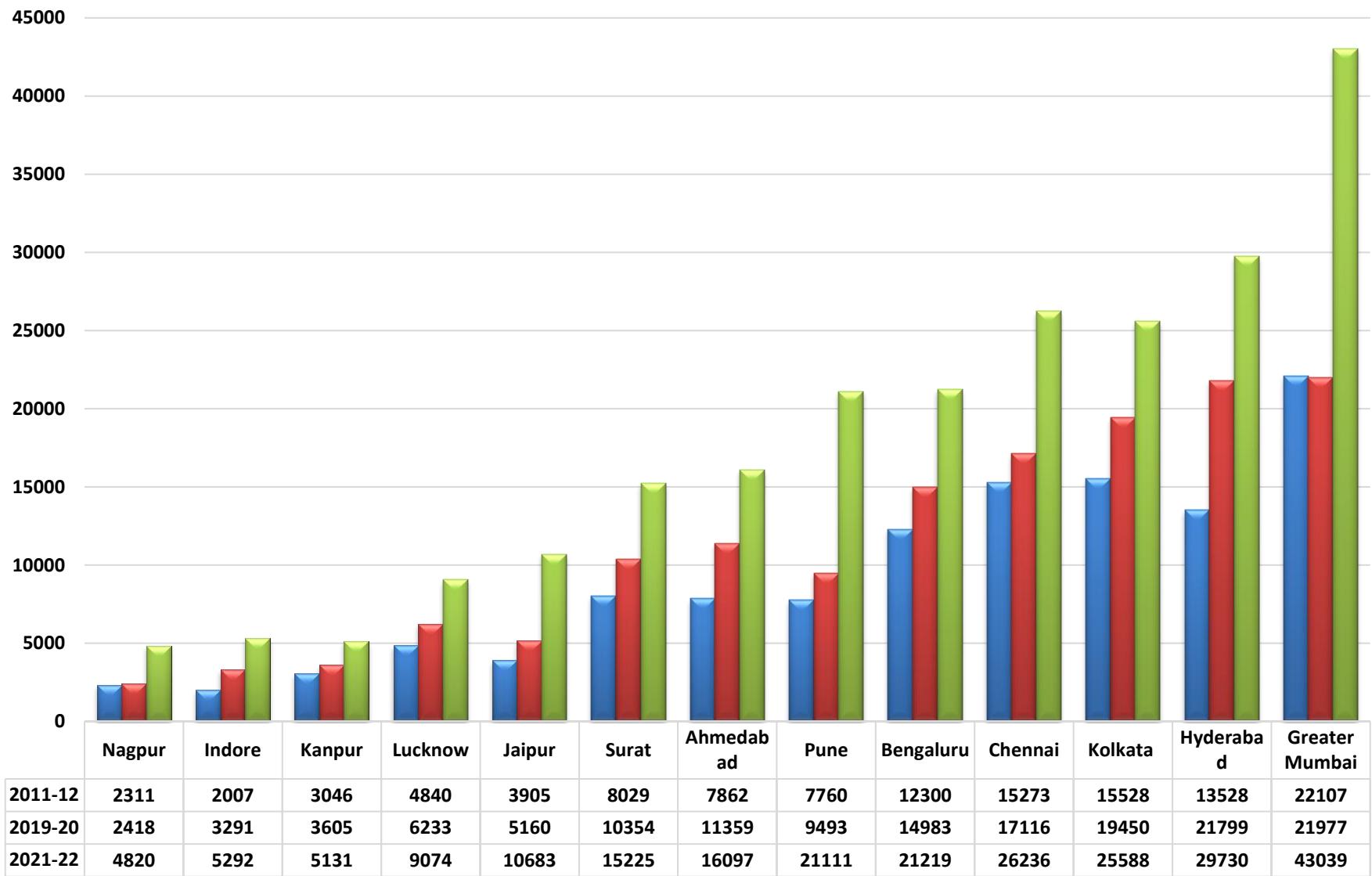
**18th Electric Power Survey of India (Volume - II)**  
**Annual Electric Peak Load (in MW) of mega Cities at Power Station Bus Bar**  
**For the year 2011-12, 2019-20 & 2021-22**

**Chart :37A**



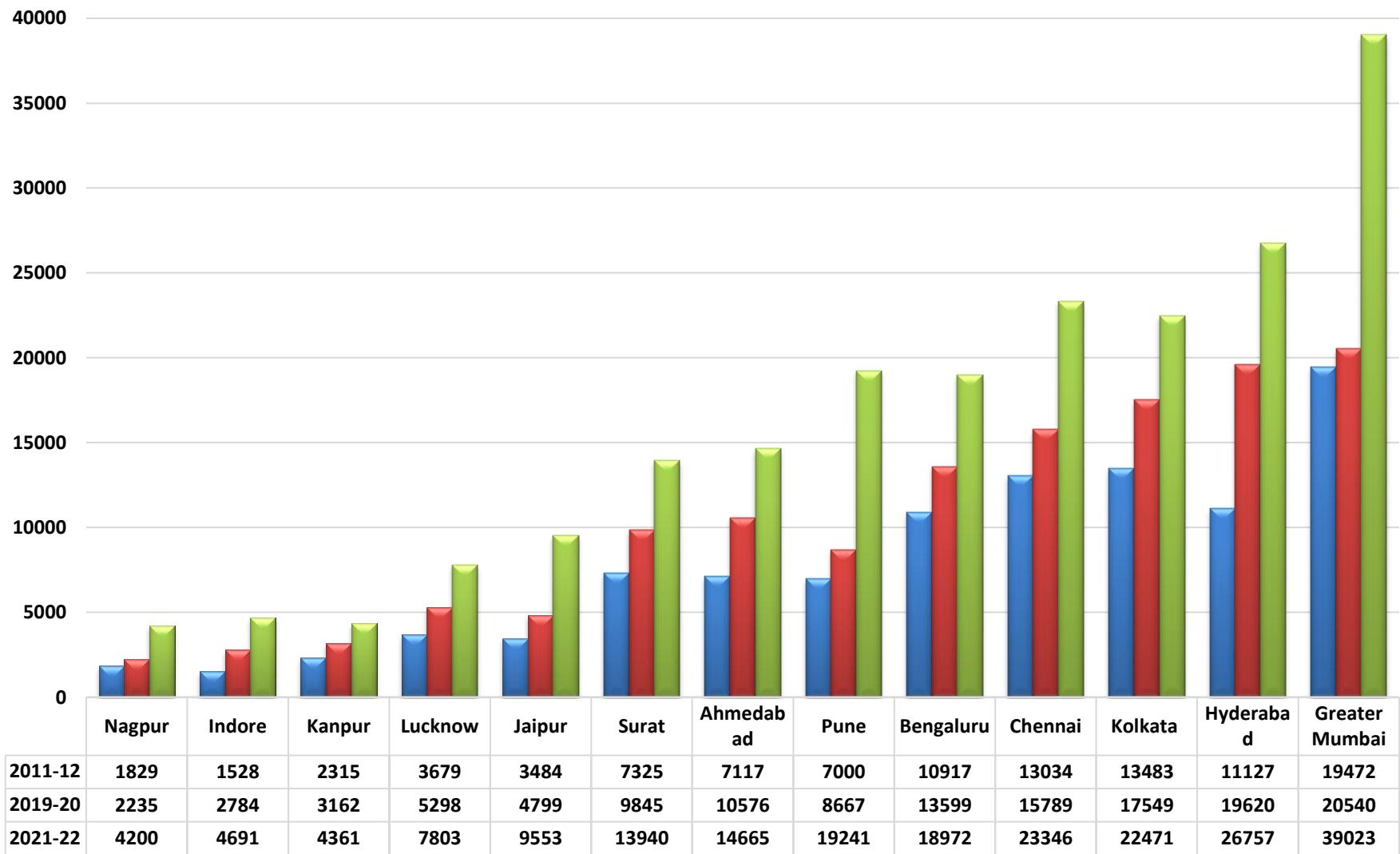
**18th Electric Power Survey of India (Volume - II)**  
**Electrical Energy Requirement (in MU) of mega Cities**  
**For the year 2011-12, 2019-20 & 2021-22**

Chart : 37B



**18th Electric Power Survey of India (Volume - II)**  
**Electrical Energy Consumption (in MU) of mega Cities**  
**For the year 2011-12, 2019-20 & 2021-22**

Chart : 37C



**Table No.8**  
**All India Power Supply Position Energy wise & Peak wise (Utilities)**  
**1984-85 to 2019-20**

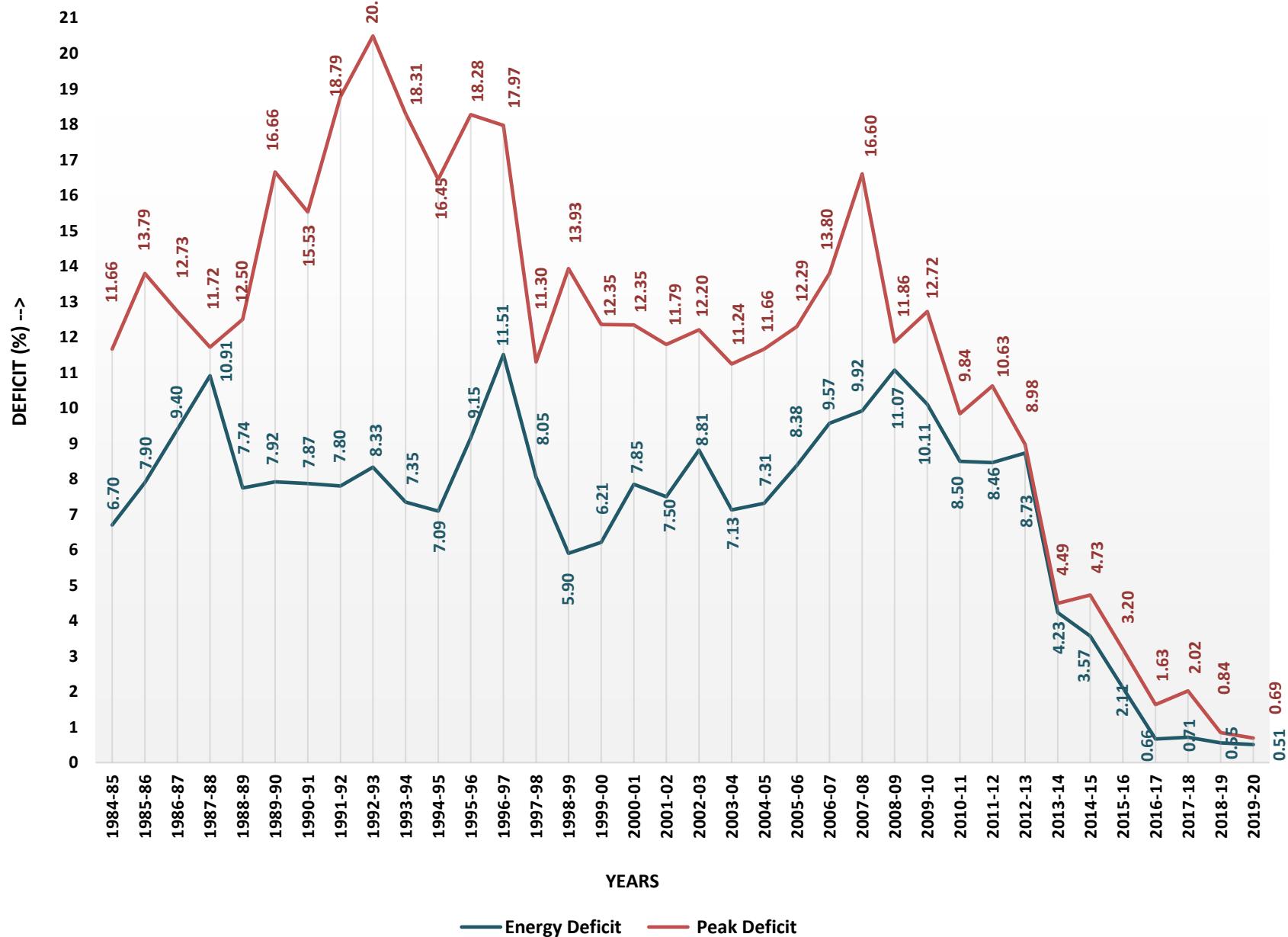
Year	Energy				Peak Demand			
	Requirement (GWh)	Availability (GWh)	Deficit (GWh)	Deficit (%)	Demand (MW)	Availability (MW)	Deficit (MW)	Deficit (%)
1984-85	155432	145013	10419	6.70	25810	22800	3010	11.66
1985-86	170746	157262	13484	7.90	28090	24215	3875	13.79
1986-87	192356	174276	18080	9.40	30850	26924	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 2019-20**

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	631554	578819	52735	8.35	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	995557	908652	86905	8.73	135453	123294	12159	8.98	
2013-14	1002257	959829	42428	4.23	135918	129815	6103	4.49	
2014-15	1068923	1030785	38138	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	1274595	1267526	7070	0.55	177022	175528	1494	0.84	
2019-20	1291010	1284444	6566	0.51	183804	182533	1271	0.69	

Chart : 38

All India Peak and Energy Deficit  
(Utilities)  
1984-85 to 2019-20



**Table 8A**  
**Region wise Summary of Electrical Energy Requirement (MU) & Peak Electricity Demand (MW)**  
**projections for the Year 2020-21 and 2021-22 As Per 19th EPS (Volume-I)**

Region/Year	Electrical Energy Requirement (MU)		Peak Electricity Demand (MW)	
	2020-21	2021-22	2020-21	2021-22
<b>Northern</b>	443704	468196	69766	73770
<b>Western</b>	455250	481501	66847	71020
<b>Southern</b>	399047	420753	59581	62975
<b>Eastern</b>	162669	171228	26633	28046
<b>North East</b>	22083	23809	4170	4499
<b>A &amp; N Island</b>	446	475	91	97
<b>Lakshdweep</b>	59	62	11	11
<b>All India Total</b>	<b>1483257</b>	<b>1566023</b>	<b>213244</b>	<b>225751</b>

NOTE : EPS - Electric Power Survey

**Table 8B**  
**Category wise Forecast of Electrical Energy Consumption**  
**For the Year 2020-21 and 2021-22**  
**As Per 19th EPS (Volume-I)**

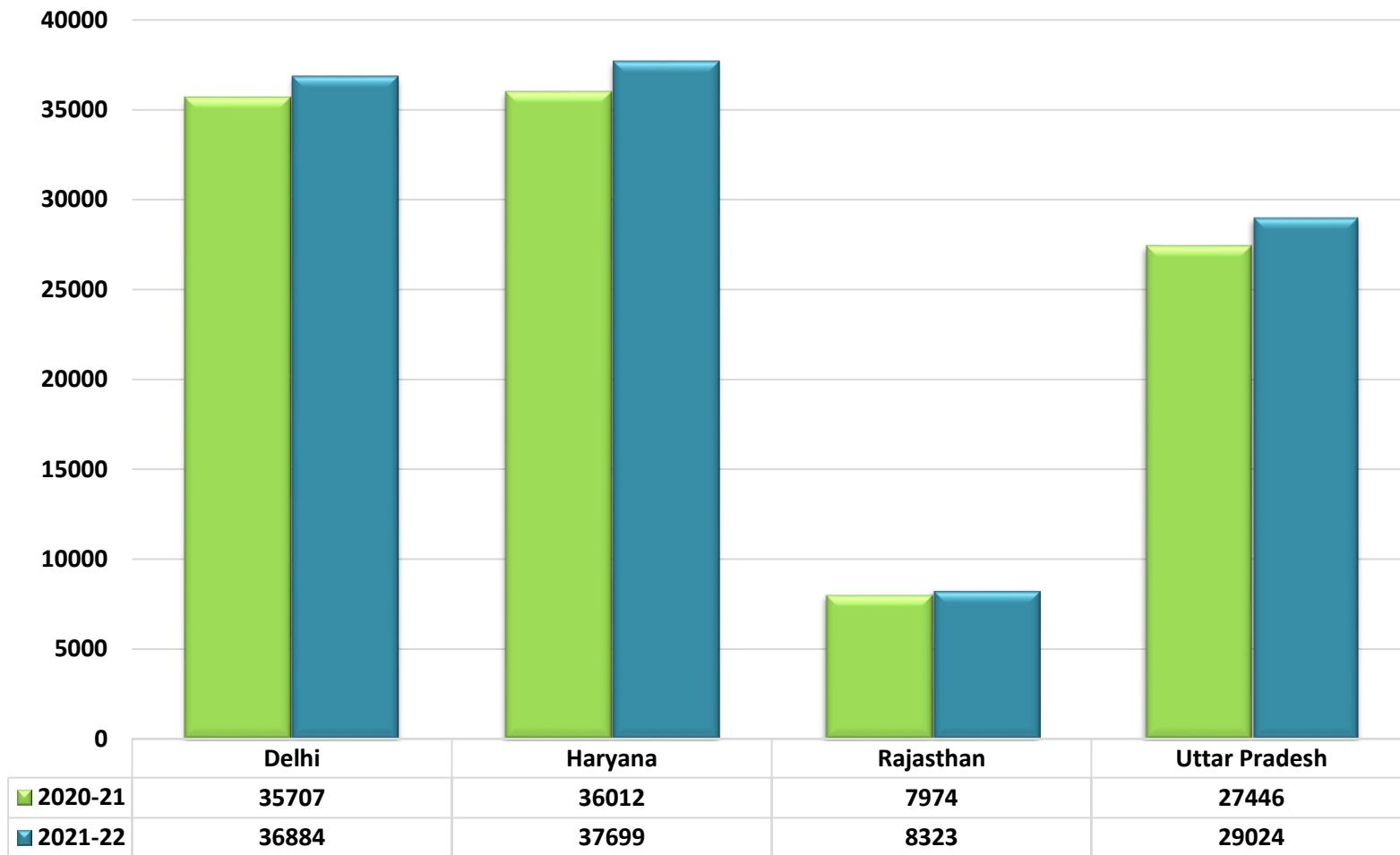
Category	Year	Year	GWh
	2020-21	2021-22	
Domestic	360256	386790	
Commercial	120469	128888	
Irrigation	262256	276277	
Industries	363460	386450	
Others	115845	122081	
<b>Total</b>	<b>1222286</b>	<b>1300486</b>	

**Table 8C**  
**Forecast of Electrical Energy Requirement (in MU) of NCR**  
**For the Year 2020-21 and 2021-22**  
**As Per 19th EPS (Volume-II)**

NCR Sub Region	2020-21	2021-22	GWh
Delhi	35707	36884	
Haryana	36012	37699	
Rajasthan	7974	8323	
Uttar Pradesh	27446	29024	
<b>NCR - Total</b>	<b>107139</b>	<b>111929</b>	

Chart : 39

**Forecast of Electrical Energy Requirement (in MU) of NCR  
For the Year 2020-21 and 2021-22**

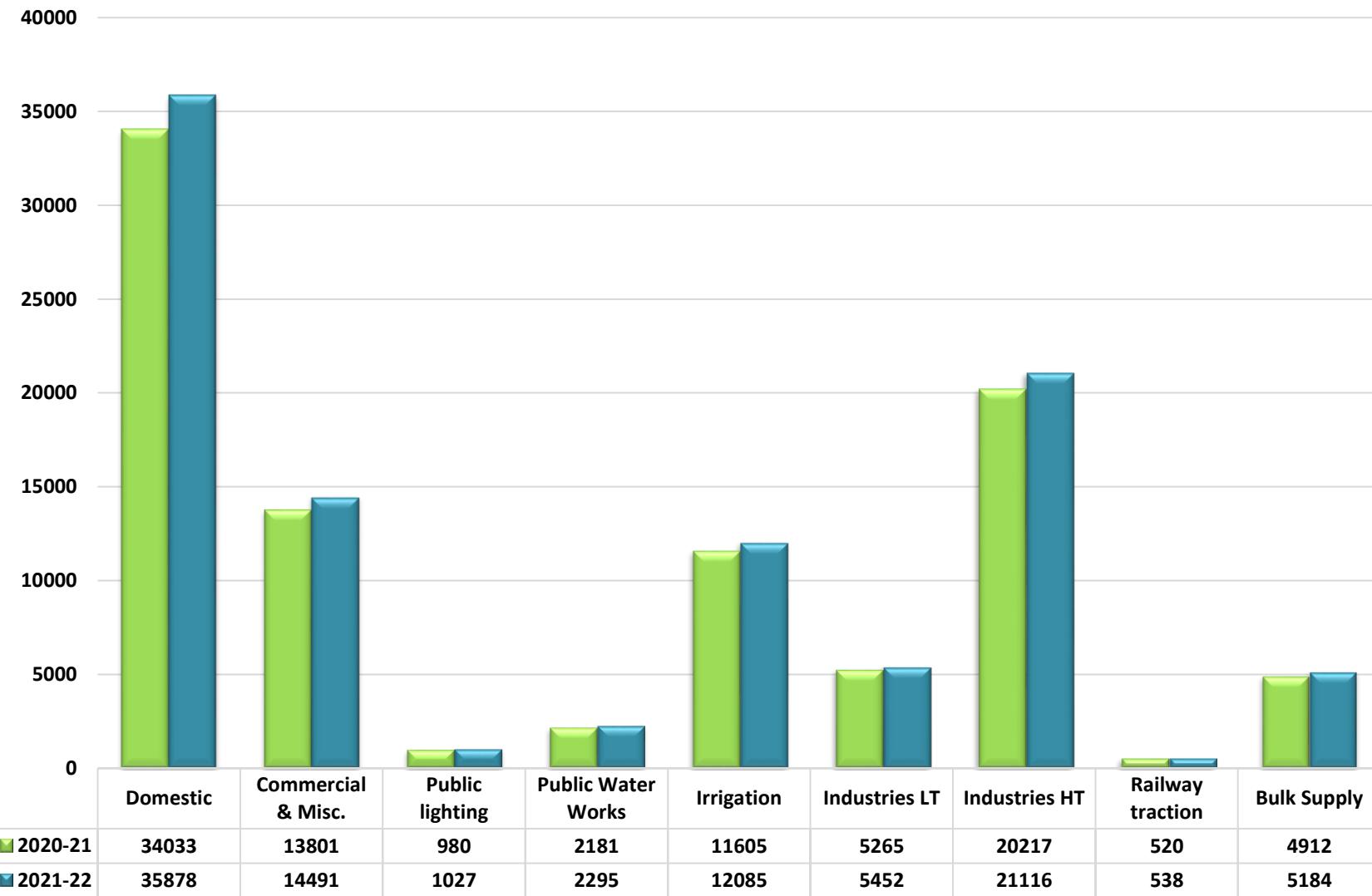


**Table 8D**  
**Forecast of Electrical Energy Consumption (in MU) of NCR**  
**For the Year 2020-21 to 2021-22**  
**As Per 19th EPS (Volume-II)**

Consumption Category	2020-21	2021-22	GWh
Domestic	34033	35878	
Commercial & Misc.	13801	14491	
Public lighting	980	1027	
Public Water Works	2181	2295	
Irrigation	11605	12085	
Industries LT	5265	5452	
Industries HT	20217	21116	
Railway traction	520	538	
Bulk Supply	4912	5184	
<b>Total (Energy Consumption)</b>	<b>93515</b>	<b>98066</b>	

Chart :40

**Forecast of Electrical Energy Consumption (in MU) of NCR  
For the year 2020-21 & 2021-22**



# MAP OF INDIA

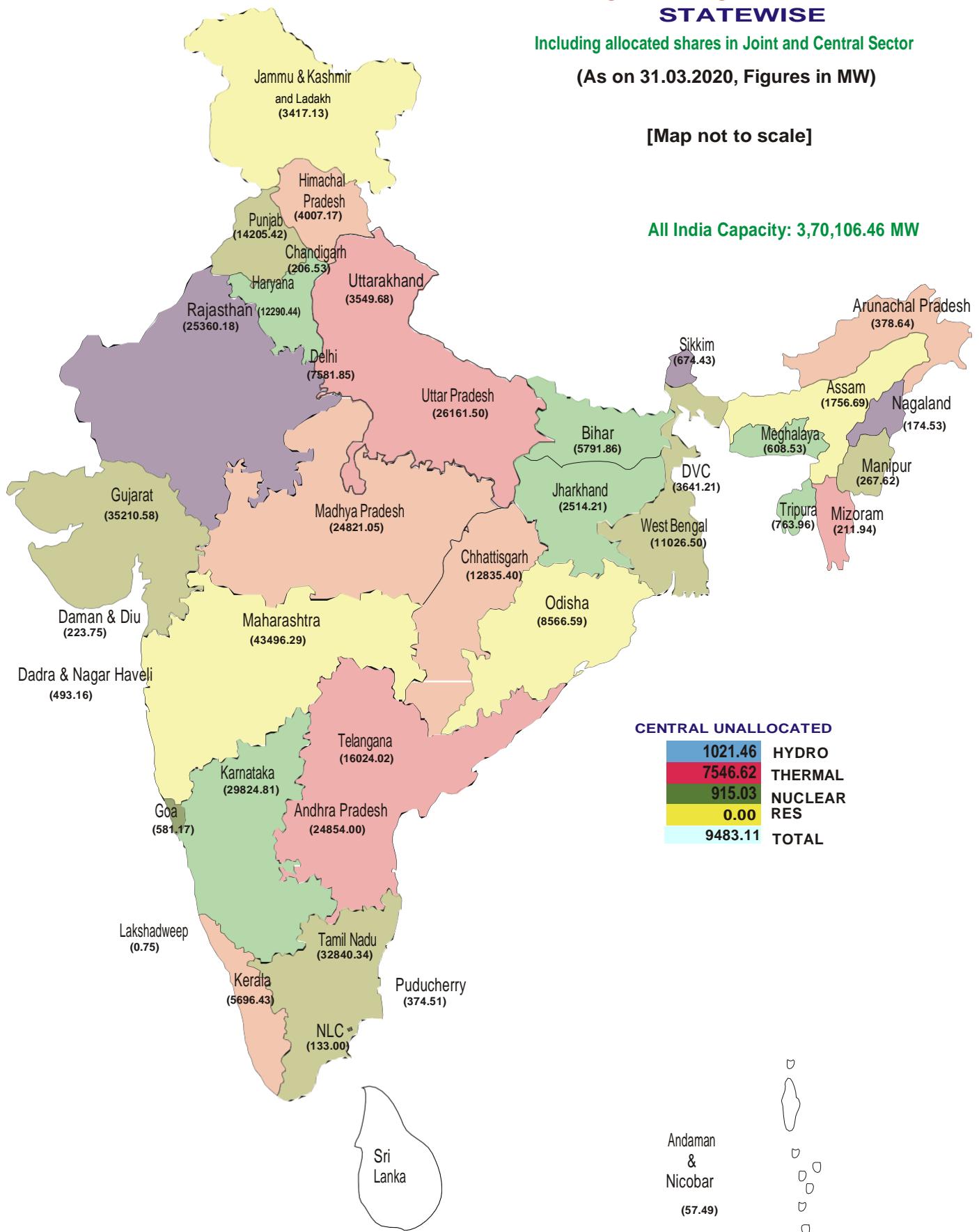
SHOWING  
INSTALLED GENERATING CAPACITY  
STATEWISE

Including allocated shares in Joint and Central Sector

(As on 31.03.2020, Figures in MW)

[Map not to scale]

All India Capacity: 3,70,106.46 MW



# MAP OF INDIA

## SHOWING INSTALLED GENERATING CAPACITY STATEWISE

Including allocated shares in Joint and Central Sector

(As on 31.03.2020, Figures in MW)

[ Map not to scale ]

**ALL INDIA INSTALLED CAPACITY 3,70,106.46 MW**

