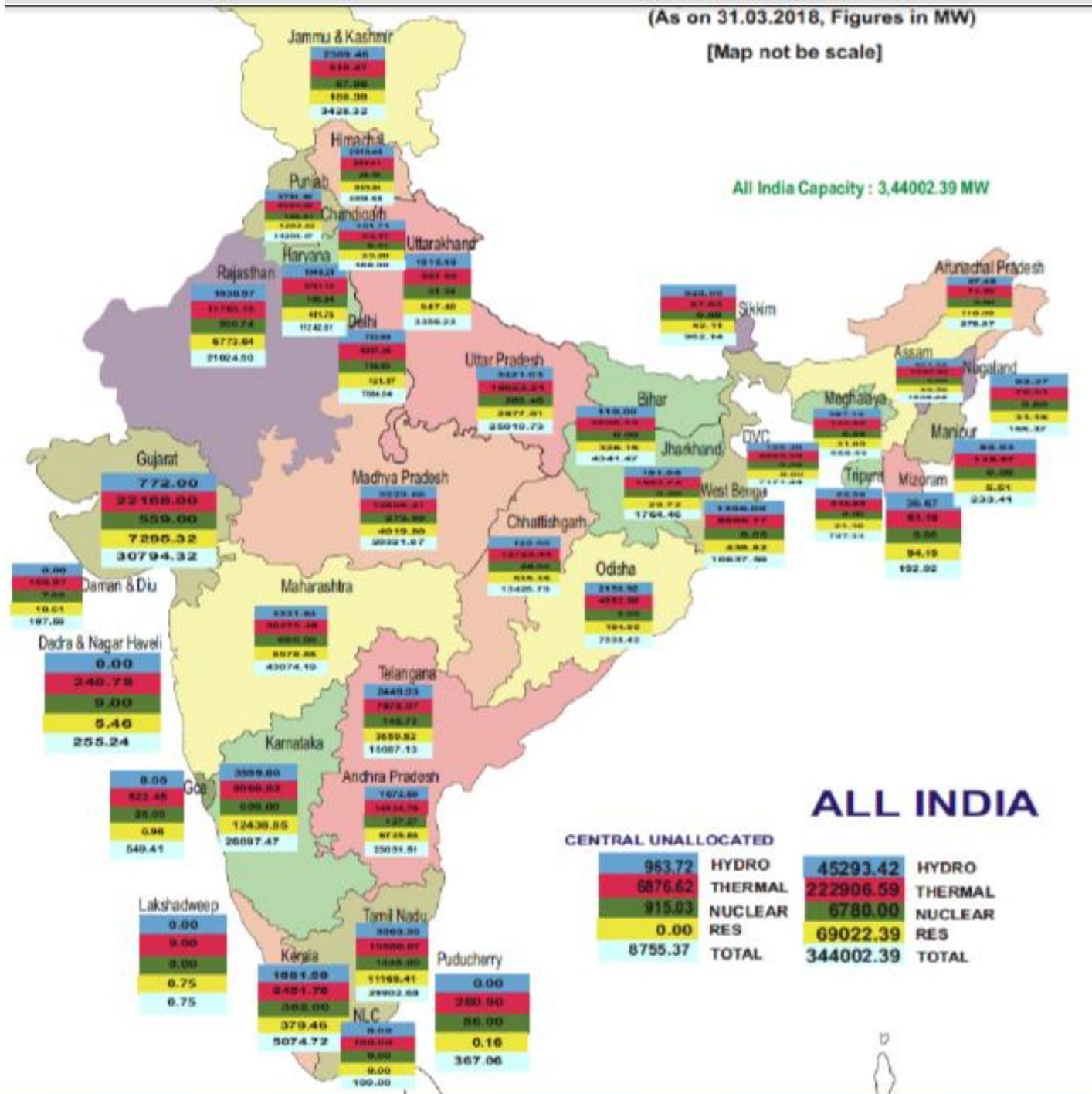


Energy Scenario & Sectorial energy Consumption

Energy Scenario

(As on 31.03.2018, Figures in MW)

[Map not be scale]



Refineries and Petroleum Product Pipelines

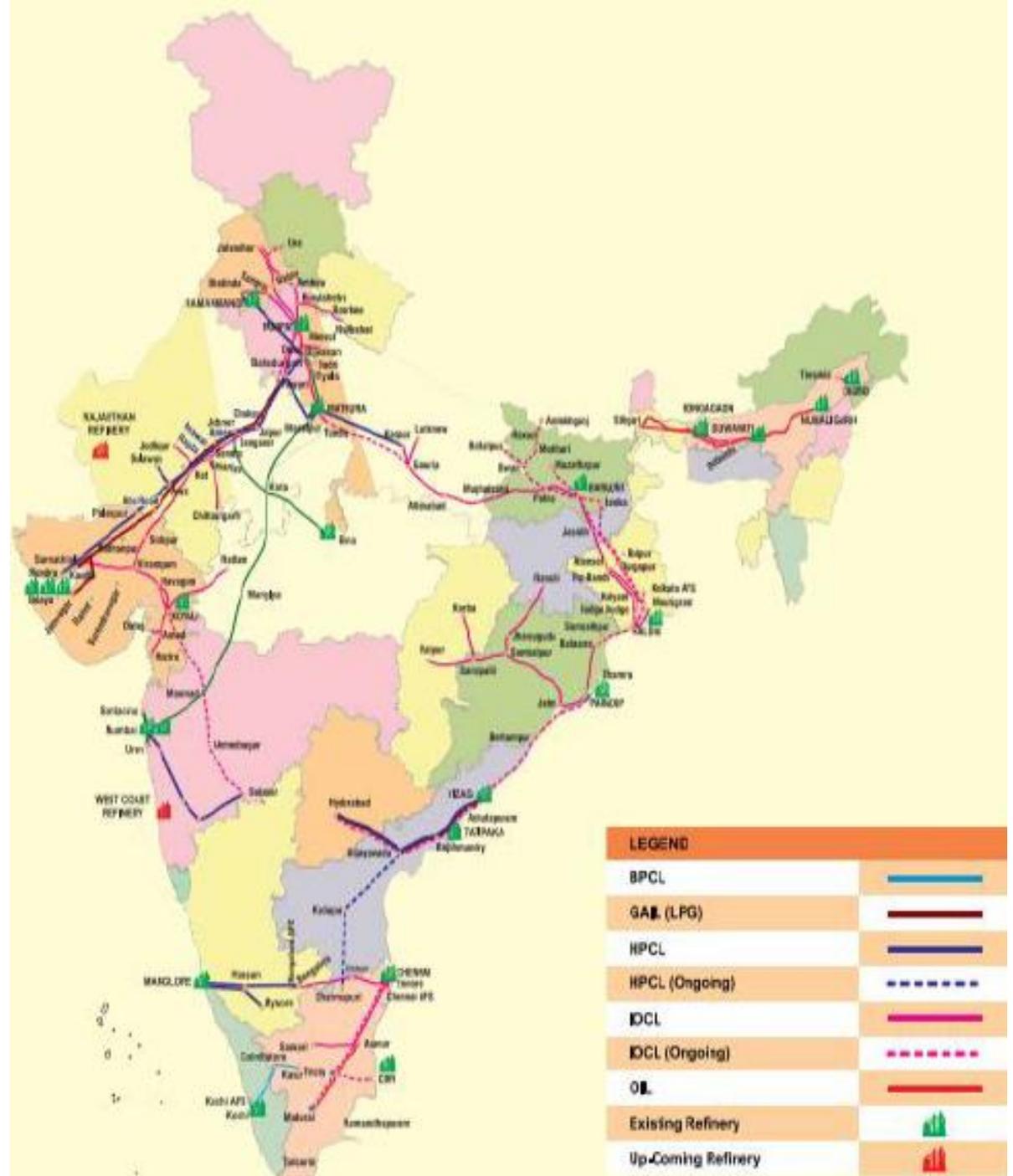


Fig 6.5: Sourcewise Consumption of Energy during 2017-18

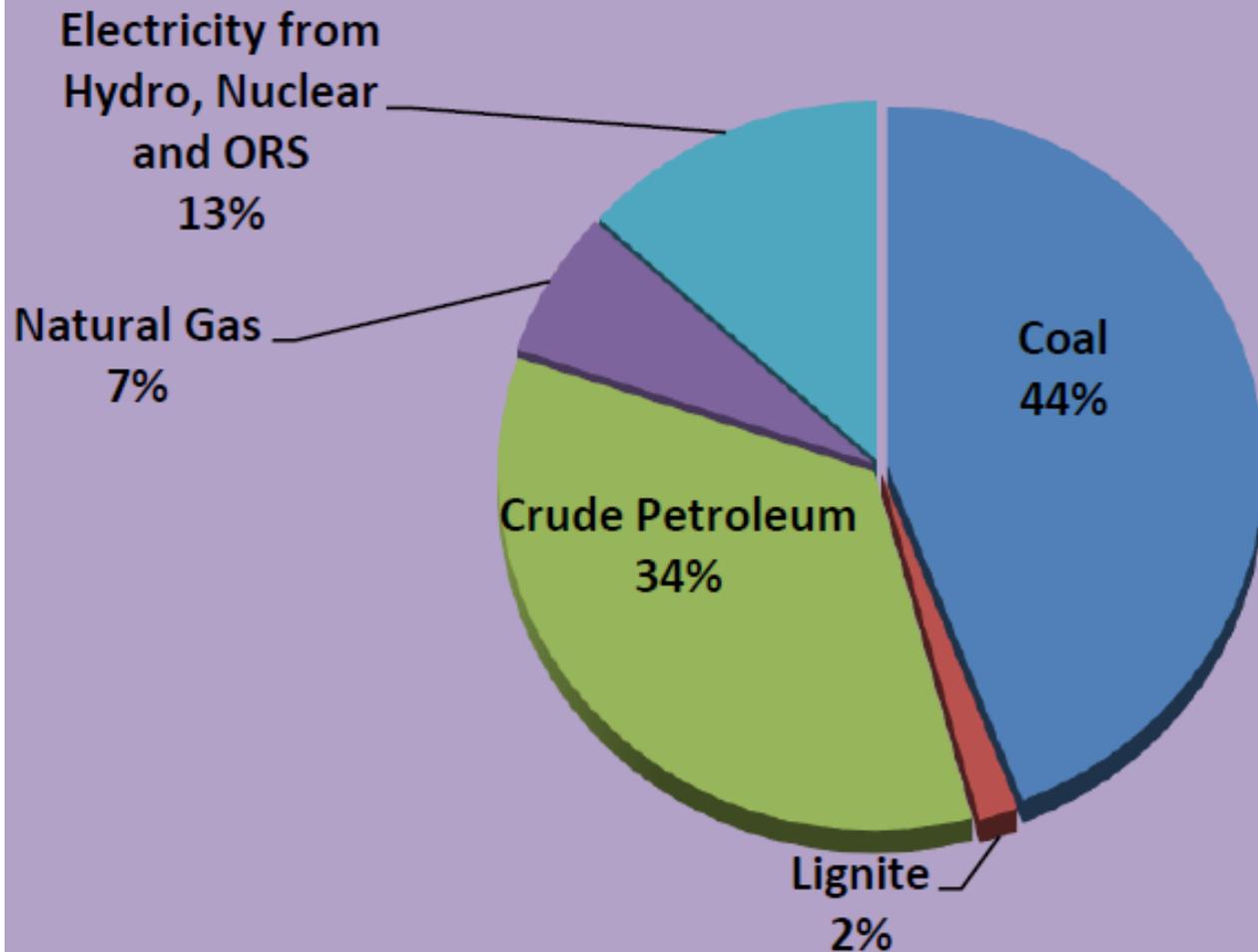


Fig 3.2: Trends in Production of Energy by Commercial Sources in India from 2008-09 to 2017-18

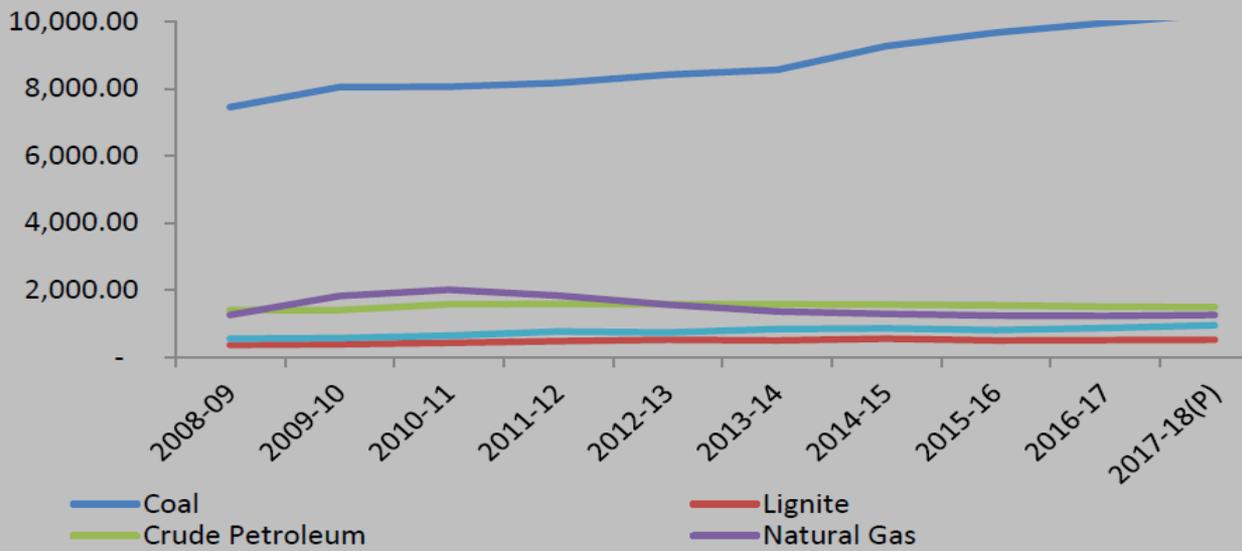
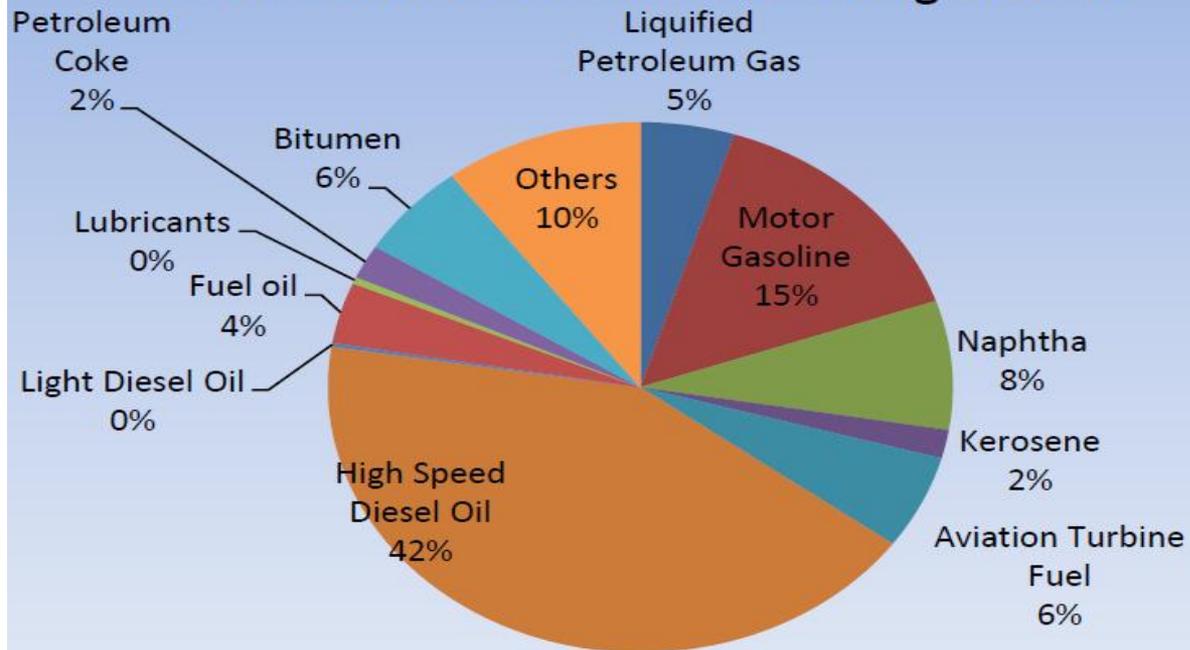


Fig 3.3 : Distribution of Domestic Production of Petroleum Products in India during 2017-18



Production and Consumption.

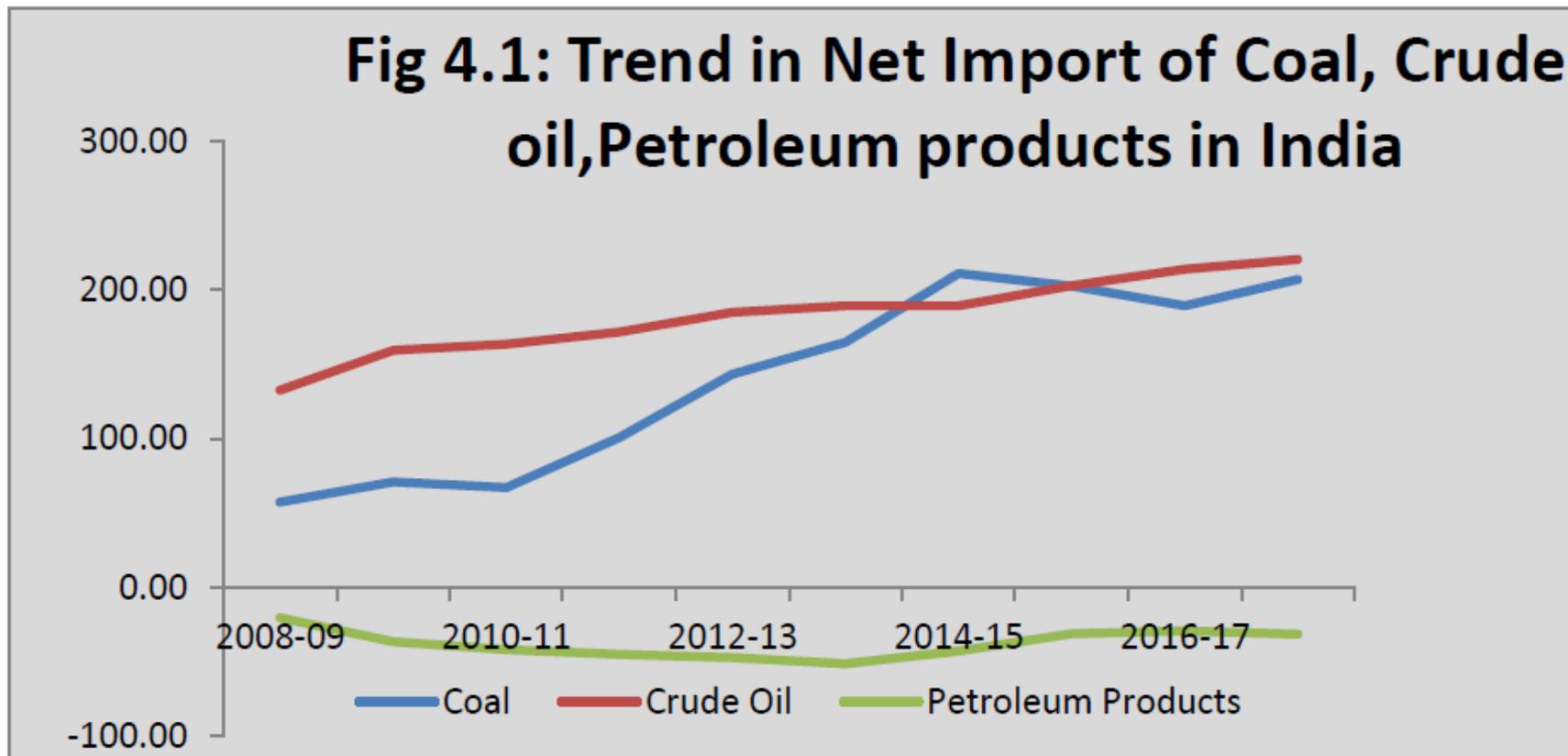
- Compound Annual Growth Rate (CAGR) of Production of Coal & Lignite in 2017-18 over 2008-09 are 3.20% & 3.62% respectively whereas their consumption grew at 5.01% and 3.70% respectively during the same period.
- In case of Crude Oil and Natural Gas, during the period 2008-09 to 2017-18 the Production increased by 0.63% and (-) 0.06% whereas Consumption increased by 4.59% & 4.82%.
- During the aforesaid period, Generation of Electricity increased by 5.71 % and Consumption of electricity increased by 7.39%.

Imports and Exports.

- Imports of the Coal during 2008-09 to 2017-18 increased at a CAGR of 13.44% whereas the Exports during the corresponding period decreased at (-) 0.96%.
- During the period 2008-09 to 2017-18, the imports of Natural Gas and Crude Oil increased at CAGR of 9.44% and 5.20% respectively.
- The imports of petroleum products, during the period 2008-09 to 2017-18 increased at CAGR of 6.67%, whereas during the same reference period the exports registered an increase of 5.55%.
- For electricity, the net imports witnessed significant change in last two years i.e. 2016-17 and 2017-18. The exports have robust increase at CAGR of 61.83% during 2008-09 to 2017-18 whereas the imports registered a decline with CAGR of (-) 0.50%.

(Compound annual growth rate (CAGR) is the rate of return that would be required for an investment to grow from its beginning balance to its ending balance)

- ❖ India is highly dependent on import of crude oil. Net imports of crude oil have increased from 132.78 MTs during 2008-09 to 220.43 MTs during 2017-18.

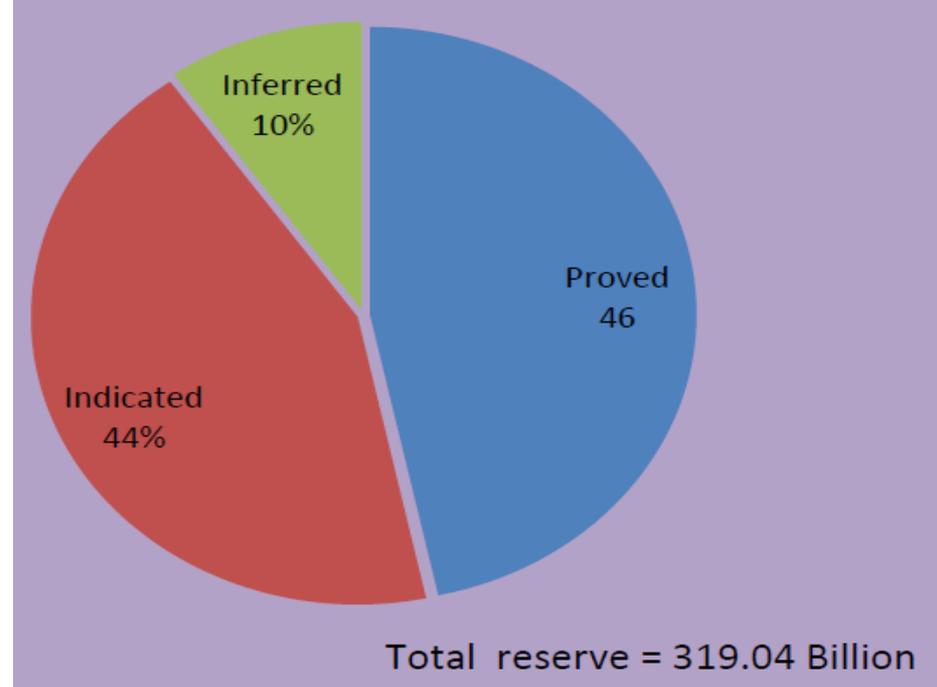


RESERVES AND POTENTIAL

Coal

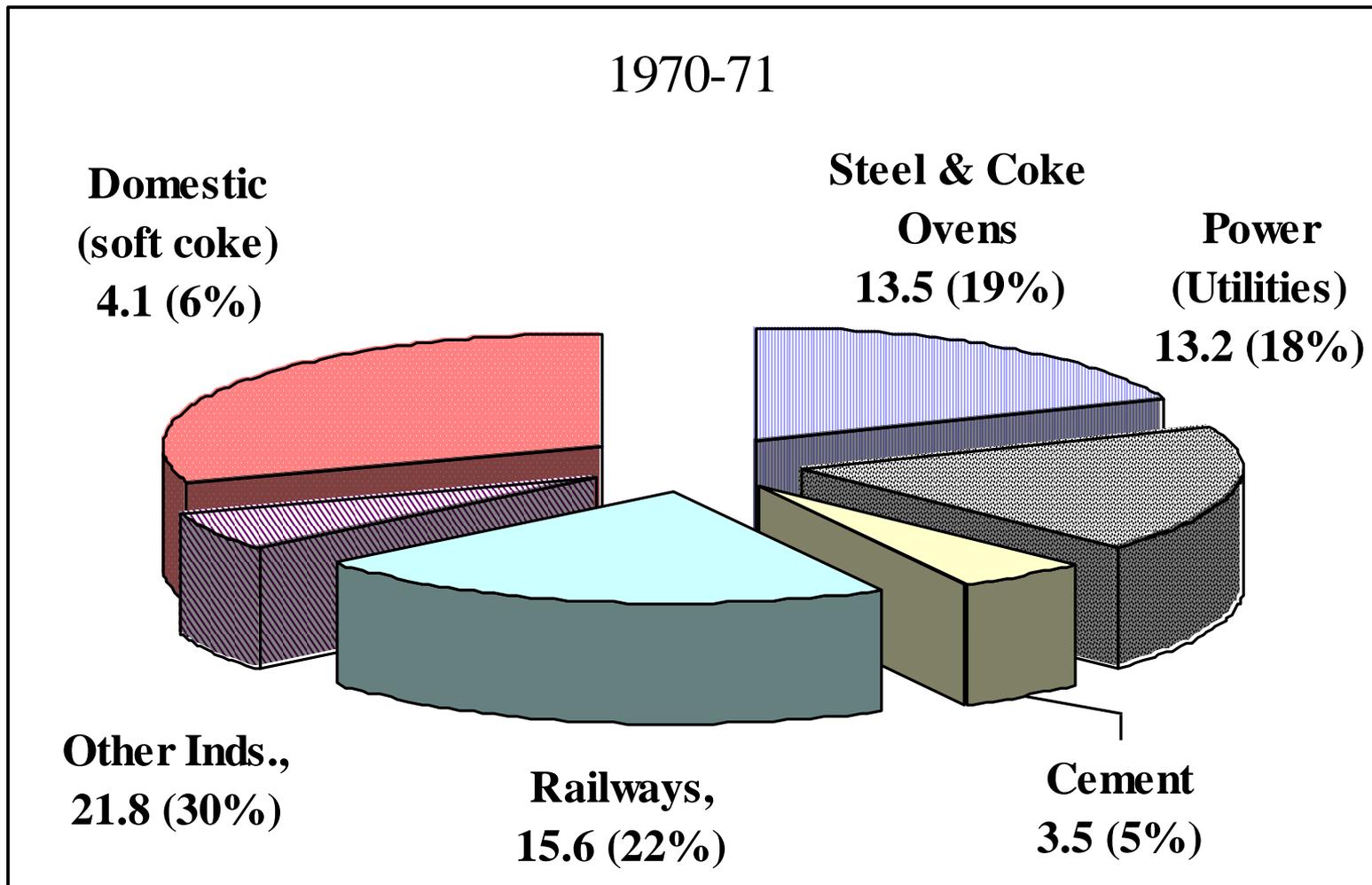
- Telangana and Maharashtra account for 98.26% of the total coal reserves in the country. The State of Jharkhand had the maximum share (26.06%) in the overall reserves of coal in the country as on 31st March 2018 followed by the State of Odisha (24.86%)
- As on 31.03.18, the estimated reserves of coal were 319.04 billion tonnes, an addition of 3.88 billion tonnes over the last year in corresponding period.
- increase of 1.23% in the estimated coal reserves during the year 2017-18 with Odisha accounting for the maximum increase of 2.6%.

Estimated Reserves of Coal in India as on 31.03.2018

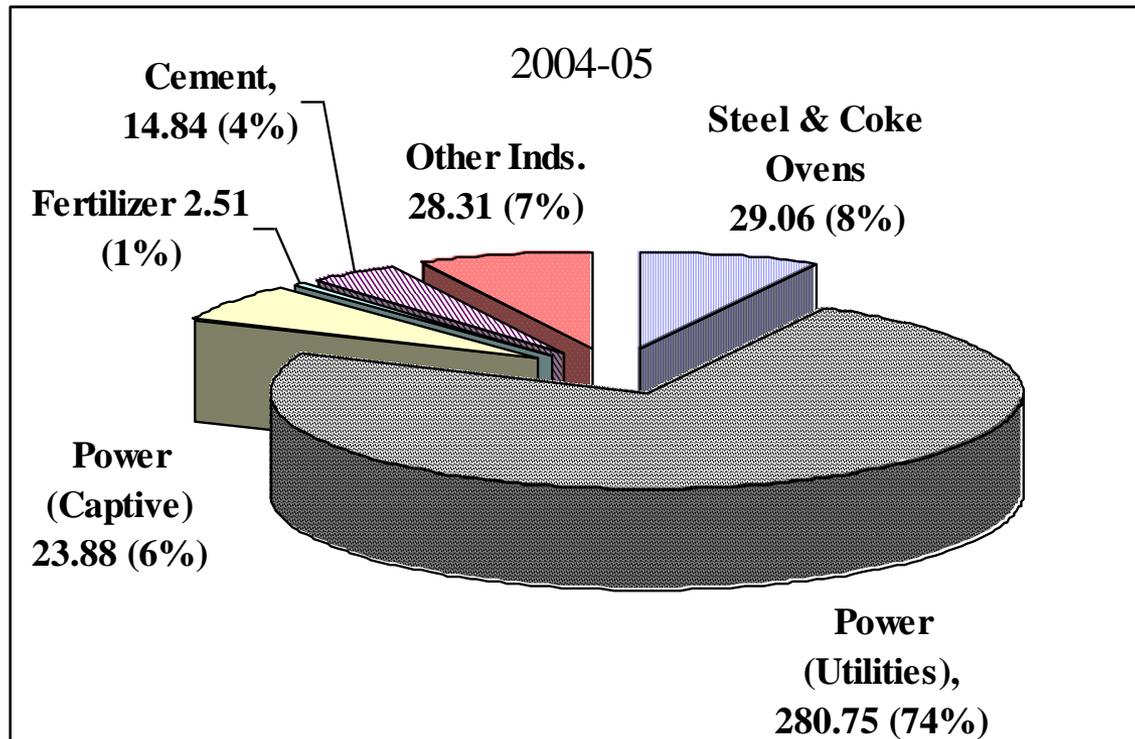


- The estimated total reserves of lignite as on 31.03.18 was 45.66 billion tonnes against 44.70 billion tonnes on 31.03.17

Sector Wise Coal Consumption (1970-71) (million tonnes)

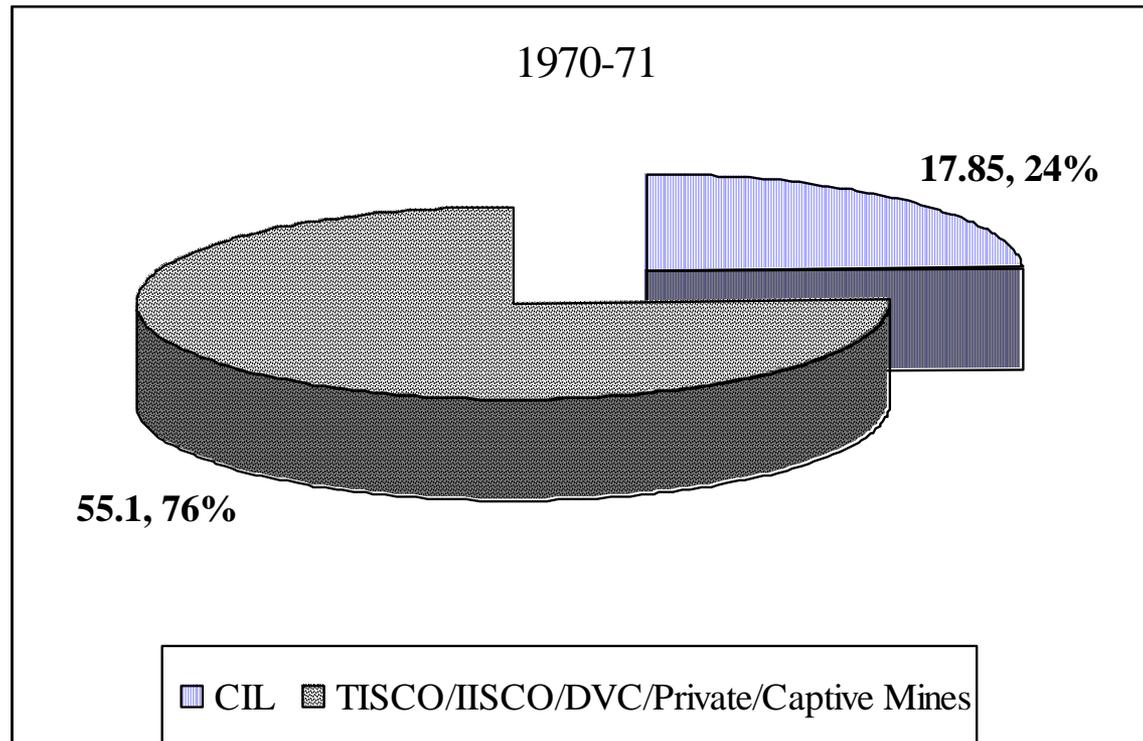


Sector Wise Coal Consumption (2004-05) (million tonnes)

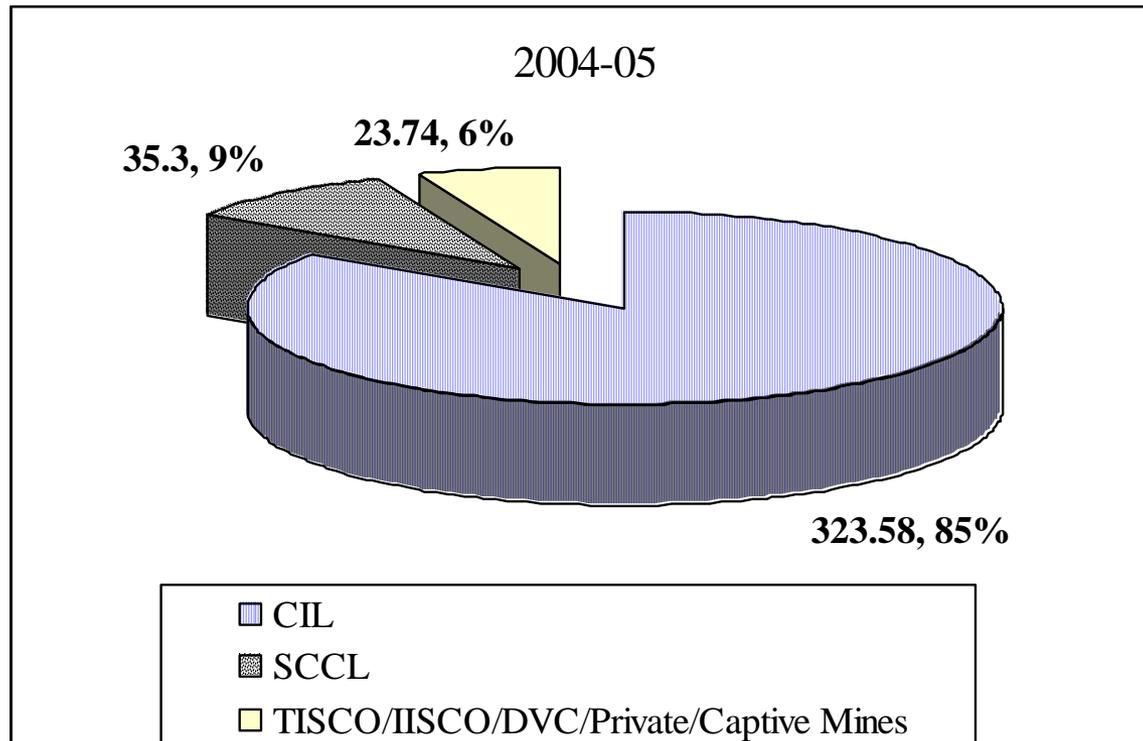


Significantly high share by Power Sector.

Ownership Wise Coal Production (1970-71) (Total = 72.95 million tonnes)



Ownership Wise Coal Production (2004-05) (Total = 382.62 million tonnes)



Significantly high share of Govt. Sector.

Table 1.1: Statewise Estimated Reserves of Coal in India as on 31.03.2017 and 31.03.2018

(in Billion Tonne)

States/ UTs	Proved		Indicated		Inferred		Total		Distribution (%)	
	31.03.2017	31.03.2018	31.03.2017	31.03.2018	31.03.2017	31.03.2018	31.03.2017	31.03.2018	31.03.2017	31.03.2018
Andhra Pradesh	0	0	1.15	1.15	0.43	0.43	1.58	1.58	0.50	0.50
Arunachal Pradesh	0.03	0.03	0.04	0.04	0.02	0.02	0.09	0.09	0.03	0.03
Assam	0.47	0.47	0.06	0.06	0.00	0.00	0.53	0.53	0.16	0.16
Bihar	0.00	0.16	0.00	0.81	1.35	0.39	1.35	1.37	0.43	0.43
Chhattisgarh	20.00	20.43	34.46	34.58	2.20	2.20	56.66	57.21	17.98	17.97
Jharkhand	44.34	45.56	31.88	31.44	6.22	6.15	82.44	83.15	26.16	26.06
Madhya Pradesh	11.27	11.96	12.76	12.15	3.65	3.88	27.67	27.99	8.78	8.77
Maharashtra	7.04	7.18	3.16	3.07	2.06	2.05	12.26	12.30	3.89	3.88
Meghalaya	0.09	0.09	0.02	0.02	0.47	0.47	0.58	0.58	0.18	0.18
Nagaland	0.01	0.01	0.00	0.00	0.40	0.40	0.41	0.41	0.13	0.13
Odisha	34.81	37.39	34.06	34.17	8.42	7.74	77.29	79.30	24.52	24.86
Sikkim	0.00	0.00	0.06	0.06	0.04	0.04	0.10	0.10	0.03	0.03
Uttar Pradesh	0.88	0.88	0.18	0.18	0.00	0.00	1.06	1.06	0.34	0.33
West Bengal	13.72	14.16	12.95	12.87	4.99	4.64	31.67	31.67	10.05	9.92
Telangana	10.40	10.47	8.54	8.58	2.52	2.65	21.46	21.70	6.81	6.80
All India Total	143.06	148.79	139.31	139.18	32.78	31.06	315.16	319.04	100.00	100.00
Distribution (%)	45.39	46.64	44.20	43.62	10.40	9.74	100.00	100.00		

Source: Office of Coal Controller, Ministry of Coal

- **Petroleum**
- The estimated reserves of crude oil in India as on 31.03.2018 stood at 594.49million tonnes (MT) against 604.10 million tonnes on 31.03.2017.
- Western Offshore (40%) followed by Assam (27%), whereas the maximum reserves of Natural Gas are in the Eastern Offshore (38.13%) followed by Western offshore (23.33%).

Fig 1.3: Estimated Reserves of Crude Oil in India as on 31.03.2018

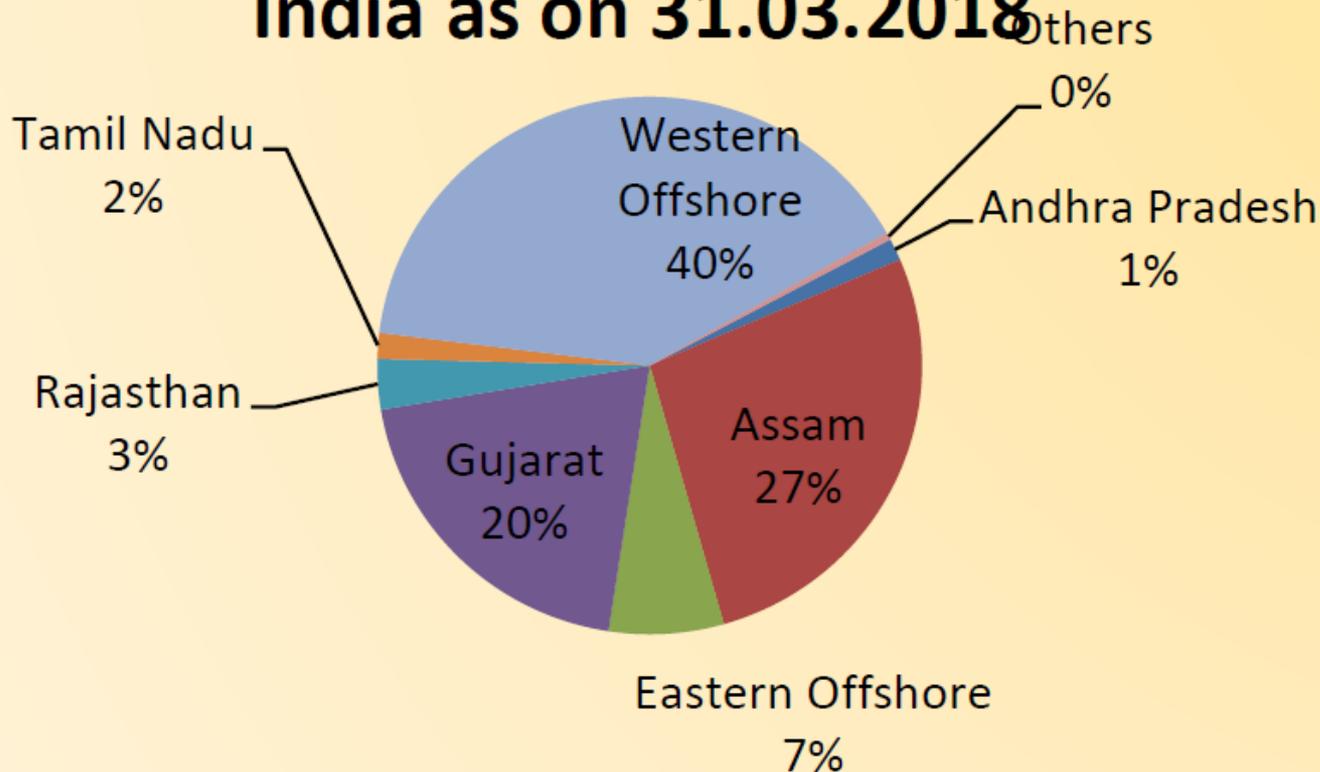
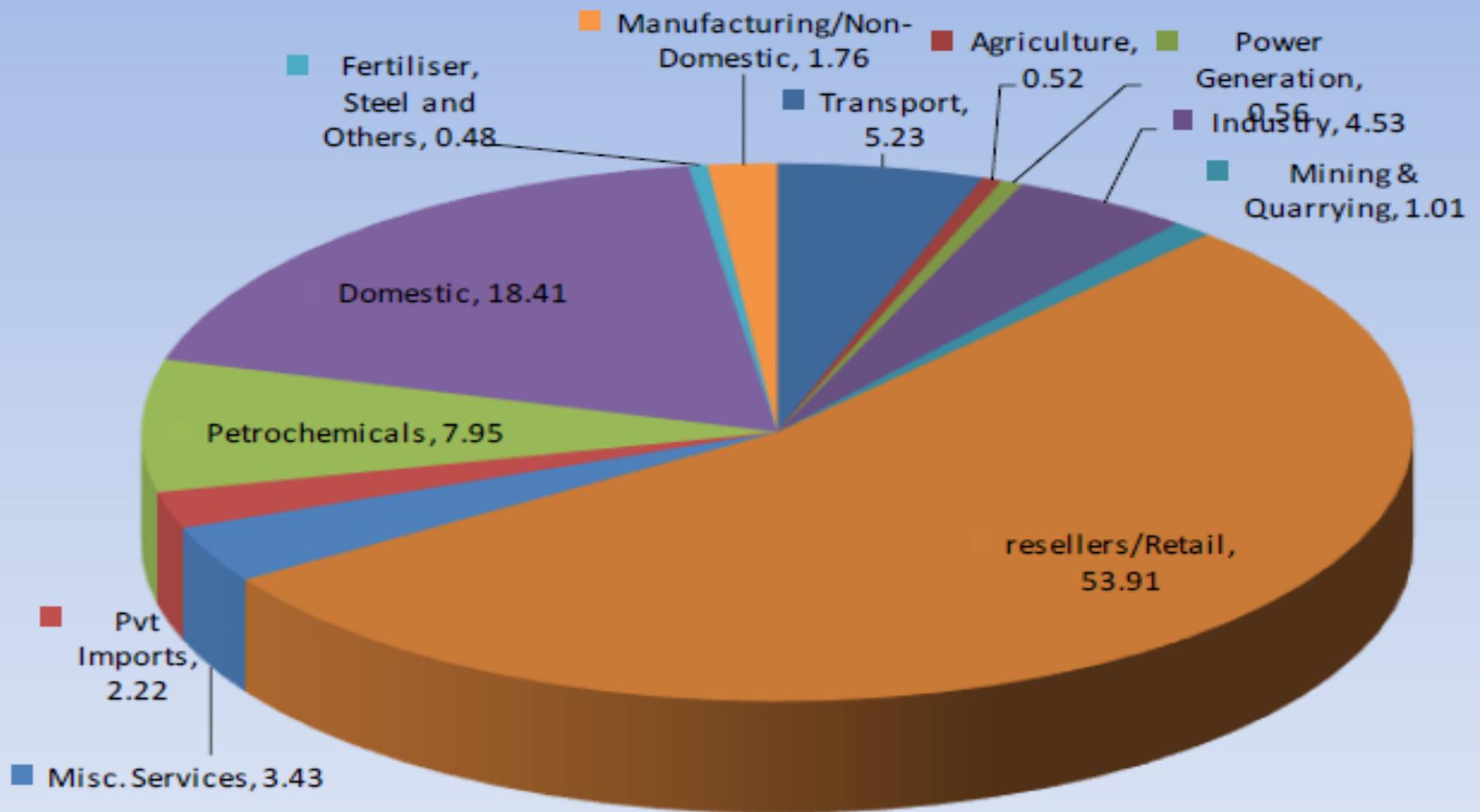


Fig 6.3: Sector-wise Consumption of Petroleum Products during 2017-18



Total consumption = 130.363 MT

Natural Gas

- The estimated reserves of Natural Gas in India as on 31.03.2018 stood at 1339.57 Billion Cubic Meters (BCM) as against 1289.70 BCM as on 31.03.2017.
- The estimated reserves of Natural Gas increased by 3.87% over the last year. The maximum contribution to this increase has been from Arunachal Pradesh, and Rajasthan followed by Andhra Pradesh and Tamil Nadu.

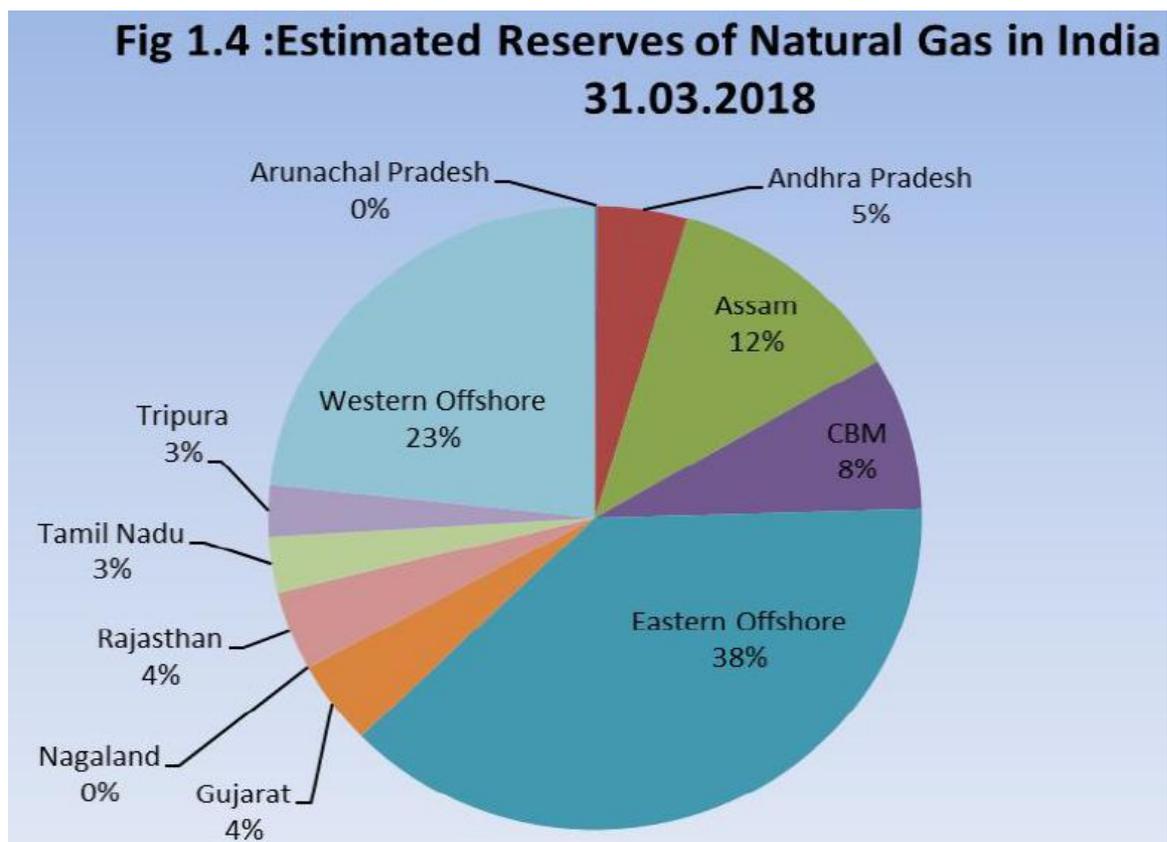
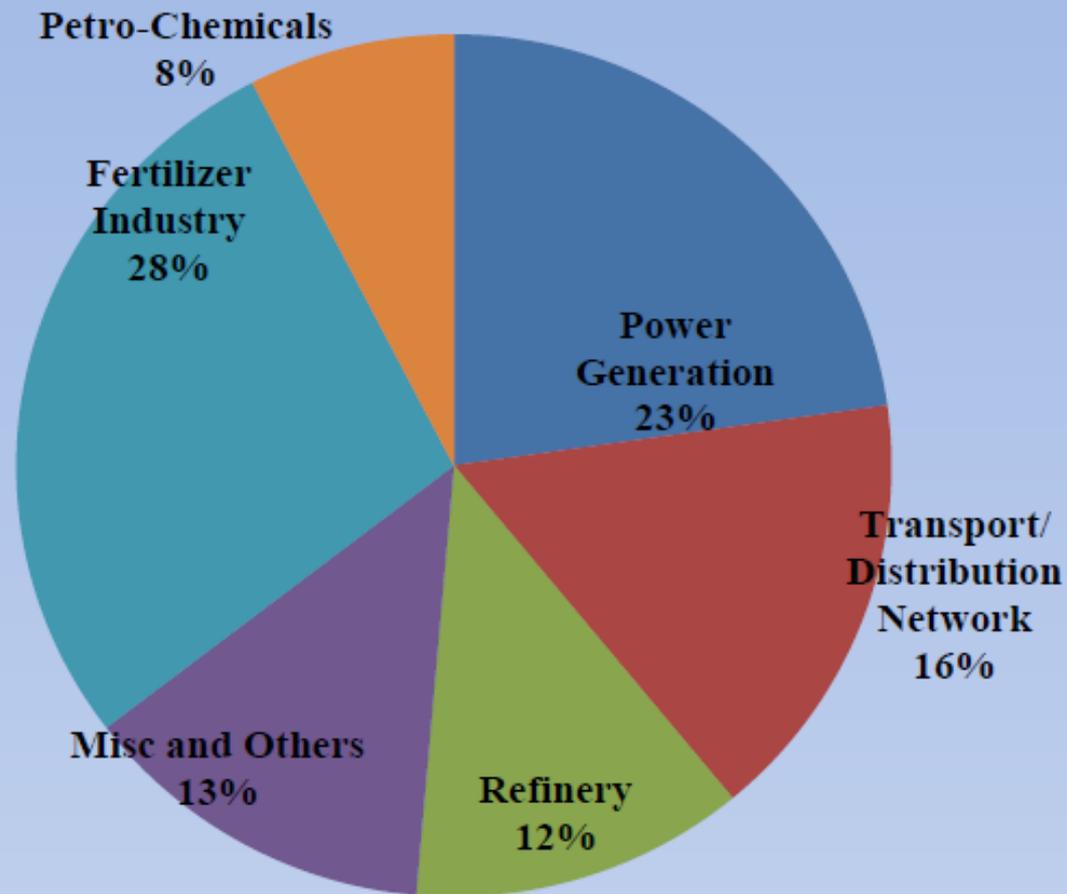


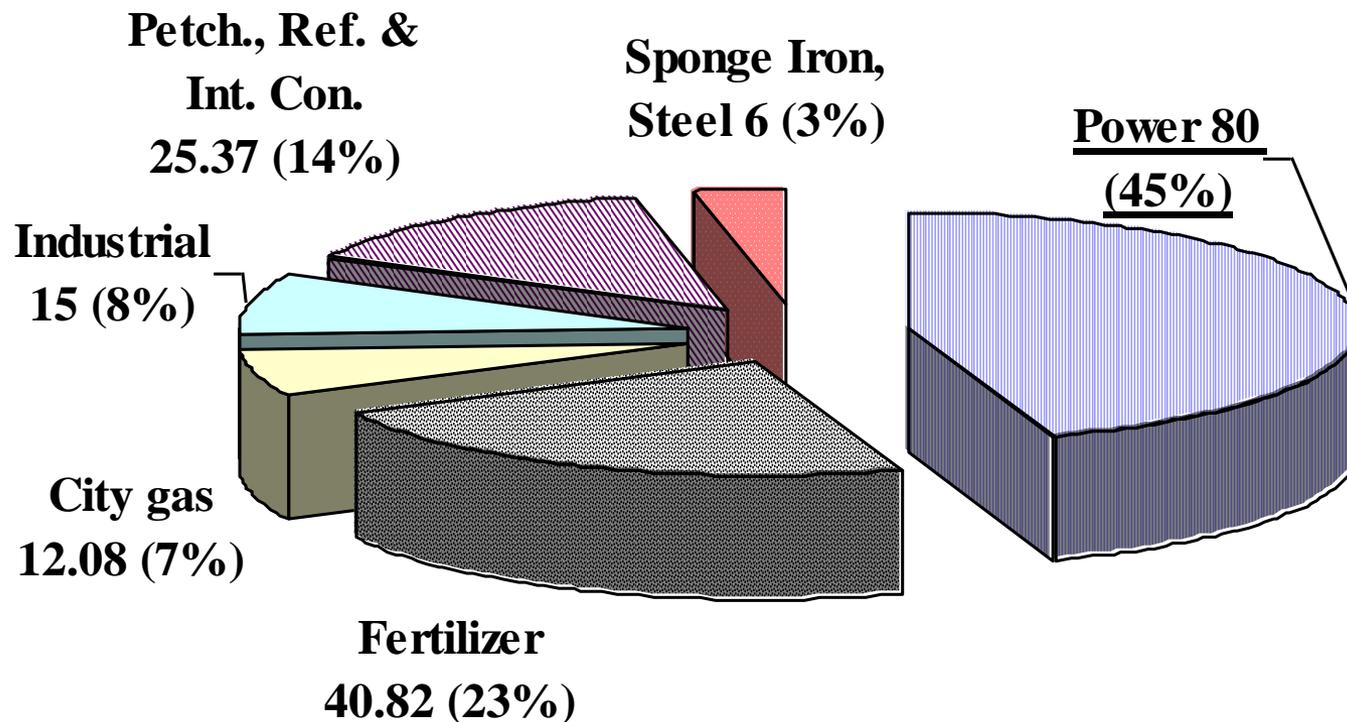
Fig 6.2: Industrywise off-take of Natural Gas in India during 2017-18



Total Consumption= 52.83 BCM

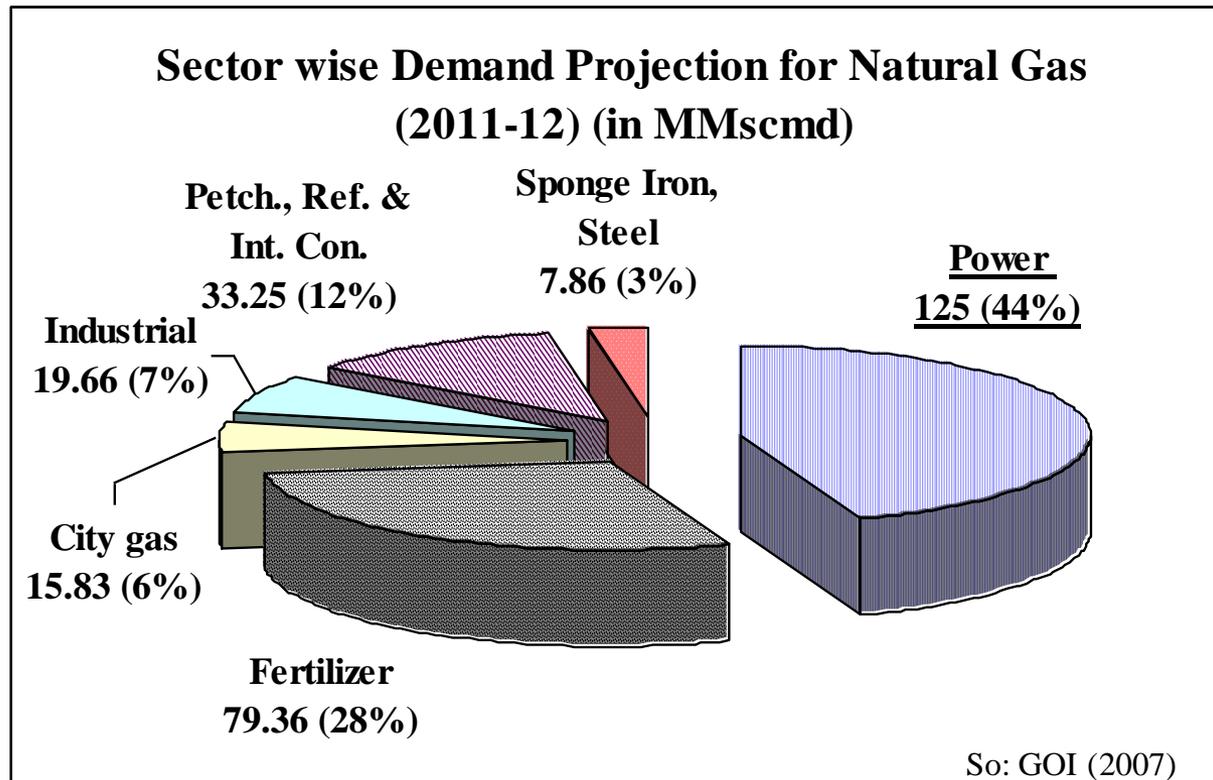
Sector Wise Demand Projection for Natural Gas (2007-08)

Sector wise Demand Projection for Natural Gas (2007-08) (in MMscmd)

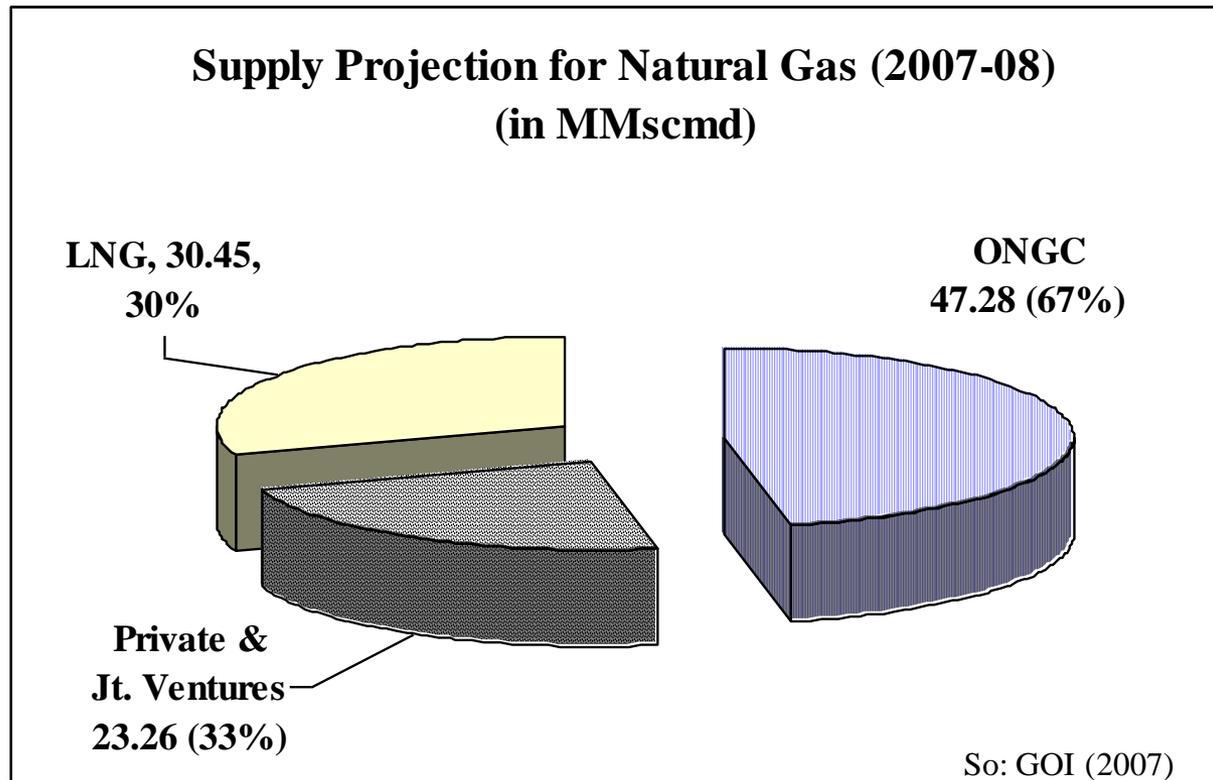


So: GOI (2007)

Sector Wise Demand Projection for Natural Gas (2011-12)



Supply Projection for Natural Gas (2007-08)



Supply Projection for Natural Gas (2011-12)

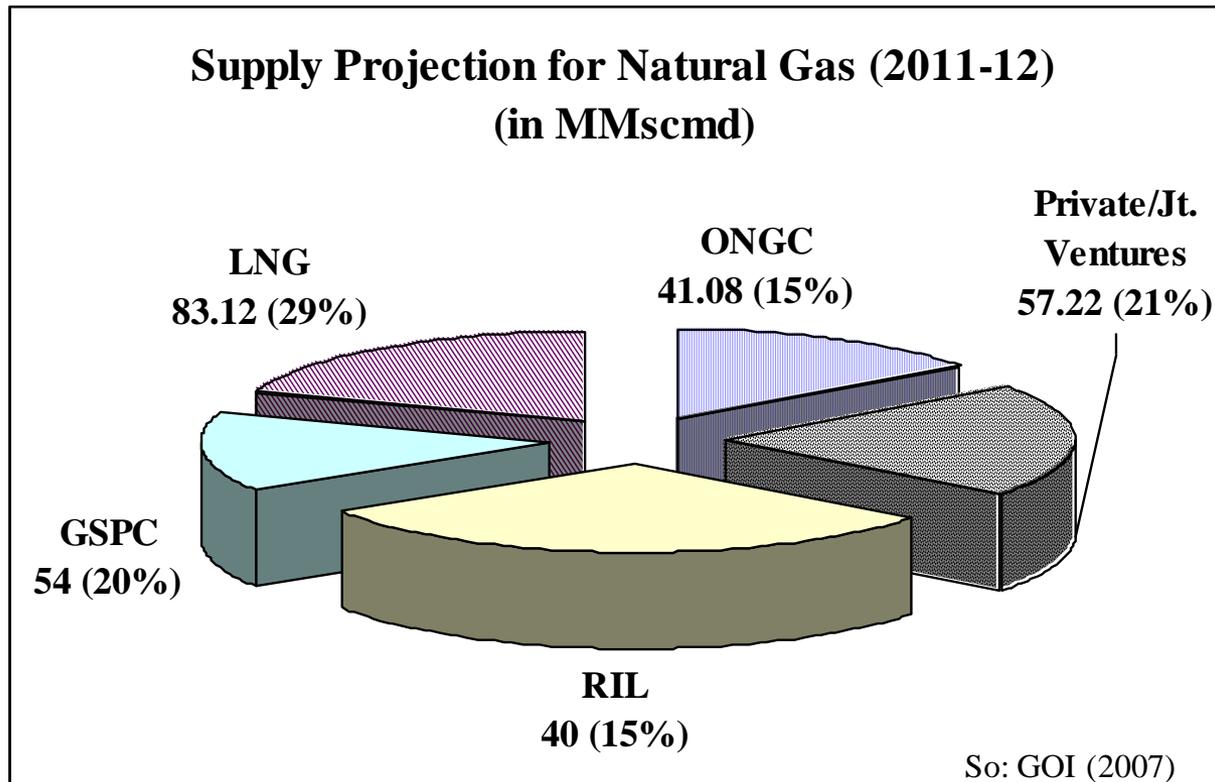


Table 1.2 :Statewise Estimated Reserves of Crude Oil and Natural Gas in India as on 31.03.2017 and 31.03.2018

States/ UTs/ Region	Crude Petroleum (million tonnes)				Natural Gas (billion cubic metres)			
	31.03.2017		31.03.2018		31.03.2017		31.03.2018	
	Estimated Reserves	Distribution (%)	Estimated Reserves	Distribution (%)	Estimated Reserves	Distribution (%)	Estimated Reserves	Distribution (%)
Arunachal Pradesh	1.52	0.25	1.74	0.29	0.72	0.06	1.26	0.09
Andhra Pradesh	8.15	1.35	7.94	1.34	48.31	3.75	59.89	4.47
Assam	159.95	26.48	160.34	26.97	158.57	12.30	161.65	12.07
Cold Bed Methane (CBM)	0.00	0.00	0.00	0.00	106.67	8.27	105.94	7.91
Eastern Offshore ¹	40.67	6.73	40.42	6.80	507.76	39.37	510.83	38.13
Gujarat	118.61	19.63	118.20	19.88	62.28	4.83	58.23	4.35
Nagaland	2.38	0.39	2.38	0.40	0.09	0.01	0.09	0.01
Rajasthan	24.55	4.06	17.99	3.03	34.86	2.70	54.85	4.09
Tamil Nadu	9.00	1.49	9.16	1.54	31.98	2.48	39.11	2.92
Tripura	0.07	0.01	0.07	0.01	36.10	2.80	35.20	2.63
Western Offshore ²	239.20	39.60	236.25	39.74	302.35	23.44	312.52	23.33
Total	604.10	100.00	594.49	100.00	1289.70	100.00	1339.57	100.00

* CBM : Cold Bed Methane (Jharkhand, West Bengal and M.P.)

Notes:

1. Proved and indicated Balance Recoverable Reserves as on 1st April.
2. Western offshore includes Gujarat offshore
3. Total may not tally due to rounding off

Source: M/o Petroleum & Natural Gas

Renewable energy sources

- The total potential for renewable power generation in the country as on 31.03.18 is estimated at 1096081MW (Table 1.3). This includes solar power potential of 748990 MW (68.33%), wind power potential of 302251 MW (27.58%) at 100mhub height, SHP (small-hydro power) potential of 19749 MW (1.80%), Biomass power of 17,536 MW (1.60%), 5000 MW (0.46%) from bagasse-based cogeneration in sugar mills and 2554 MW (0.23%) from waste to energy.
- The geographic distribution of the estimated potential of renewable power as on 31.03.2018 reveals that Rajasthan has the highest share of about 15% (162238MW), followed by Gujarat with 11% share (122086 MW) and Maharashtra with 10% share (113933MW), mainly on account of solar power potential.

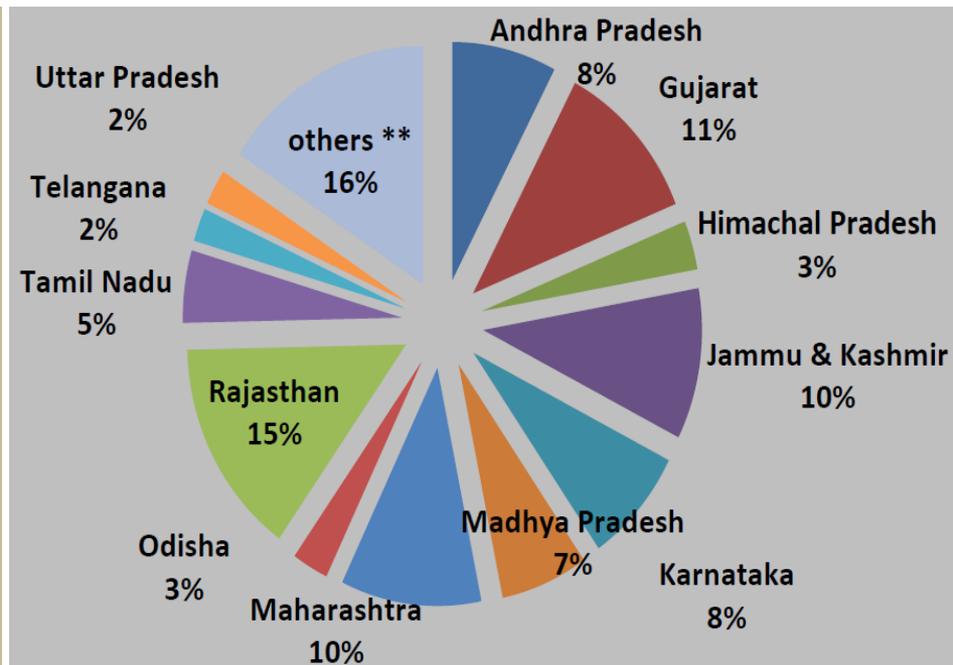
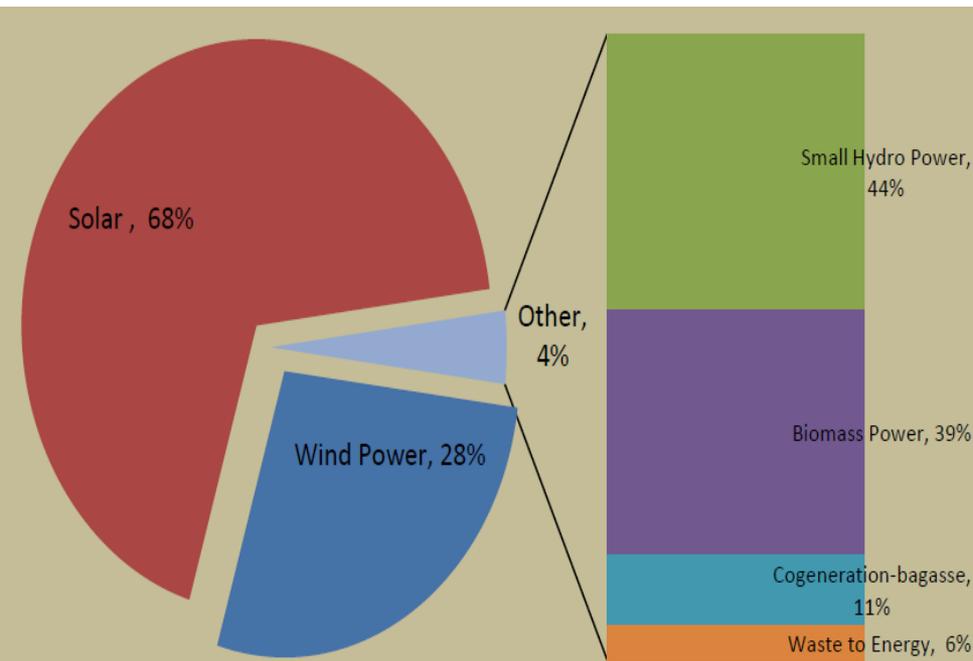


Table 1.3 :Sourcewise and Statewise Estimated Potential of Renewable Power in India as on 31.03.2018

(in MW)

Sl. No.	States/ UTs	Wind Power @ 100m	Small Hydro Power	Biomass Power	Cogeneration-bagasse	Waste to Energy	Solar Energy	Total Estimated Reserves	Distribution (%)
1	Andhra Pradesh	44229	978	578	300	123	38440	84648	7.72
2	Arunachal Pradesh		1341	8			8650	10000	0.91
3	Assam		239	212		8	13760	14218	1.30
4	Bihar		223	619	300	73	11200	12415	1.13
5	Chhattisgarh	77	1107	236		24	18270	19714	1.80
6	Goa	1	7	26			880	913	0.08
7	Gujarat	84431	202	1221	350	112	35770	122086	11.14
8	Haryana		110	1333	350	24	4560	6377	0.58
9	Himachal Pradesh		2398	142		2	33840	36382	3.32
10	Jammu & Kashmir		1431	43			111050	112523	10.27
11	Jharkhand		209	90		10	18180	18489	1.69
12	Karnataka	55857	4141	1131	450		24700	86279	7.87
13	Kerala	1700	704	1044		36	6110	9595	0.88
14	Madhya Pradesh	10484	820	1364		78	61660	74406	6.79
15	Maharashtra	45394	794	1887	1250	287	64320	113933	10.39
16	Manipur		109	13		2	10630	10755	0.98
17	Meghalaya		230	11		2	5860	6103	0.56
18	Mizoram		169	1		2	9090	9261	0.84
19	Nagaland		197	10			7290	7497	0.68

Table 1.3 :Sourcewise and Statewise Estimated Potential of Renewable Power in India as on 31.03.2018

(in MW)									
Sl. No.	States/ UTs	Wind Power @ 100m	Small Hydro Power	Biomass Power	Cogeneration-bagasse	Waste to Energy	Solar Energy	Total Estimated Reserves	Distribution (%)
20	Odisha	3093	295	246		22	25780	29437	2.69
21	Punjab		441	3172	300	45	2810	6768	0.62
22	Rajasthan	18770	57	1039		62	142310	162238	14.80
23	Sikkim		267	2			4940	5209	0.48
24	Tamil Nadu	33800	660	1070	450	151	17670	53800	4.91
25	Telangana	4244					20410	24654	2.25
26	Tripura		47	3		2	2080	2131	0.19
27	Uttar Pradesh		461	1617	1250	176	22830	26333	2.40
28	Uttarakhand		1708	24		5	16800	18537	1.69
29	West Bengal	2	396	396		148	6260	7202	0.66
30	Andaman & Nicobar	8	8				0	16	0.00
31	Chandigarh					6	0	6	0.00
32	Dadar & Nagar Haveli						0	0	0.00
33	Daman & Diu						0	0	0.00
34	Delhi					131	2050	2181	0.20
35	Lakshadweep	8					0	8	0.00
36	Puducherry	153				3	0	156	0.01
37	Others*					1022	790	1812	0.17
All India Total		302251	19749	17536	5000	2554	748990	1096081	100.00
Distribution (%)		27.58	1.80	1.60	0.46	0.23	68.33	100.00	

* Industrial waste

Source: Ministry of New and Renewable Energy

Electricity

- Total installed capacity for electricity generation in the country has increased from 1,74,639 MW as on 31.03.2009 to 3,99,000 MW as on 31.03.2018, registering a compound annual growth rate (CAGR) of 8.61%
- Non-utilities accounted for 13.78% (54997MW) of the total installed electricity generation capacity.

Fig 2.1: Installed Electricity Generation Capacity (MW) in India during the period 2008-09 to 2017-18

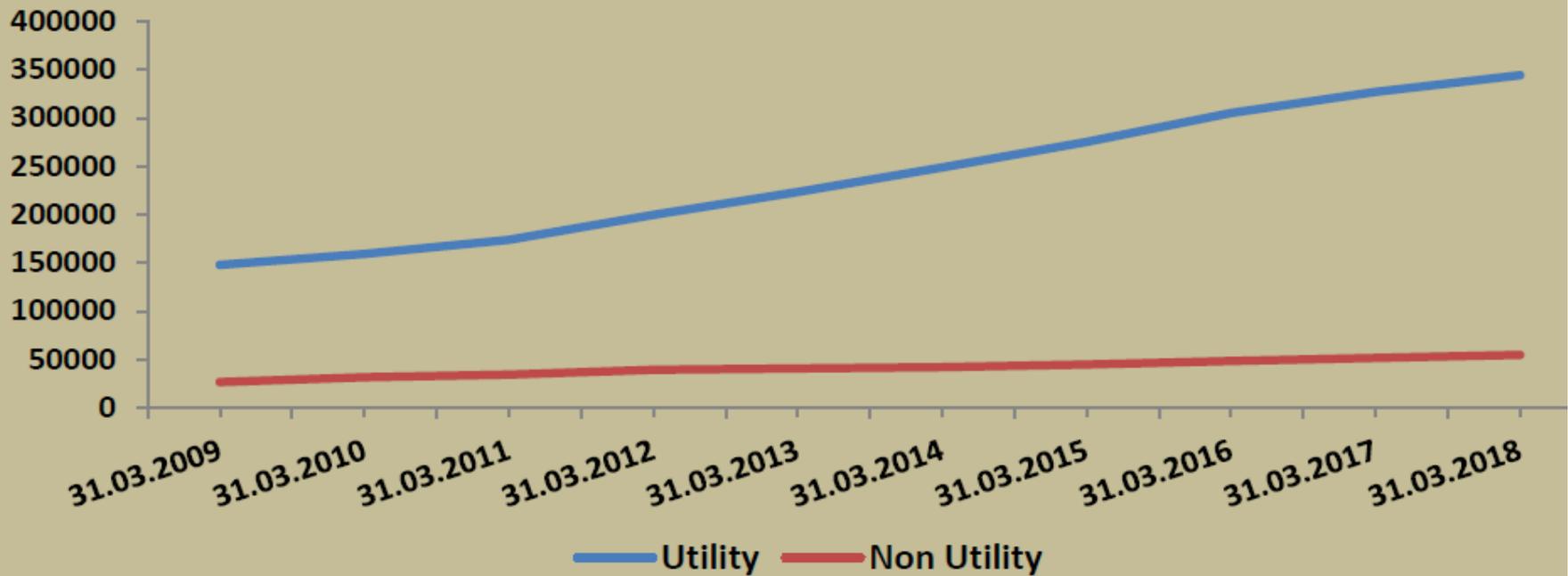
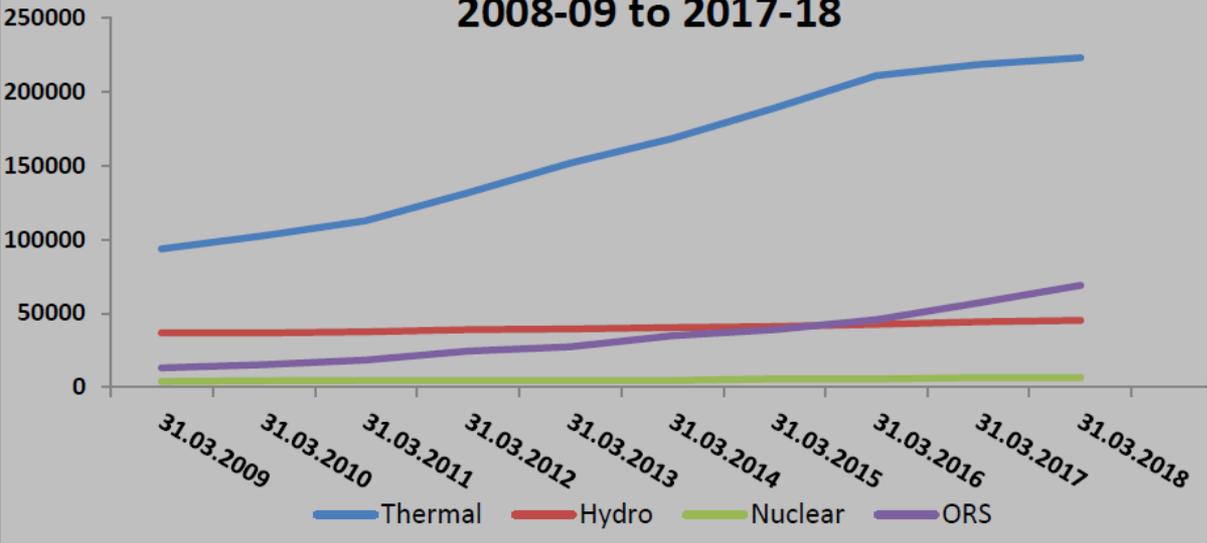


Fig 2.2: Installed Electricity Generation Capacity from Utilities (MW) in India during the period 2008-09 to 2017-18



Among all the states Bihar registered highest annual growth (106.31%) in the installed capacity followed by Sikkim (33.60%) and Telangana (28.40%).

Fig 2.3: Regionwise Installed Generation Capacity of Electricity (Utilities) as on 31.03.2018

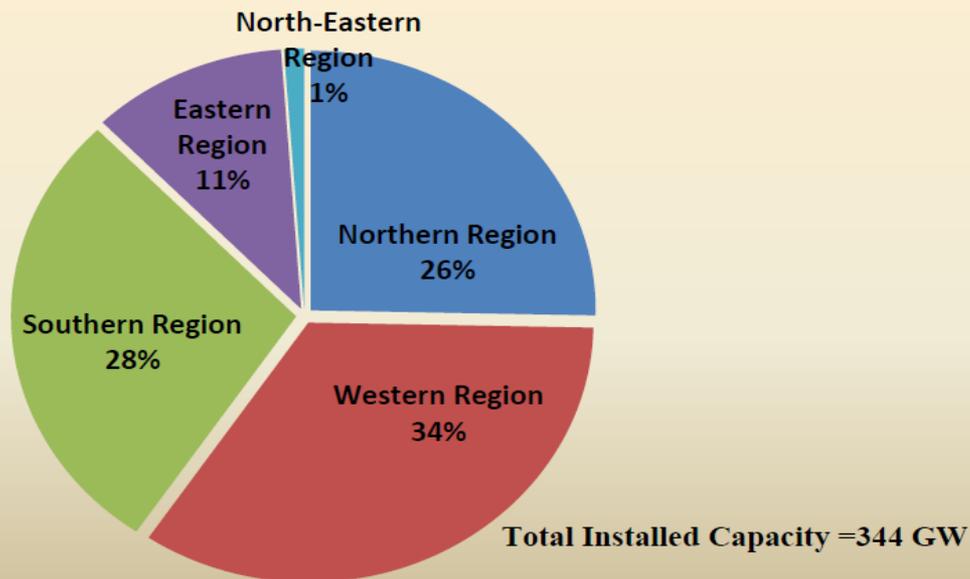
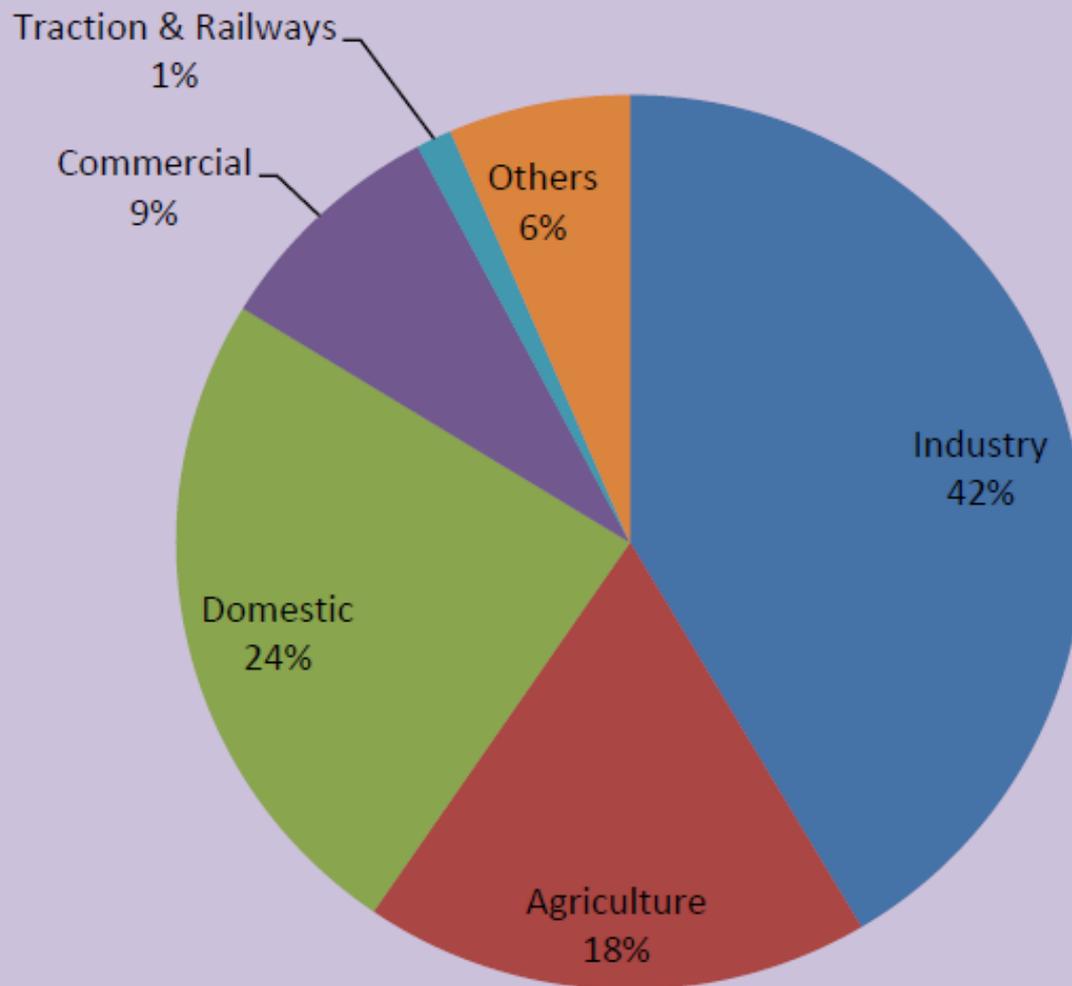
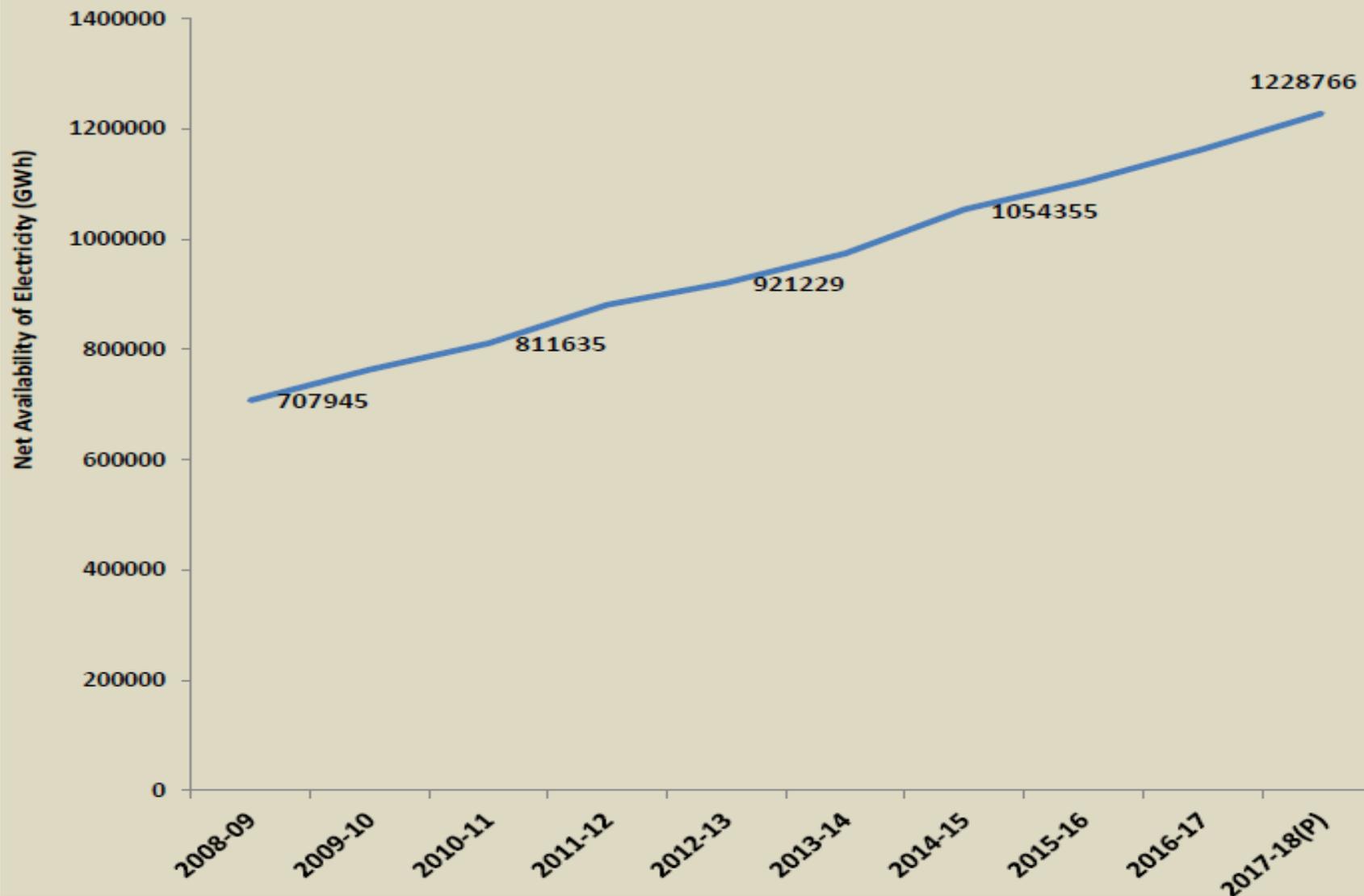


Fig 6.4: Consumption of Electricity by Sectors in India during 2017-18



Total consumption = 11,30,244 GWh

Fig 5.1:Trends in Availability of Electricity in India from 2008-09 to 2017-18



End of Presentation

Thank You All