ENERGY STATISTICS 2015

CENTRAL STATISTICS OFFICE
NATIONAL STATISTICAL ORGANISATION
MINISTRY OF STATISTICS AND PROGRAMME IMPLEMENTATION
GOVERNMENT OF INDIA
www.mospi.gov.in

ENERGY STATISTICS

2015

(Twenty Second Issue)

CENTRAL STATISTICS OFFICE
MINISTRY OF STATISTICS AND PROGRAMME IMPLEMENTATION
GOVERNMENT OF INDIA
NEW DELHI

FOREWORD

Energy is one of the most fundamental parts of our universe. Energy has come to be known as a `strategic commodity' and any uncertainty about its supply can threaten the functioning of the entire economy, particularly in developing economies. India's substantial and sustained economic growth is placing enormous demand on its energy resources. The demand and supply imbalance in energy sources is pervasive requiring serious efforts by Government of India to augment energy supplies as India faces possible severe energy supply constraints. Energy requirement in our country is increasing at a very rapid rate. Achieving energy security in this strategic sense is of fundamental importance not only to India's economic growth but also for the human development objectives that aim at alleviation of poverty, unemployment and meeting the Millennium Development Goals (MDGs). Holistic planning for achieving these objectives requires quality energy statistics that is able to address the issues related to energy demand, energy poverty and environmental effects of energy growth.

This publication titled "Energy Statistics" is brought out every year by Central Statistics Office (CSO) and the present one is the 22nd in the series. The latest data on reserves, installed capacity, potential for generation, production, consumption, import, export and wholesale price of different energy commodities are included in the publication. The publication also includes analytical indicators viz. Growth Rates, Compound Annual Growth Rates (CAGR) & Percentage Distributions, in relevant tables to increase the utility of the publication. The data has been sourced from the concerned subject matter Ministries of the Government of India, in respect of different energy sources as per their mandate. The Energy Balance in the chapter 7 is provisional and efforts are being made to reduce the statistical difference.

I wish to use this opportunity to express my appreciation and convey my thanks to all those who worked hard in Ministry of Petroleum and Natural Gas, Central Electricity Authority, Office of Coal Controller, Ministry of New and Renewable Energy and Office of the Economic Advisor, Ministry of Commerce and Industry, to provide the requisite information for this publication in time.

I would like to put on record my appreciation to the team of officers in the Economic Statistics Division for their dedicated services in bringing out this publication in time.

This publication is an attempt to cater to the needs of the planners, policy makers and researchers by making available the entire energy data at a single place. I hope that "Energy Statistics 2015" will fulfill the expectations of all.

(Ashish Kumar)
DIRECTOR GENERAL (In-charge)
Central Statistics Office

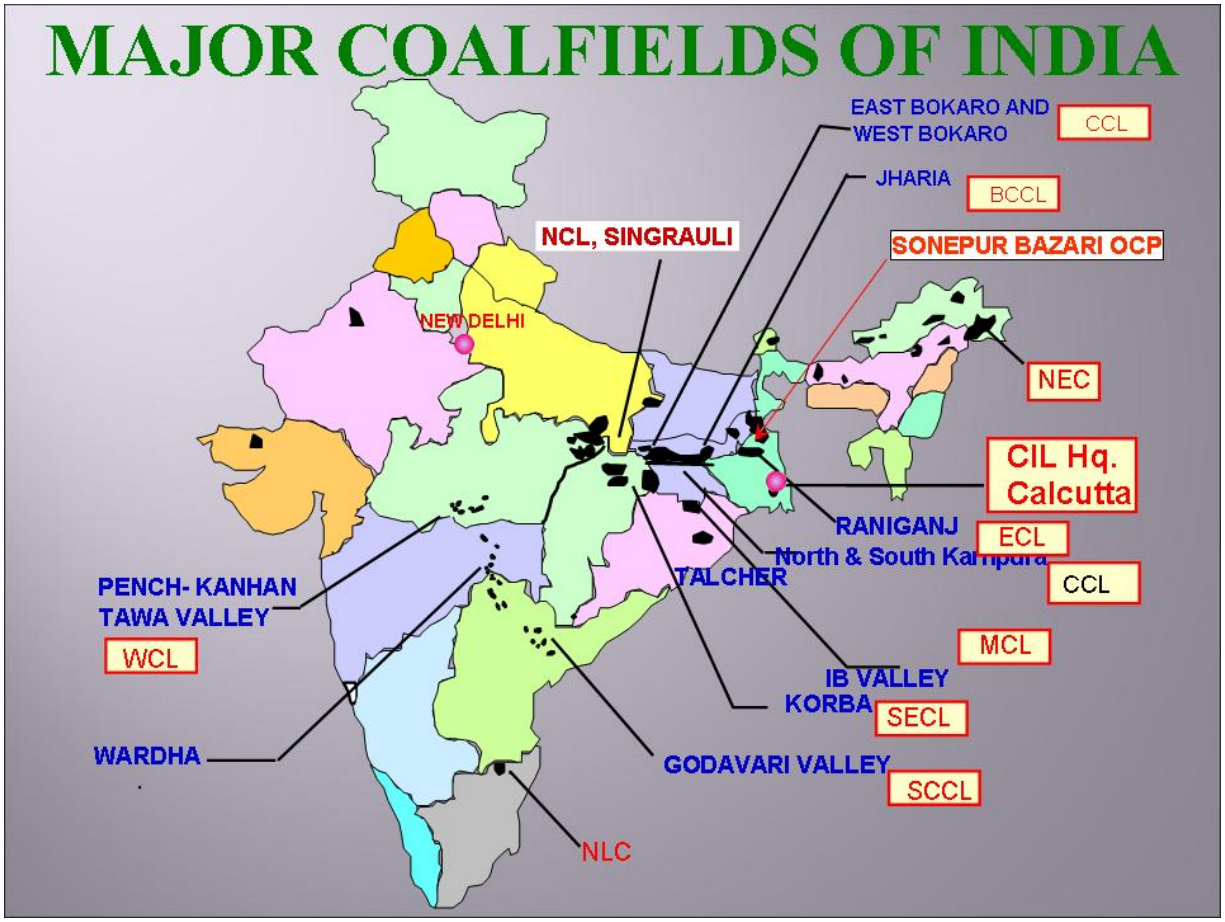
New Delhi
March 2015.

Officers associated with the publication:

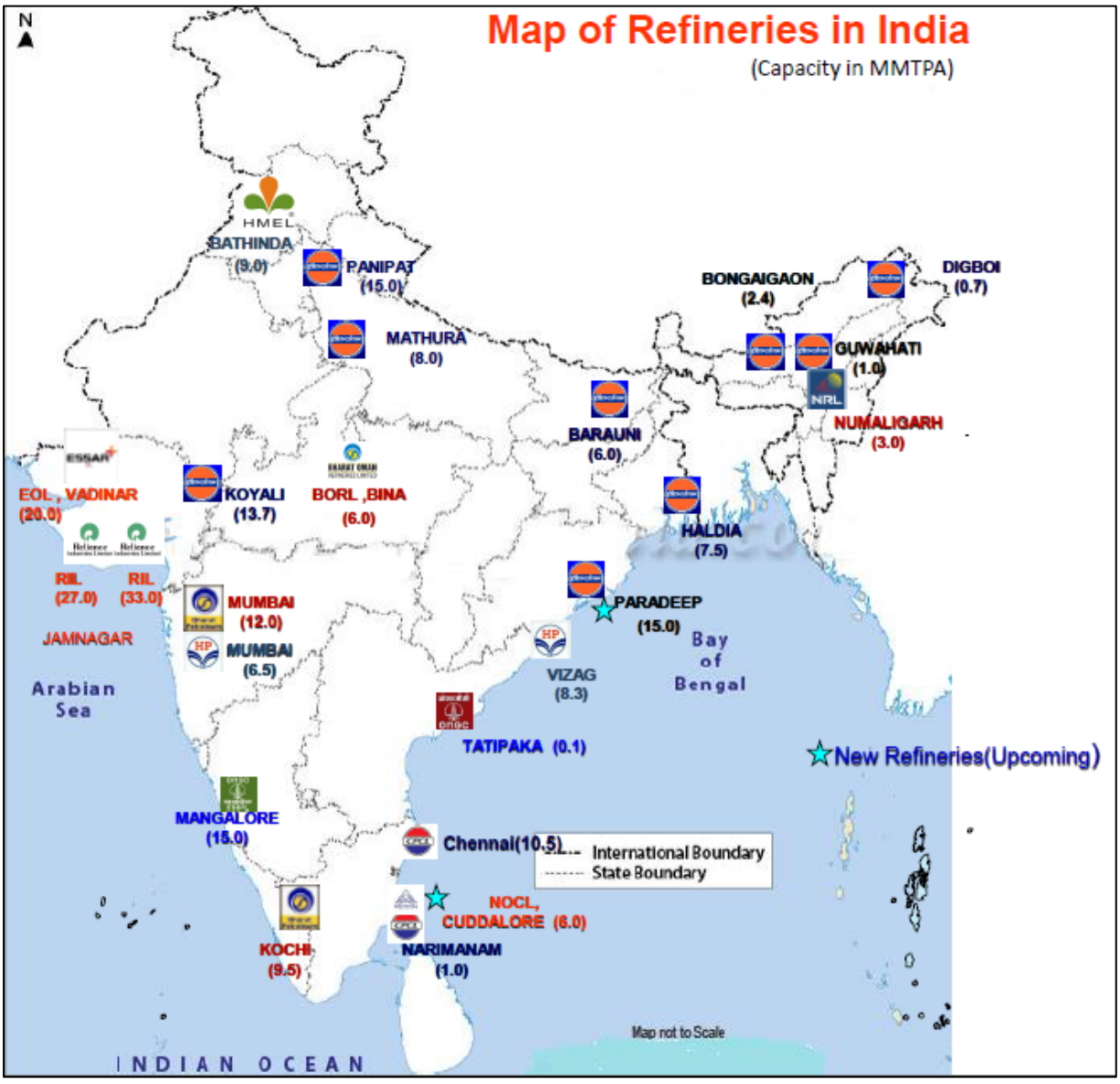
Dr. G.C. Manna	Additional Director General
Shri Baljeet Singh Chhabra	Deputy Director General
Smt Geeta Singh Rathore	Director
Shri Sushil Kumar	Senior Statistical Officer
Shri Aditya Singh Hada	Junior Statistical Officer

CONTENTS

ENERGY MAP OF INDIA



Courtesy: Eastern Coalfields Limited
(As on 31.03.2014)



Source: http://ppac.org.in/WriteReadData/userfiles/file/IndiaRefineryMap.pdf
(As on 31.03.2014)

Nuclear Facilities in India

http://www.npcil.nic.in/images/maps_24feb2015.jpg

METADATA-ENERGY STATISTICS

1. Contact	
1.1. Contact organisation	Central Statistics Office (CSO), M/o Statistics & Programme Implementation (MOSPI)
1.2. Contact organisation unit	Economic Statistics Division, CSO
1.3. Contact mail address	9th Floor, Jeevan Prakash Building, 25 K. G. Marg, New Delhi-110 001
1.4. Contact emails	gc.manna@nic.in chhabra.bs@nic.in gs.rathore@nic.in
1.5. Homepage	http:// www.mospi.gov.in

2. Statistical presentation
2.1 Data sources
The data has been sourced from the concerned subject matter Ministries of the Government of India in respect of different energy sources as per their mandate. These Ministries are Ministry of Petroleum and Natural Gas, Central Electricity Authority, Office of Coal Controller, Ministry of New and Renewable Energy and Office of the Economic Advisor, Ministry of Commerce and Industry.
2.2. Data description
The statistics present information about the reserves, installed capacity, potential for generation, production, consumption, import, export and wholesale price of different energy commodities.
2.3. Sector coverage
Coal & Lignite, Petroleum & Natural Gas, Renewable Energy Resources and Electricity.(Data collection Mechanism is given in **Annex: IV**
2.4. Data content
The Statistics are given by type of fuel and energy source. The publication includes analytical indicators viz. Growth Rates, Compound Annual Growth Rates (CAGR) and Percentage Distributions.
2.5. Statistical unit
Data are aggregated appropriately at national and state level.
2.6. Statistical population
Data covers all the energy commodity sources.
2.7. Reference area
The energy industries of the entire country are covered.
2.8. Time coverage
In the current publication the data given is for the period 2005-06 to 2013-14.
2.9. Base period
2004-05
2.10. Statistical concepts and definitions
The main Concepts and Definitions are given in **Annex: I.(Annex. II & Annex. III** respectively give certain Conversion Factors and Abbreviations used**)**

3. Unit of measure

Energy quantities data are recorded in physical units relevant to the product in question (GWh for electricity, 1000 Tons for petroleum products etc.). Prices are indicated by Wholesale Price Index. The Energy Balance is given in ktoe. Consumption and Production of the Energy resources is also given in petajoules.

4. Reference period

Reference period of the Publication of "Energy Statistics -2015" is the financial year 2013-14 and the previous financial years since 2005-06.

5. Institutional mandate

6.1. Legal acts and other agreements

No legal acts, however this statistics is collected in view of the mandate of the Ministry in allocation of Business rules.

6.2. Data sharing

The publication is disseminated on the website of the Ministry(MOSPI) and is available free of cost.

6. Confidentiality

7.1. Confidentiality – policy and data treatment

Confidentiality of the data is maintained by the data source ministries.

7. Release policy

7.1. Release calendar

Publication of Energy Statistics is released on MOSPI's web-site in March every year.

7.2. User access

MOSPI disseminates Economic statistics on its website in an objective, professional and transparent manner in which all users are treated equitably. The detailed arrangements are governed by the dissemination policy of Government of India.

8. Dissemination format

8.1. News release

Publication on Energy Statistics is released annually.

8.2. Publications

Annual publication in pdf format is available on the website of MOSPI.

9. Accessibility of documentation

9.1. Documentation on methodology

Information on the relevant Energy indicators methodology can be found in the publication.

10. Accuracy and reliability

10.1. Overall accuracy

Data on energy is published on the basis of information received from the source agencies. This Division compiles and analyses data received from the source agencies and then presents in the form of publication.

11. Timeliness and punctuality
11.1. Timeliness
Preliminary data on energy production, consumption statistics and few energy indicators are available 12 months after the reference year. Preliminary data on energy consumption and supply are complete and published before the end of the next financial year. Final data for the year are published 24 months after the end of the statistical reference year.
11.2. Punctuality
Annual publication on Energy Statistics is released by the end of March every year.

12. Data revision
12.1. Data revision – policy
The annual publication provides data on the last reference year and revisions for the year before. Revisions of entire time series when made by source agencies due to specific survey or data revision are incorporated in due time.
12.2. Data revision - practice
Preliminary data on energy production and consumption statistics is published in current publication. Final data will be given in the next publication in March 2016.

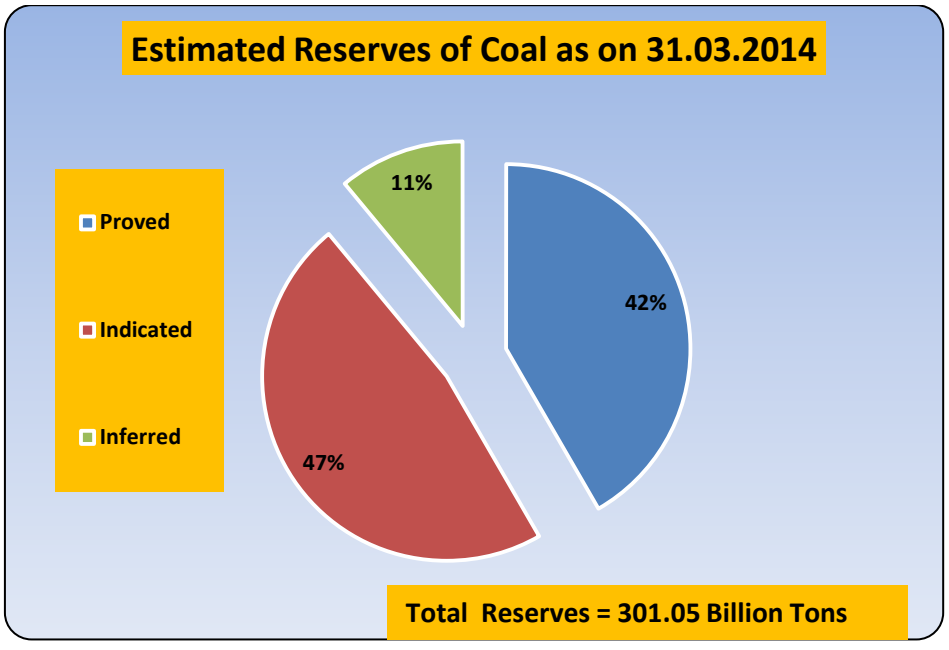
13. Statistical processing
13.1. Source data
Energy data are collected from the source agencies at national level and presented in publication. It is published in the ministry's web-site.
13.2. Frequency of data collection
Annual.
13.3. Data collection
Data is collected through e-mail or by post from the source ministries.
13.4. Data validation
Checks are carried out to the data before publishing it.
13.5.5. Data compilation
Data is calculated by summing up the national figures.
13.6. Adjustment
No seasonal adjustment or temperature correction of the energy consumption is applied.

CHAPTER 1: RESERVES AND POTENTIAL FOR GENERATION

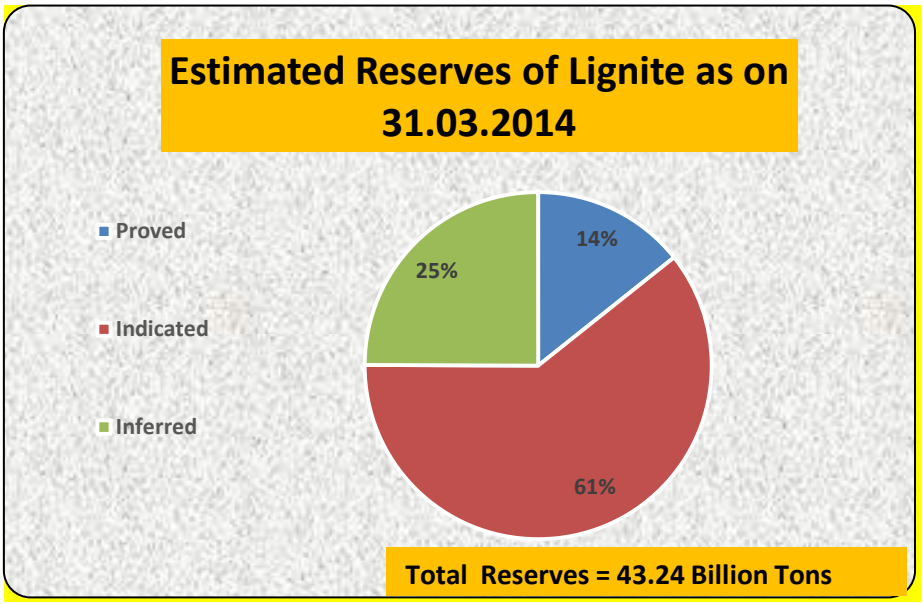
1.1 Coal and Lignite

- Coal deposits are mainly confined to eastern and south central parts of the country. The states of Jharkhand, Odisha, Chhattisgarh, West Bengal, Madhya Pradesh, Andhra Pradesh and Maharashtra account for more than 99% of the total coal reserves in the country. The State of Jharkhand had the maximum share (26.81%) in the overall reserves of coal in the country as on 31st March 2014 followed by the State of Odisha(24.94%)(Table 1.1).

- As on 31.03.14 the estimated reserves of coal was 301.05 billion tons, an addition of 2.11 billion over the last year (Table 1.1). There has been an increase of 0.7% in the estimated coal reserves during the year 2013-14 with Odisha accounting for the maximum increase of 1.85%



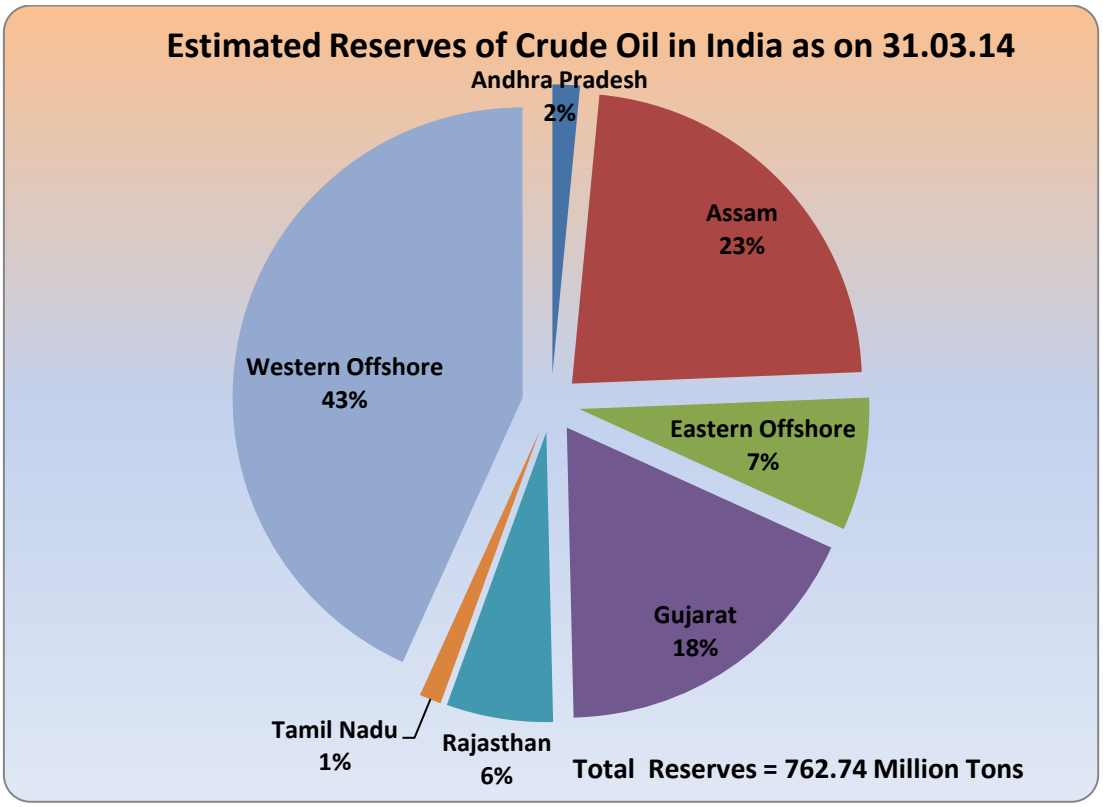
- The estimated total reserves of lignite as on 31.03.14 was 43.24 billion tons against 43.22 billion tons as on 31.03.13. (Table 1.1(A)).



1.2 Petroleum and Natural gas

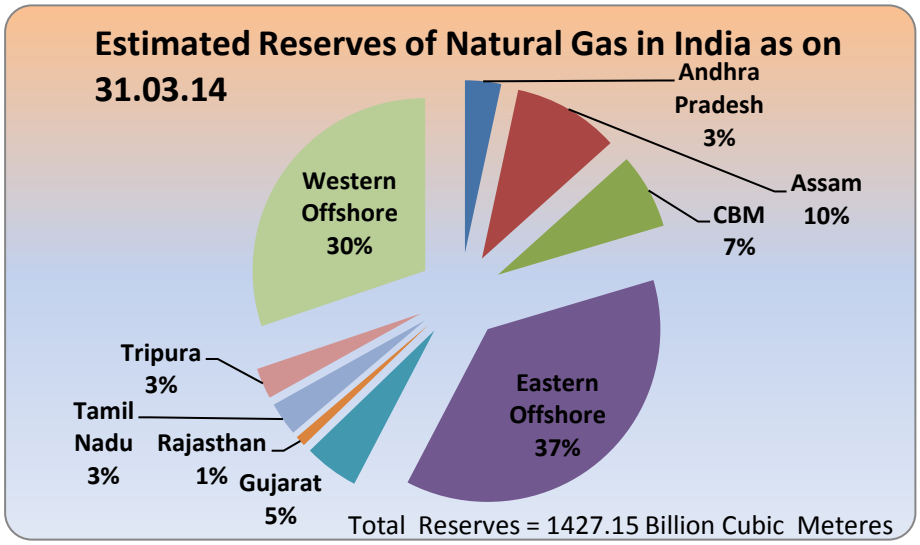
- The estimated reserves of crude oil in India as on 31.03.2014 stood at 762.74 million tons (MT) (Table 1.2).

- Geographical distribution of Crude oil indicates that the maximum reserves are in the Western Offshore (42.91%) followed by Assam (22.69%), whereas the maximum reserves of Natural Gas are in the Eastern Offshore (37.24%) followed by Western offshore (30.17%). (Table 1.2).



- There was increase of 0.57% in the estimated reserve of crude oil for the country as a whole by 31st March, 2014 as compared to the position a year ago. During the same period, estimated reserves of crude oil in Rajasthan, Western offshore and Gujarat decreased by 24.24%, 2.66% and 1.26.% respectively, while the same in Eastern Offshore and Assam increased by 84.69% and 0.56% respectively.

- The estimated reserves of natural gas in India as on 31.03.2014 stood at 1427.15 billion cubic meters (BCM) (Table 1.2).

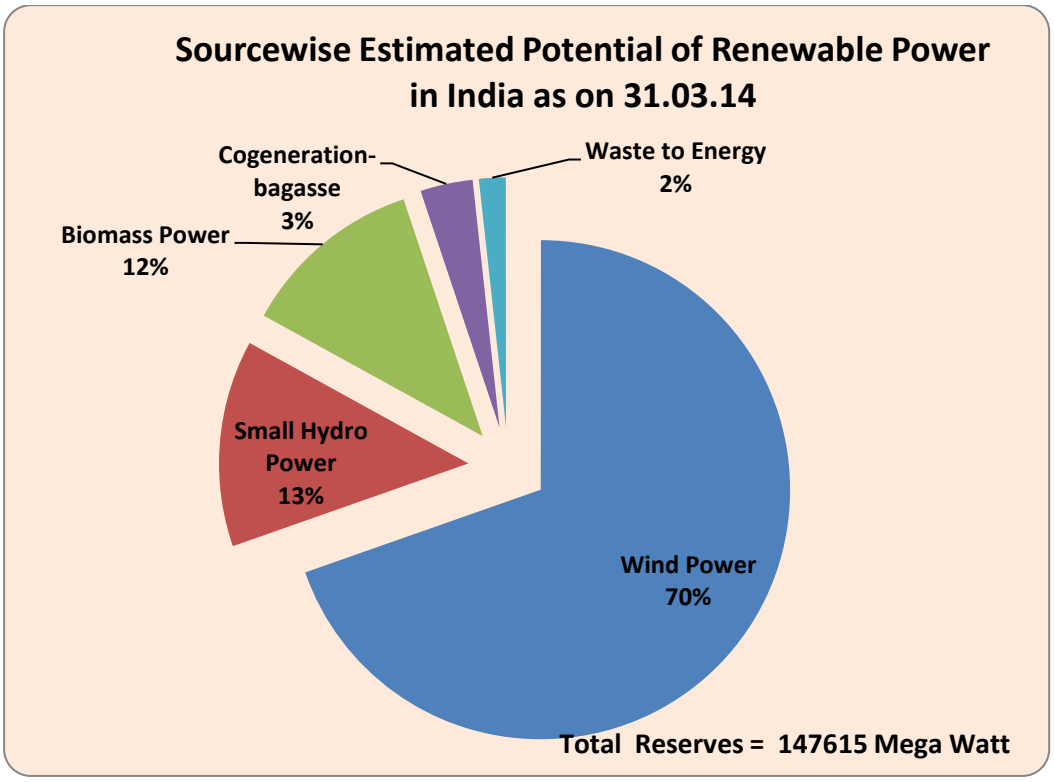


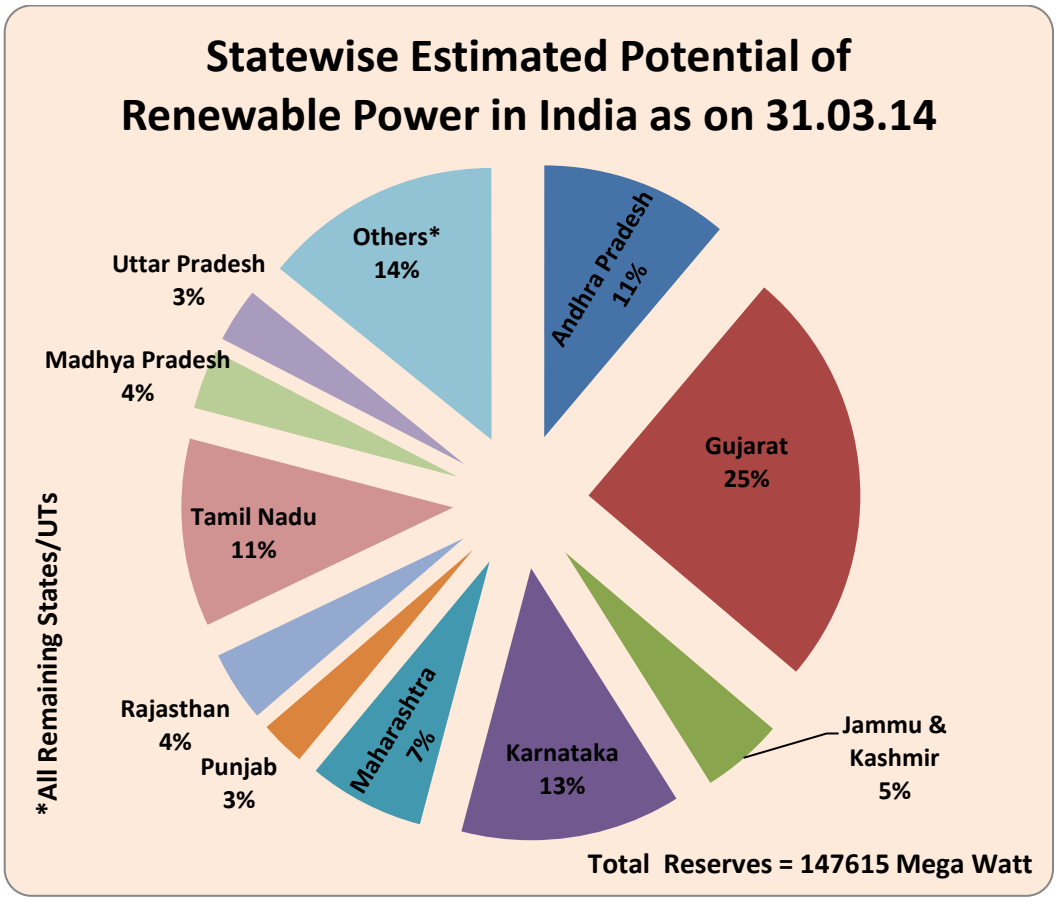
- In case of Natural Gas, the increase in the estimated reserves over the same period was 5.34%. The maximum contribution to this increase has been from Eastern Offshore (12.26%), followed by Western Offshore (3.6%).

1.3 Renewable energy sources

- There is high potential for generation of renewable energy from various sources- wind, solar, biomass, small hydro and cogeneration bagasse.

- The total potential for renewable power generation in the country as on 31.03.14 is estimated at 147615 MW (Table 1.3). This includes wind power potential of 102772 MW (69.6%), SHP (small-hydro power) potential of 19749 MW (13.38%), Biomass power potential of 17,538 MW (11.88%) and 5000 MW (3.39%) from bagasse-based cogeneration in sugar mills.





❖ The geographic distribution of the estimated potential of renewable power as on 31.03.2014 reveals that Gujarat has the highest share of about 25.04% (36,956 MW), followed by Karnataka with 13.08% share (19,315 MW) and Tamil Nadu with 11.17% share (16,483 MW), mainly on account of wind power potential.

Table 1.1 :Statewise Estimated Reserves of Coal in India as on 31.03.2013 and 31.03.2014

(in Billion Tons)

States/ UTs	Proved		Indicated		Inferred		Total		Distribution (%)	
	31.03.13	31.03.14	31.03.13	31.03.14	31.03. 13	31.03. 14	31.03. 13	31.03. 14	31.03. 13	31.03. 14
Andhra Pradesh	9.60	9.73	9.55	9.67	3.05	3.07	22.20	22.47	**7.43**	**7.46**
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	0.00	0.05	0.00	0.00	0.00	0.52	0.00	**0.17**	**0.00**
Bihar	0.00	0.00	0.00	0.00	0.16	0.16	0.16	0.16	**0.05**	**0.05**
Chhattisgarh	14.78	16.05	34.11	33.25	3.28	3.23	52.17	52.53	**17.45**	**17.45**
Jharkhand	41.16	41.38	32.99	32.78	6.56	6.56	80.71	80.72	**27.00**	**26.81**
Madhya Pradesh	9.82	10.41	12.36	12.38	2.88	2.88	25.06	25.67	**8.38**	**8.53**
Maharashtra	5.67	5.67	3.19	3.19	2.11	2.11	10.97	10.96	**3.67**	**3.64**
Meghalaya	0.09	0.09	0.02	0.02	0.47	0.47	0.58	0.58	**0.19**	**0.19**
Nagaland	0.01	0.01	0.00	0.00	0.31	0.31	0.32	0.32	**0.11**	**0.10**
Odisha	27.28	27.79	37.11	37.87	9.32	9.41	73.71	75.07	**24.66**	**24.94**
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	**0.35**	**0.35**
West Bengal	13.40	13.40	13.00	13.02	4.89	4.89	31.29	31.32	**10.47**	**10.40**
All India Total	**123.19**	**125.44**	**142.66**	**142.46**	**33.09**	**33.15**	**298.94**	**301.05**	**100.00**	**100.00**
Distribution (%)	**41.21**	**41.67**	**47.72**	**47.32**	**11.07**	**11.01**	**100.00**	**100.00**		

Source: Office of Coal Controller, Ministry of Coal

Table 1.1(A) :Statewise Estimated Reserves of Lignite in India as on 31.03.2013 and 31.03.2014

(in Billion Tons)

States/ UTs	Proved		Indicated		Inferred		Total		Distribution (%)	
	31.03.13	31.03.14	31.03.13	31.03.14	31.03. 13	31.03. 14	31.03. 13	31.03. 14	31.03. 13	31.03. 14
Gujarat	1.28	1.28	0.28	0.28	1.16	1.16	2.72	2.72	**6.29**	**6.29**
Jammu & Kashmir	0.00	0.00	0.02	0.02	0.01	0.01	0.03	0.03	**0.07**	**0.06**
Kerala	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	**0.02**	**0.02**
Pondicherry	0.00	0.00	0.41	0.41	0.01	0.01	0.42	0.42	**0.97**	**0.96**
Rajasthan	1.17	1.17	2.67	2.67	1.85	1.88	5.69	5.72	**13.17**	**13.23**
TamilNadu	3.74	3.74	22.90	22.90	7.71	7.71	34.35	34.35	**79.48**	**79.43**
India	**6.19**	**6.18**	**26.28**	**26.28**	**10.75**	**10.78**	**43.22**	**43.24**	**100.00**	**100.00**
Distribution (%)	**14.32**	**14.29**	**60.81**	**60.78**	**24.87**	**24.93**	**100.00**	**100.00**		

Source: Office of Coal Controller, Ministry of Coal

Table 1.2 :Statewise Estimated Reserves@ of Crude Oil and Natural Gas in India as on in 31.03.2013 and 31.03.2014

States/ UTs/ Region	Crude Petroleum (Million Tons)				Natural Gas (Billion Cubic Metres)			
	31.03.2013		31.03.2014		31.03.2013		31.03.2014	
	Estimated Reserves	Distribution (%)	Estimated Reserves	Distribution (%)	Estimated Reserves	Distribution (%)	Estimated Reserves	Distribution (%)
Andhra Pradesh	7.42	**0.98**	11.45	**1.50**	48.21	**3.56**	48.20	**3.38**
Arunachal Pradesh	3.37	**0.44**	2.95	**0.39**	1.96	**0.14**	0.72	**0.05**
Assam	172.11	**22.69**	173.08	**22.69**	142.77	**10.54**	142.19	**9.96**
CBM	0.00	**0.00**	0.00	**0.00**	100.76	**7.44**	100.59	**7.05**
Eastern Offshore[1]	30.43	**4.01**	56.09	**7.35**	473.51	**34.95**	531.54	**37.24**
Gujarat	136.73	**18.03**	135.01	**17.70**	77.53	**5.72**	72.96	**5.11**
Nagaland	2.69	**0.35**	2.69	**0.35**	0.12	**0.01**	0.12	**0.01**
Rajasthan	60.19	**7.94**	45.00	**5.90**	11.50	**0.85**	14.02	**0.98**
Tamil Nadu	9.21	**1.21**	9.12	**1.20**	45.83	**3.38**	44.92	**3.15**
Tripura	0.07	**0.01**	0.07	**0.01**	36.92	**2.73**	41.28	**2.89**
Western Offshore[2]	336.22	**44.33**	327.28	**42.91**	415.65	**30.68**	430.61	**30.17**
Total	**758.44**	**100.00**	**762.74**	**100.00**	**1354.76**	**100.00**	**1427.15**	**100.00**

CBM : Cold Bed Methane

@ Proved and indicated Balance Recoverable Reserves.

1 Includes JVC/Pvt. Parties for Crude Oil and includes West Bengal for Natural Gas

2 Includes Bombay High offshore, Rajasthan and JVC for Crude Oil and Bombay High offshore, Rajasthan and Madhya Pradesh (Coal Bed Mathane) for Natural Gas

Source: Ministry of Petroleum & Natural Gas

Table 1.3 :Sourcewise and Statewise Estimated Potential of Renewable Power in India as on 31.03.2014

(in MW)

States/ UTs	Wind Power	Small Hydro Power	Biomass Power	Cogeneration -bagasse	Waste to Energy	Total	
						Estimated Potential	Distribution (%)
1	2	3	4	5	6	7	8
Andhra Pradesh	14497	978	578	300	123	16476	11.16
Arunachal Pradesh	236	1341	8	0	0	1585	1.07
Assam	112	239	212	0	8	571	0.39
Bihar	144	223	619	300	73	1359	0.92
Chhattisgarh	314	1107	236	0	24	1681	1.14
Goa	0	7	26	0	0	33	0.02
Gujarat	35071	202	1221	350	112	36956	25.04
Haryana	93	110	1333	350	24	1910	1.29
Himachal Pradesh	64	2398	142	0	2	2606	1.77
Jammu & Kashmir	5685	1431	43	0	0	7159	4.85
Jharkhand	91	209	90	0	10	400	0.27
Karnataka	13593	4141	1131	450	0	19315	13.08
Kerala	837	704	1044	0	36	2621	1.78
Madhya Pradesh	2931	820	1364	0	78	5193	3.52
Maharashtra	5961	794	1887	1250	287	10179	6.90
Manipur	56	109	13	0	2	180	0.12
Meghalaya	82	230	11	0	2	325	0.22
Mizoram	0	169	1	0	2	172	0.12
Nagaland	16	197	10	0	0	223	0.15
Odisha	1384	295	246	0	22	1947	1.32
Punjab	0	441	3172	300	45	3958	2.68
Rajasthan	5050	57	1039	0	62	6208	4.21
Sikkim	98	267	2	0	0	367	0.25
Tamil Nadu	14152	660	1070	450	151	16483	11.17
Tripura	0	47	3	0	2	52	0.04
Uttar Pradesh	1260	461	1617	1250	176	4764	3.23
Uttarakhand	534	1708	24	0	5	2271	1.54
West Bengal	22	396	396	0	148	962	0.65
Andaman & Nicobar	365	8	0	0	0	373	0.25
Chandigarh	0	0	0	0	6	6	0.00
Dadar & Nagar Haveli	0	0	0	0	0	0	0.00
Daman & Diu	4	0	0	0	0	4	0.00
Delhi	0	0	0	0	131	131	0.09
Lakshadweep	0	0	0	0	0	0	0.00
Puducherry	120	0	0	0	3	123	0.08
Others*	0	0	0	0	1022	1022	0.69
All India Total	**102772**	**19749**	**17538**	**5000**	**2556**	**147615**	**100.00**
Distribution (%)	**69.62**	**13.38**	**11.88**	**3.39**	**1.73**	**100.00**	

* Industrial waste
Source: Ministry of New and Renewable Energy

CHAPTER 2: INSTALLED CAPACITY AND CAPACITY UTILIZATION

2.1 Coal Washeries

- Coal washing is an integral part of coal production. Raw coal coming from mines is washed to remove the ash contents to make them fit for feeding into boilers, particularly those of steel plants. Barring a few instances, a coal washery does not form part of a coal mine in India.

- As per the provisional estimates, total installed capacity of washeries in the country is around 131.24 Million ton per year (MTY) as on 31.3.2014 (Table 2.1). As on 31.03.14, a total of 52 washeries, both PSUs and Private, were operating in the country considering both Coking (29.69 MTY) and Non-Coking Coal (101.55 MTY).

2.2 Refineries of crude oil

- As on 31.03.14 there were a total of 22 refineries in the country (Table 2.2), 17 in the Public Sector, 3 in the private sector and 2 in joint venture.

- There is no change in refining capacity in the country (215 MMTPA) over the period of one year (Table 2.2).

- The Refinery production (crude throughput) achievement was 222.497 MMT during 2013-14 which marks net increase of 1.5% over 2012-13 (219.212 MMT)

- Capacity utilization of the refineries was 101.9% during 2012-13 which increased to 103.5% during 2013-14. In the Public Sector the maximum increase in capacity utilization (12.9%) was at ONGC, Tatipaka, Andhra Pradesh.

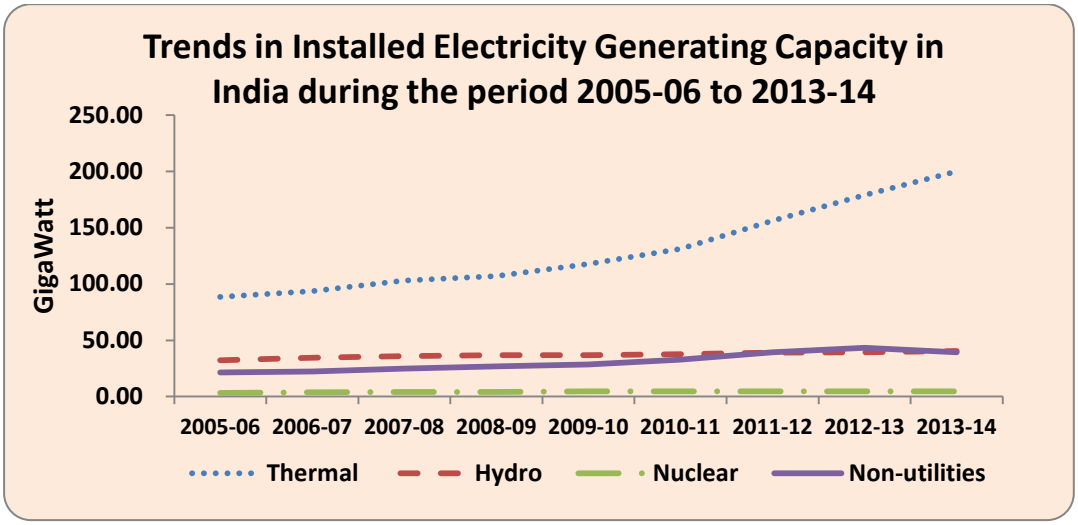
- In the Private Sector the highest increase (6.8%) in capacity utilization was at RIL(SEZ), Jamnagar, Gujarat.

- Indian Oil Corporation, the state owned corporation had highest refining capacity of 53,126 TMTY. All units of IOC together processed 53,126 TMT during 2013-14 as compared to 54,649 TMT during 2012-13. The capacity utilization of these refineries was 98% during 2013-14 as against 100.8% during 2012-13.

- All the private refineries taken together processed 88,229 TMT during 2013-14 as compared to 88,273 TMT during 2012-13. The capacity utilization of these refineries during 2012-13 and 2013-14 was constant i.e. 110.3%.

2.3 Installed generating capacity of electricity

- The total installed capacity for electricity generation in the country has increased from 145755 MW as on 31.03.2006 to 284,634 MW as on 31.03.2014, registering a compound annual growth rate (CAGR) of 7.72% (Table 2.3).



- There has been an increase in generating capacity of 17990 MW over the last one year, the annual increase being 6.75%.

- The highest rate of annual growth (11.66%) from 2012-13 to 2013-14 in installed capacity was for Thermal power followed by Hydro Power (2.63%).

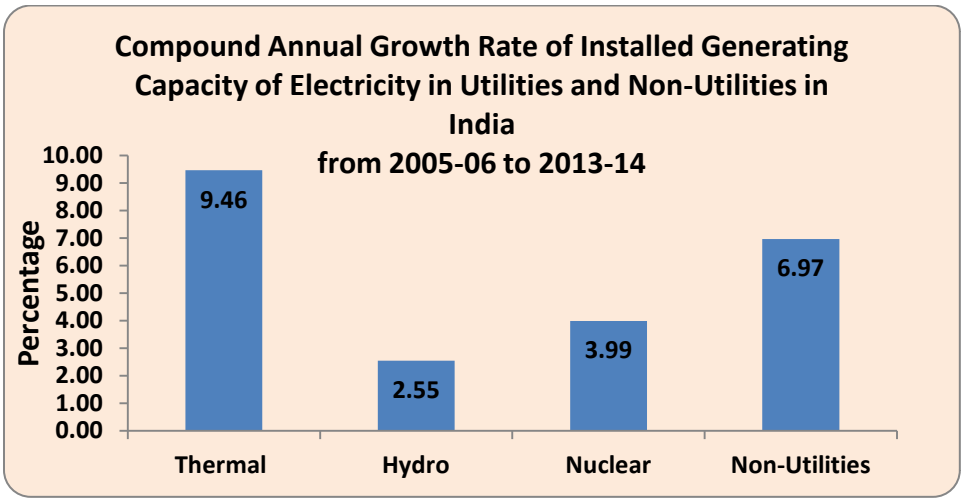
- The total Installed capacity of power utilities in the country increased from 124,287 MW in 31.3.2006 to 245,259 MW as on 31.3.2014, with a CAGR of 7.84 % over the period.

- At the end of March 2014, thermal power plants accounted for an overwhelming 70.25% of the total installed capacity in the country, with an installed capacity of 199,947 MW. The share of Nuclear energy was only 1.68% (4.78 GW).

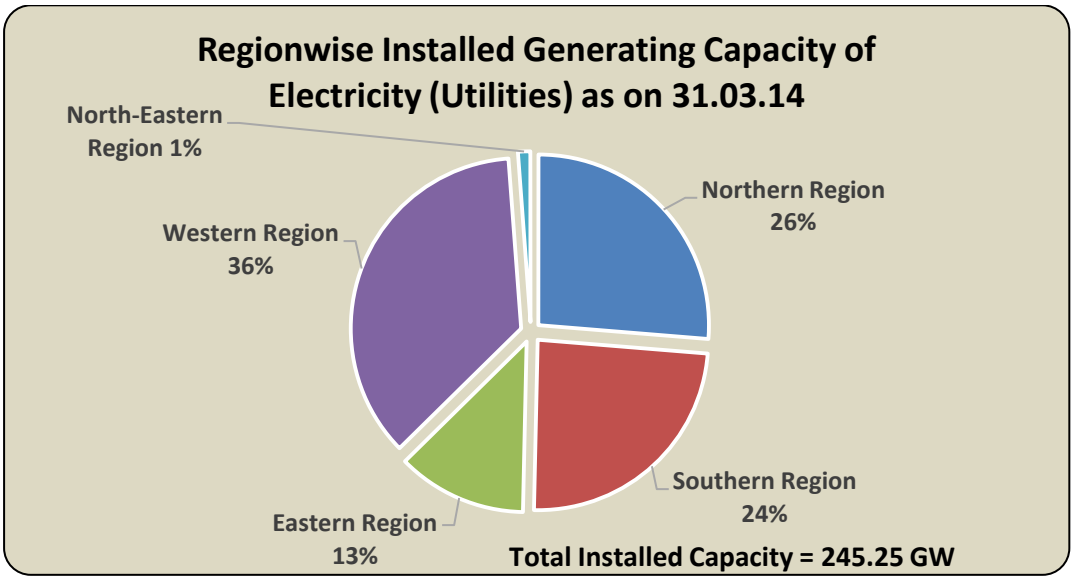
- Hydro power plants come next with an installed capacity of 40,531 MW, accounting for 14.24% of the total installed Capacity.

- Non-utilities accounted for 13.83% (39,375MW) of the total installed generation capacity.

- The highest CAGR (9.46%) was in case of Thermal utilities followed by Nuclear (3.99%) and Hydro (2.55%).



- The geographical distribution of Installed generating capacity of electricity as on 31.03.14 (Table 2.4) indicates that Western Region (both central and state sector) accounted for the highest share (36.18%) followed by Northern Region (26.28%), Southern Region (24.06%), Eastern Region (12.29%) and North Eastern Region (1.19%).



- Region wise growth in the installed capacity during 2013-14 reveals that Western Region registered the highest annual growth of about 15.94%, followed by Northern Region (7.65%) and Eastern Region (7.03%).

- Among the States in the Western Region that accounted for the highest growth of 15.94%, Chhattisgarh registered the highest (66.24%) followed by Madhya Pradesh (50.17%).

- Among all the states Sikkim registered highest annual growth (164.59%) growth in the installed capacity followed by Chhattisgarh (66.24%) and Madhya Pradesh (50.17%).

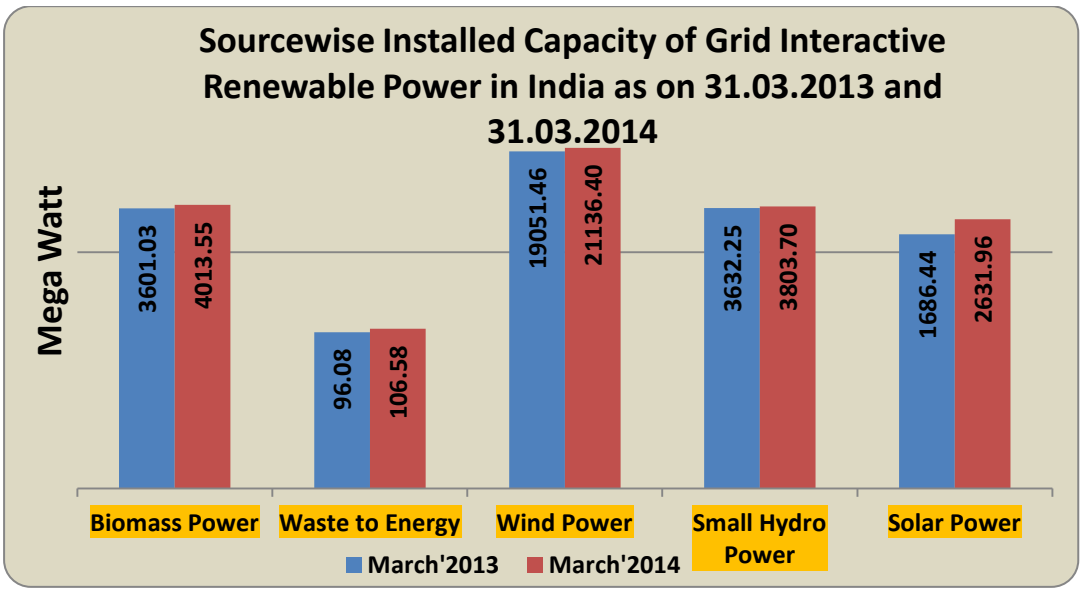
2.4 Grid Interactive Renewable Power

- The total installed capacity of grid interactive renewable power, which was 28067.26 MW as on 31.03.2013 had gone up to 31692.18 MW as on 31.03.2014 indicating growth of 12.92% during the period (Table 2.5).

- Out of the total installed generation capacity of renewable power as on 31-03-2014, Wind power accounted for about 66.69%, followed by Biomass power (12.66%) and Small hydro power (12%).

- Tamil Nadu had the highest installed capacity of grid connected renewable power (8070.26 MW) followed by Maharashtra (5630.20 MW) and Gujarat (4430.20 MW), mainly on account of wind power.

- As on 31.03.2014 out of total number of Biogas plants installed (47.52 lakh) (Table 2.6), maximum number of plants installed were in Maharashtra (8.56 lakh) followed by Andhra Pradesh, Karnataka, Uttar Pradesh and Gujarat each with more than 4 lakh biogas plants.



- Out of 1221.26 MW Solar Cookers installed as on 31.03.2014, 824.09 MW were installed in Gujarat and 222.9 MW in Rajasthan.

- As on 31.03.2013 there were 1,418 Water pumping Wind mills systems installed and 7971 remote villages and 2183 hamlets were electrified.

Table 2.1: Installed Capacity of Coal Washeries in India as on 31.03.14

Sl. No.	Washery & Operator	State of Location	Capacity (MTY) 31.03.2014*
	COKING COAL :		
1	Dudga-II, CIL	Jharkhand	2.00
2	Bhojudih, CIL	West Bengal	1.70
3	Patherdih, CIL	Jharkhand	1.60
4	Moonidih, CIL	Jharkhand	1.60
5	Sudamdih, CIL	Jharkhand	1.60
6	Mahuda, CIL	Jharkhand	0.63
7	Kathara, CIL	Jharkhand	3.00
8	Swang, CIL	Jharkhand	0.75
9	Rajrappa, CIL	Jharkhand	3.00
10	Kedla, CIL	Jharkhand	2.60
11	Nandan, CIL	Madhya Pradesh	1.20
	(A) CIL		**19.68**
12	Durgapur, SAIL	West Bengal	1.50
13	DCOP, DPL	West Bengal	1.35
14	Chasnala, IISCO	Jharkhand	1.50
15	Jamadoba, TISCO	Jharkhand	0.90
16	West Bokaro-II, TISCO	Jharkhand	1.80
17	West Boakaro-III,TISCO	Jharkhand	2.10
18	Bhelatand	Jharkhand	0.86
	(B) PSU & Private		**10.01**
	TOTAL (A + B)		**29.69**
	NON-COKING COAL		
1	Dugda-I,CIL	Jharkhand	2.50
2	Madhuban,CIL	Jharkhand	2.50
3	Gidi,CIL	Jharkhand	2.50
4	Piparwar,CIL	Jharkhand	6.50
5	Kargali,CIL	Jharkhand	2.72
6	Bina,CIL	Uttar Pradesh	4.50
	(A) CIL		**21.22**
7	Dipka, Aryan coal beneficiation pvt. ltd.	Chattisgarh	12.00
8	Gevra, -do-	Chattisgarh	5.00
9	Panderpauni, -do-	Maharashtra	3.00
10	Chakabuwa, Aryan Energy private ltd.	Chattisgarh	4.00
11	Indaram, Aryan Coal Benefication Pvt.Ltd.	Andhra Pradesh	-
12	Talcher, Aryan Energy Pvt. Ltd.	Odisha	2.00

Table 2.1(Contd.): Installed Capacity of Coal Washeries in India as on 31.03.14

Sl. No.	Washery & Operator	State of Location	Capacity (MTY) 31.03.2014*
13	Wani, Kartikay Coal washeries pvt. ltd.(Aryan)	Maharashtra	2.50
14	Korba, ST-CLI Coal washeries ltd.	Chhattisgarh	5.20
15	Ramagundam, Gupta coalfield & washeries ltd.	Andhra Pradesh	2.40
16	Sasti, Gupta coalfield & washeries ltd.	Maharashtra	2.40
17	Wani, Gupta coalfield & washeries ltd.	Maharashtra	1.92
18	Umrer, Gupta coalfield & washeries ltd.	Maharashtra	0.75
19	Bhandara, Gupta coalfield & washeries ltd.	Maharashtra	0.75
20	Gondegaon, Gupta coalfield & washeries ltd.	Maharashtra	2.40
21	Majri, Gupta coalfield & washeries ltd.	Maharashtra	2.40
22	Bilaspur, Gupta coalfield & washeries ltd.	Chhattisgarh	3.50
23	Ghugus, Gupta coalfield & washeries ltd.	Maharashtra	2.40
24	Talcher, Global coal Mining (P) Ltd.	Odisha	2.50
25	Ib Valley, Global coal Mining (P) Ltd.	Odisha	3.25
26	Ramagundam, Global coal Mining (P) Ltd.	Andhra Pradesh	1.00
27	Wani, Bhatia International Ltd.	Maharashtra	3.73
28	Ghugus, Bhatia International Ltd.	Maharashtra	4.00
29	Jharsuguda, Bhatia International Ltd.	Odisha	1.50
30	Tamnar, Jindal Steel & Power Ltd.	Chattisgarh	6.00
31	Wani, Indo Unique Flame Ltd.	Maharashtra	2.40
32	Nagpur, Indo Unique Flame Ltd.	Maharashtra	0.60
33	Punwat, Indo Unique Flame Ltd.	Maharashtra	2.40
34	Dharamsthal, BLA Industries	Madhya Pradesh	0.33
	(B) Private		**80.33**
	TOTAL (A+B)		**101.55**
	Gross Total (Coking+Non-Coking)		**131.24**

* Provisional

Source: Office of Coal Controller, Ministry of Coal

Table 2.2: Installed Capacity and Capacity Utilization of Refineries of Crude Oil during 2012-13 and 2013-14

Sl. No.	Refinery	Installed Capacity (TMTPA)		Crude Oil Processed (TMT)		Capacity Utilisation (%)		
		01.04.13	01.04.14	2012-13	2013-14*	2012-13	2013-14	Change in Utilisation
A	**Public Sector Refineries**	**120066**	**120066**	**120303**	**119547**	**100.2**	**99.6**	**-0.6**
I	**IOC RFINERIES**	**54200**	**54200**	**54649**	**53126**	**100.8**	**98.0**	**-2.8**
	IOC, Guwahati, Assam	1000	1000	956	1019	95.6	101.9	**6.3**
	IOC,Barauni, Bihar	6000	6000	6344	6478	105.7	108.0	**2.2**
	IOC,Koyali, Gujarat	13700	13700	13155	12960	96.0	94.6	**-1.4**
	IOC, Haldia, West Bengal	7500	7500	7490	7952	99.9	106.0	**6.2**
	IOC, Mathura, Uttar Pradesh	8000	8000	8561	6641	107.0	83.0	**-24.0**
	IOC, Digboi, Assam	650	650	660	651	101.6	100.2	**-1.4**
	IOC, Panipat, Haryana	15000	15000	15126	15098	100.8	100.7	**-0.2**
	IOC, Bongaigaon, Assam	2350	2350	2356	2328	100.3	99.1	**-1.2**
III	**BPCL RFINERIES**	**21500**	**21500**	**23183**	**22969**	**107.8**	**106.8**	**-1.0**
	BPCL, Mumbai, Maharastra	12000	12000	13077	12684	**109.0**	**105.7**	**-3.3**
	BPCL, Kochi, Kerala	9500	9500	10105	10285	**106.4**	**108.3**	**1.9**
III	**HPCL RFINERIES**	**14800**	**14800**	**15777**	**15561**	**106.6**	**105.1**	**-1.5**
	HPCL, Mumbai, Maharastra	6500	6500	7748	7785	119.2	119.8	**0.6**
	HPCL, Visakh, Andhra Pradesh	8300	8300	8028	7776	96.7	93.7	**-3.0**
IV	**CPCL RFINERIES**	**11500**	**11500**	**9745**	**10624**	**84.7**	**92.4**	**7.6**
	CPCL, Manali, Tamil Nadu	10500	10500	9105	10065	86.7	95.9	**9.1**
	CPCL, Narimanam, Tamil Nadu	1000	1000	640	559	64.0	55.9	**-8.1**
V	**NRL, Numaligarh, Assam**	**3000**	**3000**	**2478**	**2613**	**82.6**	**87.1**	**4.5**
VI	**MRPL, Mangalore, Karanataka**	**15000**	**15000**	**14415**	**14589**	**96.1**	**97.3**	**1.2**
VII	**ONGC, Tatipaka, Andhra Pradesh**	**66**	**66**	**57**	**65**	**85.6**	**98.5**	**12.9**
B	**Private Sector Refineries**	**80000**	**80000**	**88273**	**88229**	**110.3**	**110.3**	**-0.1**
I	**RIL RFINERIES**	**60000**	**60000**	**68504**	**68027**	**114.2**	**113.4**	**-0.8**
	RIL, DTA,Jamnagar, Gujarat	33000	33000	32613	30307	98.8	91.8	**-7.0**
	RIL(SEZ), Jamnagar, Gujarat	27000	27000	35892	37720	132.9	139.7	**6.8**
II	Essar Oil Ltd.(EOL), Vadinar	20000	20000	19769	20202	98.8	101.0	**2.2**
C	**JOINT VENTURE**	**15000**	**15000**	**10636**	**14721**	**70.9**	**98.1**	**27.2**
I	**BORL,Bina*** **	**6000**	**6000**	**5732**	**5450**	**95.5**	**90.8**	**-4.7**
II	**HMEL,Bathinda****	**9000**	**9000**	**4904**	**9271**	**54.5**	**103.0**	**48.5**
	Total (A+B+C)	**215066**	**215066**	**219212**	**222497**	**101.9**	**103.5**	**1.5**

***** Provisional TMT: Thousand Metric Tons TMTPA: Thousand Metric Tons Per Annum
****:** HPCL & Mittal Energy Investments Pvt. Ltd., a Joint Venture, Bathinda commissioned on April,2012.
*****:** BPCL & Oman Oil Company, a Joint Venture,Bina Commissioned on May,2011

Source: Ministry of Petroleum and Natural Gas

Table 2.3 : Trends in Installed Generating Capacity of Electricity in Utilities and Non-utilities in India from 2005-06 to 2013-14

(in Mega Watt) = (10^3 x Kilo Watt)

As on	Utilities				Non-utilities	Grand Total
	Thermal *	Hydro	Nuclear	Total	Total	
1	2	3	4	5	6	7
31.03.2006	88,601	32,326	3,360	124,287	21,468	145,755
31.03.2007	93,775	34,654	3,900	132,329	22,335	154,664
31.03.2008	103,032	35,909	4,120	143,061	24,986	168,047
31.03.2009	106,968	36,878	4,120	147,966	26,980	174,946
31.03.2010	117,975	36,863	4,560	159,398	28,474	187,872
31.03.2011	131,279	37,567	4,780	173,626	32,900	206,526
31.03.2012	156,107	38,990	4,780	199,877	39,375	239,252
31.03.2013	179,072	39,491	4,780	223,344	43,300	266,644
31.03.2014(P)	199,947	40,531	4,780	245,259	39,375	284,634
Growth rate of 2013-14 over 2012-13(%)	**11.66**	**2.63**	**0.00**	**9.81**	**-9.06**	**6.75**
CAGR 2005-06 to 2013-14(%)	**9.46**	**2.55**	**3.99**	**7.84**	**6.97**	**7.72**

* Thermal includes Renewable Energy Resources.

** Capacity in respect of Self Generating Industries includes units of capacity 1 MW and above.

CAGR: Compound Annual Growth Rate =[(Current Value/Base Value)^(1/nos. of years)-1]*100

Source : Central Electricity Authority.

Table 2.4 : Regionwise and Statewise Installed Generating Capacity of Electricity (Utilities) in India as on 31.03.2013 and 31.03.2014

(in Giga Watt=10^6 KW)

States/UTs	Hydro		Thermal		Nuclear		New & Renewable Energy**		Total		Growth *
	31.03.13	31.03.14	31.03.13	31.03.14	31.03.13	31.03.14	31.03.13	31.03.14	31.03.13	31.03.14	Rate(2012-13 to 2013-14)
Delhi	0.00	0.00	1.79	2.29	0.00	0.00	0.02	0.02	1.81	2.42	**33.51**
Haryana	0.88	0.88	4.81	4.91	0.00	0.00	0.12	0.13	5.82	5.92	**1.76**
Himachal Prd.	2.14	2.14	0.00	0.00	0.00	0.00	0.59	0.64	2.73	2.78	**1.87**
Jammu & Kashmir	0.78	0.78	0.18	0.18	0.00	0.00	0.13	0.15	1.09	1.11	**1.55**
Punjab	2.23	2.23	3.02	3.86	0.00	0.00	0.39	0.32	5.63	6.41	**13.76**
Rajasthan	0.99	0.99	5.55	7.22	0.00	0.00	3.33	3.64	9.86	11.85	**20.10**
Uttar Pradesh	0.52	0.52	8.01	7.77	0.00	0.00	0.82	0.83	9.36	9.12	**-2.52**
Uttrakhand	1.65	1.65	0.00	0.00	0.00	0.00	0.19	0.21	1.84	1.86	**1.09**
Chandigarh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00	-
Central Sector NR	6.27	7.13	13.84	14.34	1.62	1.62	0.00	0.00	21.73	23.09	**6.27**
Sub-Total (NR)	15.47	16.33	37.21	40.58	1.62	1.62	5.59	5.94	59.88	64.46	**7.65**
Chhatisgarh	0.12	0.12	4.57	7.86	0.00	0.00	0.31	0.32	4.99	8.30	**66.24**
D & N Haveli	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.63	-
Daman & Diu	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
Goa	0.00	0.00	0.05	0.05	0.00	0.00	0.03	0.00	0.08	0.05	**-38.44**
Gujarat	0.77	0.77	18.04	18.81	0.00	0.00	3.97	4.43	22.78	24.02	**5.41**
Madhya Pradesh	1.70	1.70	4.10	6.91	0.00	0.00	0.53	0.89	6.32	9.50	**50.17**
Maharashtra	3.33	3.33	16.24	19.28	0.00	0.00	4.16	5.63	23.73	28.24	**19.02**
Central Sector WR	1.52	1.52	15.27	15.27	1.84	1.84	0.00	0.00	18.63	18.63	**0.00**
Sub-Total (WR)	7.45	7.45	58.26	68.18	1.84	1.84	8.99	11.27	76.54	88.73	**15.94**
Andhra Pradesh	3.73	3.73	8.95	9.25	0.00	0.00	1.11	1.53	13.79	14.51	**5.24**
Karnataka	3.60	3.60	5.01	5.01	0.00	0.00	3.51	3.99	12.13	12.60	**3.90**
Kerala	1.88	1.88	0.43	0.43	0.00	0.00	0.17	0.19	2.49	2.51	**0.76**
Lakshadweep	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01	**7.52**
Puducherry	0.00	0.00	0.03	0.03	0.00	0.00	0.00	0.00	0.03	0.03	**0.00**
Tamil Nadu	2.14	2.18	6.01	6.76	0.00	0.00	7.46	8.08	15.60	17.02	**9.06**
Central Sector SR #	0.00	0.00	10.50	11.00	1.32	1.32	0.00	0.00	11.82	12.32	**4.23**
Sub-Total (SR)	11.35	11.40	30.94	32.49	1.32	1.32	12.25	13.79	55.87	59.00	**5.60**
A & N Island	0.00	0.00	0.06	0.06	0.00	0.00	0.01	0.01	0.07	0.07	**7.65**
Bihar	0.00	0.00	0.43	0.21	0.00	0.00	0.11	0.11	0.54	0.32	**-40.42**
Jharkhand	0.13	0.13	1.82	2.09	0.00	0.00	0.02	0.02	1.97	2.24	**13.71**
Odisha	2.06	2.06	3.17	3.87	0.00	0.00	0.10	0.12	5.33	6.05	**13.47**
Sikkim	0.00	0.10	0.01	0.00	0.00	0.00	0.05	0.05	0.06	0.15	**164.59**
West Bengal	0.98	0.98	6.42	6.67	0.00	0.00	0.17	0.13	7.57	7.78	**2.77**
DVC	0.00	0.00	1.05	1.05	0.00	0.00	0.00	0.00	-	1.05	-
Central Sector ER	0.81	0.85	10.77	11.64	0.00	0.00	0.00	0.00	11.58	12.48	**7.80**
Sub-Total (ER)	3.98	4.11	23.73	25.59	0.00	0.00	0.46	0.44	28.17	30.15	**7.03**
Arunachal Prd.	0.00	0.00	0.02	0.02	0.00	0.00	0.10	0.10	0.12	0.12	**-0.01**
Assam	0.10	0.10	0.38	0.38	0.00	0.00	0.03	0.03	0.51	0.52	**0.59**
Manipur	0.00	0.00	0.05	0.05	0.00	0.00	0.01	0.01	0.05	0.05	**0.00**
Meghalaya	0.28	0.28	0.00	0.00	0.00	0.00	0.03	0.03	0.32	0.32	**0.00**
Mizoram	0.00	0.00	0.05	0.05	0.00	0.00	0.04	0.04	0.09	0.08	**-7.71**
Nagaland	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.02	**-41.28**
Tripura	0.00	0.00	0.15	0.17	0.00	0.00	0.02	0.02	0.17	0.17	**2.95**
Central Sector NER	0.86	0.86	0.74	0.74	0.00	0.00	0.00	0.00	1.60	1.60	**0.00**
Sub-Total (NER)	1.24	1.24	1.39	1.41	0.00	0.00	0.25	0.26	2.88	2.91	**0.87**
Total States	**30.03**	**30.18**	**100.41**	**115.26**	**0.00**	**0.00**	**27.54**	**31.69**	**157.98**	**177.13**	**12.12**
Total Central	**9.46**	**10.36**	**51.12**	**52.99**	**4.78**	**4.78**	**0.00**	**0.00**	**65.36**	**68.13**	**4.23**
Total All India	**39.49**	**40.53**	**151.53**	**168.25**	**4.78**	**4.78**	**27.54**	**31.69**	**223.34**	**245.25**	**9.81**

**:- Renewable Energy Sources includes Small Hydro Projects, Wind Power, Biomass Power Biomass Gasifier,Urban & Industrial Waste and Solar Power.

* Growth rate of total installed electricity generating capacity of India

Includes NLC-Central capacity also

Sub-totals/Totals may not tally due to conversion to Gw and rounding off.

Source : Central Electricity Authority.

Table 2.5:Statewise and Sourcewise Installed Capacity of Grid Interactive Renewable Power as on 31.03.2013 and 30.03.2014

(in MW)

States/ UTs	Biomass Power		Waste to Energy		Wind Power	
	31.03.13	31.03.14	31.03.13	31.03.14	31.03.13	31.03.14
Andhra Pradesh	380.75	380.75	43.16	50.66	447.65	746.20
Arunachal Pradesh	-	-	-	-	-	-
Assam	-	-	-	-	-	-
Bihar	43.30	43.42	-	-	-	-
Chhattisgarh	249.90	264.90	-	-	-	-
Goa	-	-	-	-	-	-
Gujarat	30.50	43.90	-	-	3174.58	3454.30
Haryana	45.30	45.30	-	-	-	-
Himachal Pradesh	-	-	-	-	-	-
Jammu & Kashmir	-	-	-	-	-	-
Jharkhand	-	-	-	-	-	-
Karnataka	491.38	603.28	1.00	1.00	2135.15	2318.20
Kerala	-	-	-	-	35.10	35.20
Madhya Pradesh	16.00	26.00	3.90	3.90	386.00	423.40
Maharashtra	756.90	940.40	9.72	12.72	3021.85	4100.40
Manipur	-	-	-	-	-	-
Meghalaya	-	-	-	-	-	-
Mizoram	-	-	-	-	-	-
Nagaland	-	-	-	-	-	-
Odisha	20.00	20.00	-	-	-	-
Punjab	124.50	140.50	9.25	9.25	-	-
Rajasthan	91.30	101.30	-	-	2684.65	2784.90
Sikkim	-	-	-	-	-	-
Tamil Nadu	538.70	571.30	8.05	8.05	7162.18	7269.50
Tripura	-	-		-	-	-
Uttar Pradesh	776.50	776.50	5.00	5.00	-	-
Uttarakhand	10.00	30.00	-	-	-	-
West Bengal	26.00	26.00	-	-	-	-
Andaman & Nicobar	-	-	-	-	-	-
Chandigarh	-	-	-	-	-	-
Dadar & Nagar Haveli	-	-	-	-	-	-
Daman & Diu	-	-	-	-	-	-
Delhi	-	-	16.00	16.00	-	-
Lakshadweep	-	-	-	-	-	-
Puducherry	-	-	-	-	-	-
Others	-	-	-	-	4.30	4.30
All India Total	**3601.03**	**4013.55**	**96.08**	**106.58**	**19051.46**	**21136.40**
Distribution (%)	**12.83**	**12.66**	**0.34**	**0.34**	**67.88**	**66.69**

Source: Ministry of New and Renewable Energy

Table 2.5 (contd):Statewise and Sourcewise Installed Capacity of Grid Interactive Renewable Power as on 31.03.2013 and 30.03.2014

(in MW)

States/ UTs	Small Hydro Power		Solar Power		Total		Growth* Rate(2012-13 to 2013-14)
	31.03.13	31.03.14	31.03.13	31.03.14	31.03.13	31.03.14	
Andhra Pradesh	219.03	221.03	23.35	131.84	1113.94	1530.48	**37.39**
Arunachal Pradesh	103.91	103.91	0.03	0.03	103.93	103.93	**0.00**
Assam	31.11	34.11	-	-	31.11	34.11	**9.64**
Bihar	70.70	70.70	-	-	114.00	114.12	**0.11**
Chhattisgarh	52.00	52.00	4.00	7.10	305.90	324.00	**5.92**
Goa	0.05	0.05	-	-	0.05	0.05	**0.00**
Gujarat	15.60	15.60	857.90	916.40	4078.58	4430.20	**8.62**
Haryana	70.10	70.10	7.80	10.30	123.20	125.70	**2.03**
Himachal Pradesh	587.91	638.91	-	-	587.91	638.91	**8.68**
Jammu & Kashmir	130.53	147.53	-	-	130.53	147.53	**13.02**
Jharkhand	4.05	4.05	16.00	16.00	20.05	20.05	**0.00**
Karnataka	963.76	1031.66	14.00	31.00	3605.29	3985.14	**10.54**
Kerala	158.42	158.42	0.03	0.03	193.55	193.65	**0.05**
Madhya Pradesh	86.16	86.16	37.32	347.17	529.38	886.63	**67.49**
Maharashtra	299.93	327.43	100.00	249.25	4188.40	5630.20	**34.42**
Manipur	5.45	5.45	-	-	5.45	5.45	**0.00**
Meghalaya	31.03	31.03	-	-	31.03	31.03	**0.00**
Mizoram	36.47	36.47	-	-	36.47	36.47	**0.00**
Nagaland	28.67	29.67	-	-	28.67	29.67	**3.49**
Odisha	64.30	64.63	13.00	30.50	97.30	115.13	**18.32**
Punjab	154.50	156.20	9.33	16.85	297.58	322.80	**8.48**
Rajasthan	23.85	23.85	552.90	730.10	3352.70	3640.15	**8.57**
Sikkim	52.11	52.11	-	-	52.11	52.11	**0.00**
Tamil Nadu	123.05	123.05	17.11	98.36	7849.09	8070.26	**2.82**
Tripura	16.01	16.01	-	-	16.01	16.01	**0.00**
Uttar Pradesh	25.10	25.10	17.38	21.08	823.98	827.68	**0.45**
Uttaranchal	174.82	174.82	5.05	5.05	189.87	209.87	**10.53**
West Bengal	98.40	98.40	2.05	7.05	126.45	131.45	**3.95**
Andaman & Nicobar	5.25	5.25	5.10	5.10	10.35	10.35	**0.00**
Chandigarh	-	-	-	2.00	-	2.00	-
Dadar & Nagar Haveli	-	-	-	-	-	-	-
Daman & Diu	-	-	-	-	-	-	-
Delhi	-	-	2.56	5.15	18.56	21.15	**13.98**
Lakshadweep	-	-	0.75	0.75	0.75	0.75	**0.00**
Puducherry	-	-	0.03	0.03	0.03	0.03	**20.00**
Others	-	-	0.79	0.82	5.09	5.12	-
All India Total	**3632.25**	**3803.70**	**1686.44**	**2631.96**	**28067.26**	**31692.18**	**12.92**
Distribution (%)	**12.94**	**12.00**	**6.01**	**8.30**	**100.00**	**100.00**	

Source: Ministry of New and Renewable Energy

Table 2.6 : Installation of Off-grid / Decentralised Renewable Energy Systems/ Devices as on 31.03.2014

Sl. No.	State/UT	Biogas Plants (Nos. in Lakh)	Biomass Gasifiers (Rural+ Industrial) (KW)	Biomass (non-bagasse) (MW)	Water Pumping/ Wind Mills# (Nos.)	SPV Pumps (Nos.)	Solar Photovoltaic			
							SLS (Nos. in Lakh)	HLS (Nos. in Lakh)	SL (Nos. in Lakh)	PP (KWP)
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
1	Andhra Pradesh	5.2	22914	75.4	6	613	0.1	0.2	0.4	1263.6
2	Arunachal Pradesh	0.0	750	0.0	0	18	0.0	0.2	0.1	217.1
3	Assam	1.1	2933	0.0	3	45	0.0	0.1	0.0	910.0
4	Bihar	1.3	10924	8.2	46	139	0.0	0.1	0.5	775.6
5	Chhattisgarh	0.5	1210	2.5	1	240	0.0	0.1	0.0	14616.7
6	Goa	0.0	0	0.0	0	15	0.0	0.0	0.0	1.7
7	Gujarat	4.3	21530	0.0	945	85	0.0	0.1	0.3	9452.6
8	Haryana	0.6	2503	35.9	0	469	0.2	0.6	0.9	864.3
9	Himachal Pradesh	0.5	0	7.2	0	6	0.1	0.2	0.2	1208.5
10	Jammu & Kashmir	0.0	200	0.0	0	39	0.1	0.7	0.4	3430.9
11	Jharkhand	0.1	500	1.2	0	0	0.0	0.1	0.2	480.9
12	Karnataka	4.7	7447	15.2	28	551	0.0	0.5	0.1	1596.4
13	Kerala	1.4	0	0.7	79	810	0.0	0.3	0.5	214.4
14	Madhya Pradesh	3.5	10258	12.4	0	87	0.1	0.0	0.1	1983.0
15	Maharashtra	8.6	7150	16.4	26	239	0.1	0.0	0.7	913.7
16	Manipur	0.0	0	0.0	0	40	0.0	0.0	0.0	456.0
17	Meghalaya	0.1	250	13.8	0	19	0.0	0.1	0.2	173.5
18	Mizoram	0.0	250	0.0	0	37	0.0	0.1	0.1	241.0
19	Nagaland	0.1	2100	0.0	0	3	0.0	0.0	0.1	1050.0
20	Odisha	2.6	270	2.9	0	56	0.1	0.1	0.1	84.5
21	Punjab	1.6	0	110.7	0	1857	0.1	0.1	0.2	663.0
22	Rajasthan	0.7	2464	2.0	222	4501	0.1	1.4	0.0	8625.0
23	Sikkim	0.1	0	0.0	0	0	0.0	0.2	0.2	680.0
24	Tamil Nadu	2.2	16262	16.6	60	829	0.3	0.6	0.2	4006.6
25	Tripura	0.0	1050	0.0	0	151	0.0	0.3	0.6	365.0
26	Uttar Pradesh	4.4	23702	150.9	0	575	1.2	2.4	0.6	3491.5
27	Uttarakhand	0.2	2150	42.5	0	26	0.1	0.9	0.8	280.0
28	West Bengal	3.7	26168	17.4	0	48	0.1	1.5	0.2	889.0
29	Andaman & Nicobar	0.0	0	0.0	2	5	0.0	0.0	0.1	167.0
30	Chandigarh	0.0	0	0.0	0	12	0.0	0.0	0.0	730.0
31	Dadar & Nagar Haveli	0.0	0	0.0	0	0	0.0	0.0	0.0	0.0
32	Daman & Diu	0.0	0	0.0	0	0	0.0	0.0	0.0	0.0
33	Delhi	0.0	0	0.0	0	90	0.0	0.0	0.0	332.0
34	Lakshadweep	0.0	250	0.0	0	0	0.0	0.0	0.1	1090.0
35	Puducherry	0.0	0	0.0	0	21	0.0	0.0	0.0	0.0
36	Others*	0.1	0	0.0	0	0	0.1	0.2	1.3	23885.0
	Total	**47.5**	**163235**	**531.8**	**1418**	**11626**	**2.7**	**11.0**	**9.6**	**85138.4**

Source : Ministry of New and Renewable Energy

* Others includes installations through NGOs/IREDA in different states

SLS = Street Lighting System; HLS = Home Lighting System; SL = Solar Lantern; PP = Power Plants; SPV = Solar Photovoltaic; SHP = Small Hydro Power; MW = Mega Watt; KWP = Kilowatt peak;

Table 2.6(contd..) : Installation of Off-grid / Decentralised Renewable Energy Systems/ Devices as on 31.03.2014

Sl. No.	State/UT	Aerogen. Hybrid System	Solar Cooker #	Waste to Energy	Remote Village Electrification Villages	
					Villages	Hamlets
		(KW)	(MW)	(MW)	(Nos.)	(Nos.)
1	2	12	13	14	15	16
1	Andhra Pradesh	16.00	23.15	10.61	-	13
2	Arunachal Pradesh	6.80	0.03	-	297	-
3	Assam	6.00	-	-	1,952	-
4	Bihar	-	-	1.00	-	-
5	Chhattisgarh	-	4.00	0.33	568	-
6	Goa	163.80	1.69	-	-	19
7	Gujarat	20.00	824.09	14.64	38	-
8	Haryana	10.00	7.80	4.00	-	286
9	Himachal Pradesh	-	-	1.00	21	-
10	Jammu & Kashmir	15.80	-	-	334	15
11	Jharkhand	-	16.00	-	493	-
12	Karnataka	39.20	14.00	9.64	16	14
13	Kerala	8.00	0.03	-	-	607
14	Madhya Pradesh	24.00	11.75	0.48	577	-
15	Maharashtra	1422.10	34.50	20.45	340	-
16	Manipur	140.00	-	-	237	3
17	Meghalaya	191.50	-	-	149	-
18	Mizoram	-	-	-	20	-
19	Nagaland	-	-	-	11	-
20	Odisha	-	13.00	0.02	1,495	14
21	Punjab	50.00	9.33	4.78	-	-
22	Rajasthan	14.00	222.90	3.00	292	90
23	Sikkim	15.50	-	-	-	13
24	Tamil Nadu	24.50	17.06	11.42	-	131
25	Tripura	2.00	-	-	60	782
26	Uttar Pradesh	-	12.38	46.18	113	222
27	Uttarakhand	4.00	5.05	4.02	476	118
28	West Bengal	74.00	2.00	1.17	1,177	2
29	Andaman & Nicobar	-	-	-	-	-
30	Chandigarh	-	-	-	-	-
31	Dadar & Nagar Haveli	-	-	-	-	-
32	Daman & Diu	-	-	-	-	-
33	Delhi	-	2.53	-	-	-
34	Lakshaadweep	-	-	-	-	-
35	Puducherry	5.00	-	-	-	-
36	Others*	-	-	-	-	-
	Total	**2252.20**	**1221.26**	**132.74**	**8666.00**	**2329.00**

Data repeated for 2012

*Others includes installations through NGOs/IREDA in different states

SLS = Street Lighting System; HLS = Home Lighting System; SL = Solar Lantern; PP = Power Plants; SPV = Solar Photovoltaic; MW = Mega Watt; KWP = Kilowatt peak; MWe=Mega Watt electric

Source : Ministry of New and Renewable Energy

CHAPTER 3: PRODUCTION OF CONVENTIONAL ENERGY SOURCES

3.1 Production of Coal, lignite, crude petroleum, natural gas, & electricity

- Coal production in the country during the year 2013-14 was 565.77 million tons (MTs) as compared to 556.40 MTs during 2012-13, registering a growth of 1.68% (Table 3.1)

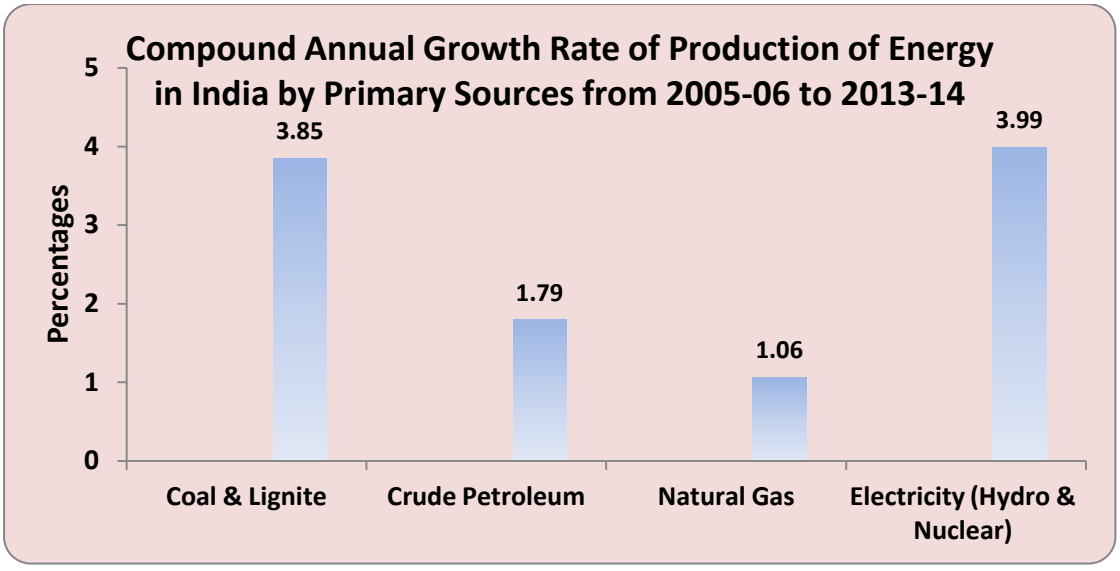
- The Lignite production during the same period decreased by 4.70%.

- Considering the trend of production from 2005-06 to 2013-14, it is observed that coal production in India was about 407.04 MTs during 2005-06, which increased to 565.77 MTs during 2013-14 with a CAGR of 3.73%.

- During the same period the CAGR of Lignite was about 4.33% with production increasing from 30.23 MTs in 2005-06 to 44.27 MTs in 2013-14.

- Production of crude petroleum increased from 32.19 MTs during 2005-06 to 37.79 MTs during 2013-14, a CAGR of about 1.80%.

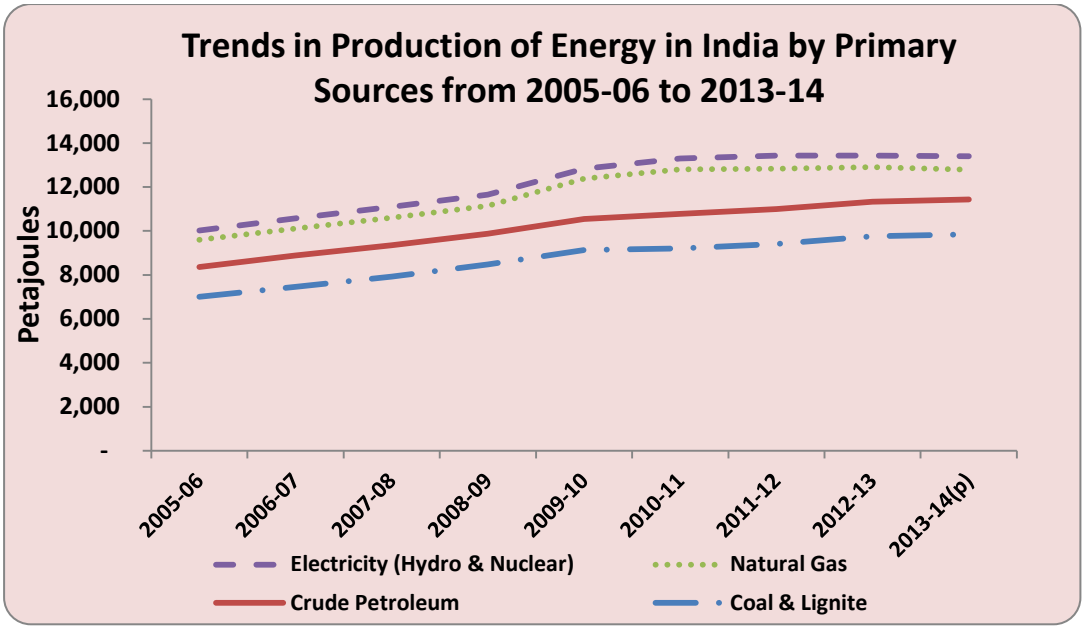
- The CAGRs for natural gas and electricity were 1.06% and 3.99% respectively. Lignite has experienced the highest CAGR i.e. 4.33% among all the conventional sources of energy since 2005.



- For more meaningful comparison in the trends and patterns of growth of different energy resources, it is desirable to convey all the resources to their energy equivalents by applying appropriate conversion factors and express them in energy units(Joules/Peta Joules/Terra Joules).

- The total production of energy from conventional sources decreased from 13409.47 Peta joules during 2012-13 to 13400.15 Peta joules during 2013-14, showing a decrease of 0.07%.(Table 3.2).

- The production of energy in Peta joules by primary sources (Table 3.2) shown that Coal and Lignite were the major sources of energy, accounting for about 73.48% of the total production during 2013-14. Crude Petroleum was second (11.81%), while Natural Gas (10.18%) was third.

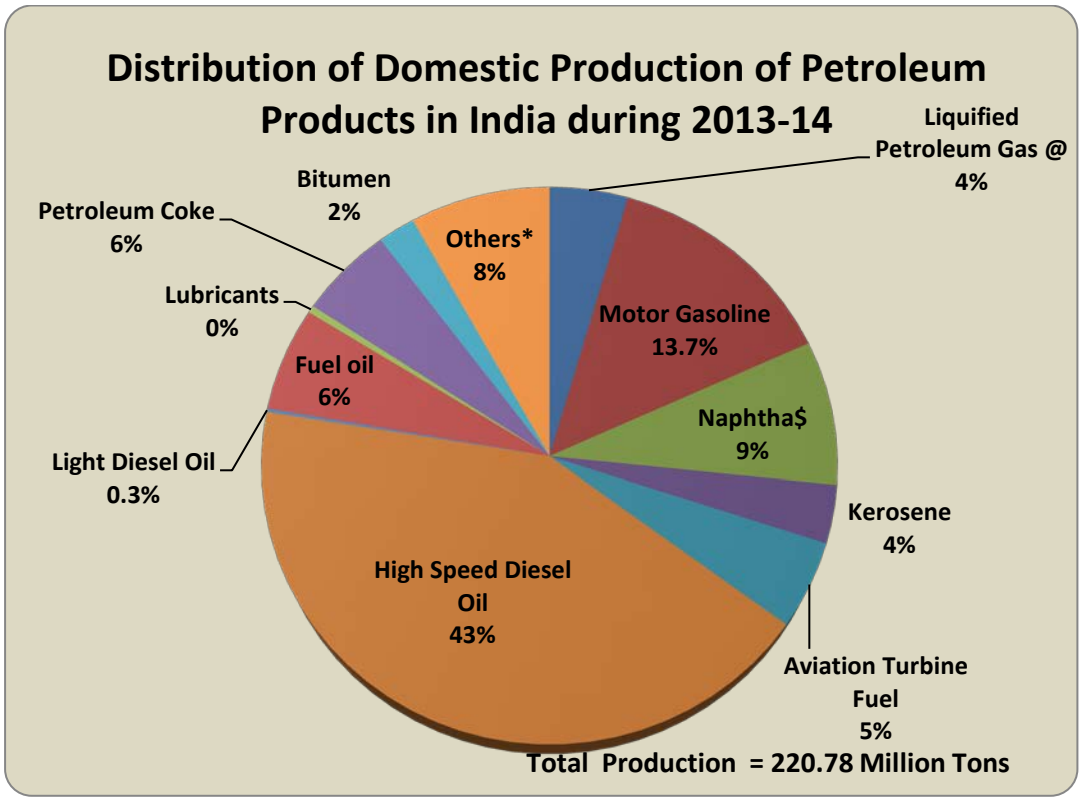


3.2 Production of petroleum products and Natural Gas

- In the year 2013-14, the production of Petroleum Products in the country was 220.78 MTs as against 217.74 during 2012-13, an increase of 1.40% (Table 3.4).

- In the total production of Petroleum products during 2013-14, High speed diesel oil accounted for the maximum share (42.47%), followed by Motor Gasoline(13.72%), Naptha (8.38%), Fuel Oil(6.07%), Petroleum Coke (5.47%) and Aviation Turbine Fuel(5.08%)(Table 3.4).

- Production of Natural Gas decreased from 39.78 billion cubic meters (BCM) in 2012-13 to 34.64 BCM in 2013-14 registering a negative growth of 12.92% and a CAGR of 1.12% from 2005-06 to 2013-14 (Table 3.5).



3.3 Generation of electricity

- The all India gross electricity generation from utilities, excluding that from the captive generating plants, was 6,23,819 Giga Watt-Hours (GWh) during 2005-06 (Table 3.6). It rose to 1,022,614 GWh during 2013-14.

- The production of electricity from utilities has increased from 9,63,811 GWh during 2012-13 to 1,022,614 GWh during 2013-14, registering an annual growth rate of about 6.10%.

- Total Electricity generation in the country, from utilities and non-utilities taken together during 2013-14 was 11,79,256 GWh. Out of this 8,53,683 GWh was generated from thermal and 1,34,731 GWh was from hydro and 34,200 GWh was generated from nuclear sources. Total output from non-utilities was 1,56,642 GWh.

Table 3.1 : Trends in Production of Primary Sources of Conventional Energy in India

Year	Coal (Million Tons)	Lignite (Million Tons)	Crude Petroleum (Million Tons)	Natural Gas (Billion Cubic Metres)	Electricity* Hydro & Nuclear (GWh)
1	2		3	4	5
2005-06	407.04	30.23	32.19	32.20	118,818
2006-07	430.83	31.29	33.99	31.75	132,304
2007-08	457.08	33.98	34.12	32.42	137,344
2008-09	492.76	32.42	33.51	32.85	142,576
2009-10	532.04	34.07	33.69	47.50	125,316
2010-11	532.69	37.73	37.68	52.22	140,524
2011-12	539.95	42.33	38.09	47.56	163,796
2012-13	556.40	46.45	37.86	40.68	146,497
2013-14(p)	565.77	44.27	37.79	35.41	168,931
Growth rate of 2013-14 over 2012-13(%)	**1.68**	**-4.70**	**-0.18**	**-12.95**	**15.31**
CAGR 2005-06 to 2013-14(%)	**3.73**	**4.33**	**1.80**	**1.06**	**3.99**

GWh = Giga Watt hour = 10^6 x Kilo Watt hour

* Thermal electricity is not a primary source of energy

(p) Provisional figure

Sources:
1. Ministry of Coal
2. Ministry of Petroleum & Natural Gas.
3. Central Electricity Authority.

Table 3.2 : Trends in Production of Energy in India by Primary Sources

(in Peta Joules)

Year	Coal & Lignite	Crude Petroleum	Natural Gas	Electricity (Hydro & Nuclear) *	Total
1	**2**	**3**	**4**	**5**	**6= 2 to 5**
2005-06	7008.97	1348.00	1240.00	427.74	10024.72
2006-07	7458.57	1423.00	1223.00	476.29	10580.86
2007-08	7925.74	1429.00	1249.00	494.44	11098.18
2008-09	8476.37	1402.90	1265.34	513.27	11657.89
2009-10	9137.06	1410.64	1830.09	451.14	12828.93
2010-11	9206.69	1578.00	2011.00	505.89	13301.58
2011-12	9398.03	1595.00	1832.00	589.67	13414.70
2012-13	9730.08	1585.00	1567.00	527.39	13409.47
2013-14(p)	9846.00	1582.00	1364.00	608.15	13400.15
Growth rate of 2013-14 over 2012-13(%)	**1.19**	**-0.19**	**-12.95**	**15.31**	**-0.07**
CAGR 2005-06 to 2013-14(%)	**3.85**	**1.79**	**1.06**	**3.99**	**3.28**

GWh = Giga Watt hour = 10^ 6 KiloWatt hour = 10^ -3 Billion KWh

1 Billion KWh = 3.60 Peta Joules of Energy

* Thermal electricity is not a primary source of energy

@ Conversion factors have been applied to convert production of primary sources of conventional energy into peta joules

Sources:

1. Office of Coal Controller, Ministry of Coal
2. Ministry of Petroleum & Natural Gas.
3. Central Electricity Authority.

Table 3.3 : Trends in Production of Coal and Lignite in India

(in Million Tons)

Year	Coal			Lignite	Grand Total
	Coking	Non-coking	Total		
1	2	3	4=(2)+(3)	5	6=(4)+(5)
2005-06	31.51	375.53	407.04	30.23	437.27
2006-07	32.10	398.74	430.83	31.29	462.12
2007-08	34.46	422.63	457.08	33.98	491.06
2008-09	33.81	457.95	491.76	32.42	524.18
2009-10	44.41	487.63	532.04	34.07	566.11
2010-11	49.55	483.15	532.69	37.73	570.43
2011-12	51.65	488.29	539.94	42.33	582.27
2012-13	51.58	504.82	556.40	46.45	602.86
2013-14(p)	56.82	508.95	565.77	44.27	610
Growth rate of 2013-14 over 2012-13(%)	**10.15**	**0.82**	**1.68**	**-4.70**	**1.19**
CAGR 2005-06 to 2013-14(%)	**6.77**	**3.44**	**3.73**	**4.33**	**3.77**

Source : Ministry of Coal, .Office of Coal Controller

Table 3.4 : Trends in Domestic Production of Petroleum Products In India

(in Million Tons)

Year	Light distillates			Middle distillates			
	Liquefied Petroleum Gas @	Motor Gasoline	Naphtha$	Kerosene	Aviation Turbine Fuel	High Speed Diesel Oil	Light Diesel Oil
1	2	3	4	5	6	7	8
2005-06	7.71	10.50	16.09	9.24	6.20	47.59	0.92
2006-07	8.41	12.54	18.14	8.63	7.81	53.48	0.80
2007-08	8.79	14.17	17.96	7.97	9.11	58.38	0.67
2008-09	9.16	16.02	16.45	8.39	8.07	62.91	0.61
2009-10	10.33	22.54	18.79	8.70	9.30	73.30	0.47
2010-11	9.71	26.14	19.20	7.81	9.59	78.06	0.59
2011-12	9.55	27.19	18.83	7.86	10.06	82.88	0.50
2012-13	9.82	30.12	17.35	7.87	10.08	91.08	0.40
2013-14(p)	10.03	30.28	18.51	7.42	11.22	93.76	0.42
Growth rate of 2013-14 over 2012-13(%)	**2.09**	**0.54**	**6.66**	**-5.69**	**11.34**	**2.94**	**5.11**
CAGR 2005-06 to 2013-14(%)	**2.97**	**12.49**	**1.57**	**-2.41**	**6.82**	**7.83**	**-8.38**

(p) : Provisional
$: includes other Light distillates from 2005-06
@: Excludes LPG production from natural gas.
*: Estimated from calendar year figures.
Source : Ministry of Petroleum & Natural Gas.

Table 3.4 (Contd.): Trends in Domestic Production of Petroleum Products in India

(in Million Tons)

Year	Heavy ends				Others*	Total
	Fuel oil	Lubricants	Petroleum Coke	Bitumen		
1	9	10	11	12	13	14= 2 to 13
2005-06	14.31	0.68	3.18	3.58	4.42	124.41
2006-07	15.70	0.83	3.78	3.89	5.75	139.75
2007-08	15.81	0.88	4.13	4.51	7.10	149.47
2008-09	17.68	0.87	4.24	4.71	6.03	155.15
2009-10	18.35	0.95	3.71	4.89	13.28	184.61
2010-11	20.52	0.88	2.71	4.48	15.14	194.82
2011-12	18.43	1.03	7.84	4.61	14.43	203.20
2012-13	15.05	0.90	10.94	4.67	19.45	217.74
2013-14(p)	13.41	0.94	12.07	4.79	17.93	220.78
Growth rate of 2013-14 over 2012-13(%)	**-10.92**	**4.89**	**10.30**	**2.57**	**-7.80**	**1.40**
CAGR 2005-06 to 2013-14(%)	**-0.72**	**3.71**	**15.97**	**3.30**	**16.84**	**6.58**

* : Includes those of light & middle distillates and heavy ends.
Source : Ministry of Petroleum & Natural Gas.

Table 3.5 :Trends in Gross and Net Production of Natural Gas in India

(in Billion Cubic Metres)

Year	Gross Production	Re-injected	Flared	Net Production
1	2	3	4	5=2-4
2005-06	32.20	4.47	0.88	31.33
2006-07	31.75	4.37	0.96	30.79
2007-08	32.42	4.50	0.94	31.48
2008-09	32.85	4.68	1.09	31.75
2009-10	47.50	5.66	0.98	46.52
2010-11	52.22	5.21	0.97	51.25
2011-2012	47.56	5.31	1.08	46.48
2012-13	40.68	5.43	0.90	39.78
2013-14(p)	35.41	5.65	0.77	34.64
Growth rate of 2013-14 over 2012-13(%)	**-12.95**	**4.08**	**-14.44**	**-12.92**
CAGR 2005-06 to 2013-14(%)	**1.06**	**2.65**	**-1.44**	**1.12**

(P) : Provisional
Source : Ministry of Petroleum & Natural Gas.

Table 3.6 :Trends in Gross Generation of Electricity in Utilities and Non-utilities in India

(Giga Watt hour) = (10^6 x Kilo Watt hour)

Year	Utilities				Non-Utilities	Grand Total
	Thermal *	Hydro	Nuclear	Total		
1	2	3	4	5 = 2 to 4	6	7=5+6
2005-06	505,001	101,494	17,324	623,819	73,640	697,459
2006-07	538,350	113,502	18,802	670,654	81,800	752,454
2007-08	585,282	120,387	16,957	722,626	90,477	813,103
2008-09	617,832	113,081	14,713	745,626	95,905	841,531
2009-10	670,965	106,680	18,636	796,281	109,693	905,974
2010-11	704,323	114,257	26,266	844,846	114,224	959,070
2011-12	708,427	130,511	32,287	922,451	128,172	1,050,623
2012-13	817,225	113,720	32,866	963,811	148,000	1,111,811
2013-14(p)	853,683	134,731	34,200	1,022,614	156,642	1,179,256
Growth rate of 2013-14 over 2012-13(%)	**4.46**	**18.48**	**4.06**	**6.10**	**5.84**	**6.07**
CAGR 2005-06 to 2013-14(%)	**6.01**	**3.20**	**7.85**	**5.65**	**8.75**	**6.01**

* From 1995-96 onwards, Thermal includes Renewable Energy Sources also.

Source : Central Electricity Authority.

CHAPTER 4: FOREIGN TRADE IN ENERGY PRODUCTS

4.1 Import and export of coal

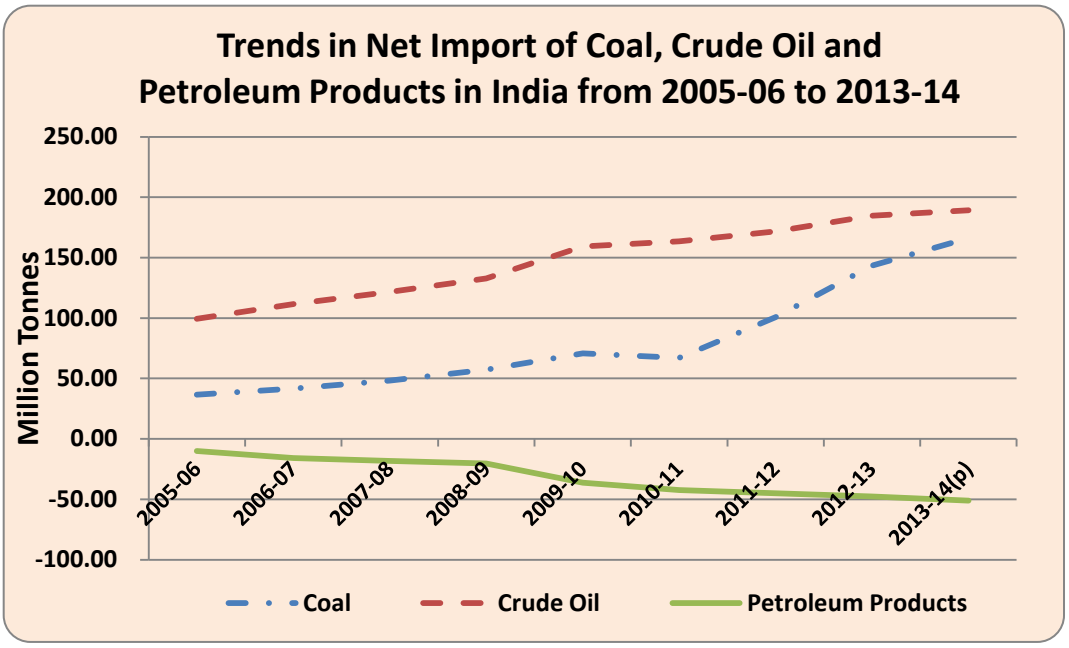
- The average quality of the Indian coal is not very high and this necessitates the import of high quality coal to meet the requirements of steel plants. There has been an increasing trend in the import of coal.

- Net Import of coal has steadily increased from 36.60 MTs during 2005-06 to 166.29 MTs during 2013-14(Table 4.1). During the said period, the quantum of coal exported increased from 1.99 MTs during 2005-06 to 2.15 MTs during 2013-14.

- There is growth rate of 15.54% of gross import and 16.01% in net imports of coal in 2013-14 over the previous year. However there was decrease of 11.87% in export of coal during the same period.

4.2 Crude oil and petroleum products

- India is highly dependent on import of crude oil. Net imports of crude oil have increased from 99.41MTs during 2005-06 to 189.24 MTs during 2013-14.



- There has been an increase of 2.41% in the net imports of crude oil during 2013-14 over 2012-13, as the net import increased from 184.80 MTs to 189.24 MTs (Table 4.1).

- Although more than 70% of its crude oil requirements and part of the petroleum products is met from imports, India has developed sufficient processing capacity over the years to produce different petroleum products so as to become a net exporter of petroleum products.

- The export of petroleum product has increased from 23.46 MT during 2005-06 to 67.86 MTs during 2013-14. During 2013-14 exports recorded an increase of 7.02% from previous year (Table 4.1).

- The import of petroleum products has increased from 13.44 MT in 2005-06 to 16.72 MT during 2013-14, although there are some fluctuations in the trend (Table 4.1). There is an increase of growth rate of 6% in import of petroleum products over the previous year.

Table 4.1: Trends of Foreign Trade in Coal, Crude Oil and Petroleum Products in India

(in Million Tons)

Year	Coal			Crude Oil			Petroleum Products		
	Gross Imports	Exports	Net Imports	Gross Imports	Exports	Net Imports	Gross Imports	Exports	Net Imports
1	2	3	4=(2)-(3)	5	6	7=(5)-(6)	8	9	10=(8)-(9)
2005-06	38.59	1.99	36.60	99.41	0.00	99.41	13.44	23.46	-10.02
2006-07	43.08	1.55	41.53	111.50	0.00	111.50	17.76	33.62	-15.86
2007-08	49.79	1.63	48.17	121.67	0.00	121.67	22.46	40.78	-18.32
2008-09	59.00	1.66	57.35	132.78	0.00	132.78	18.52	38.90	-20.38
2009-10	73.26	2.45	70.80	159.26	0.00	159.26	14.66	50.97	-36.31
2010-11	68.92	1.88	67.04	163.60	0.00	163.60	16.82	59.08	-42.26
2011-12	102.85	2.02	100.83	171.73	0.00	171.73	15.85	60.84	-44.99
2012-13	145.79	2.44	143.34	184.80	0.00	184.80	15.77	63.41	-47.63
2013-14(p)	168.44	2.15	166.29	189.24	0.00	189.24	16.72	67.86	-51.14
Growth rate of 2013-14 over 2012-13(%)	**15.54**	**-11.87**	**16.01**	**2.41**		**2.41**	**6.00**	**7.02**	**7.36**

(p): Provisional.
Sources:
1. Office of Coal Controller, Ministry of Coal
2. Ministry of Petroleum & Natural Gas.

CHAPTER 5: AVAILABILITY

5.1 Availability of Coal and Lignite

- The total availability of raw coal in India in 2013-14 stood at 739.92 MTs and that of lignite at 43.90 (Table 5.1).

- The availability of coal in the year 2013-14 increased by 4.11% compared to 2012-13. The availability of lignite decreased by 4.59% during the same period.

- The availability of coal has increased at a CAGR of about 6.13% during the period from 2005-06 to 2013-14. This increased availability might be attributed to the secular increase in the coal production (407.04 MTs during 2005-06 to 565.77 MTs during 2013-14) supplemented by imports (Table 5.2).

- The availability of lignite has increased at a CAGR of about 4.23% during the period from 2005-06 to 2013-14(Table 5.1).

5.2 Availability of Natural Gas

- The production of natural gas has steadily increased from a mere 31.33 BCMs during 2005-06 to 34.64 BCMs during 2013-14, registering a CAGR of 1.12%. Most of this increase in the indigenous production is due to discovery of new reserves.(Table 5.1)

5.3 Availability of Electricity

- Since thermal electricity is not a primary source of energy, being produced either from coal or natural gas in India, electricity availability is considered only for that electricity which is generated from Hydro and Nuclear sources.

- Without taking into account the transmission and distribution losses, the total availability is equal to the total generation, and this figure increased from 592194 GWh during 2005-06 to 11,79,256 GWh during 2013-14, registering a CAGR of 7.95% over the period (Table 5.1).

5.4 Availability of Crude Oil and Petroleum Products

- The availability of crude oil in the country increased from 131.60 MTs during 2005-06 to 227.03 MTs during 2013-14 (Table 5.3).

- During this period crude oil production increased from 32.19 MTs to 37.79 MTs and the net import increased from 99.41 MTs to 189.24 MTs during period from 2005-06 to 2013-14. There was 1.96% increase in availability of crude oil during 2013-14 over 2012-13.

Table 5.1 :Trends in Availability of Primary Sources of Conventional Energy in India

Year	Coal	Lignite	Crude Petroleum	Natural Gas	Electricity
	(Million Tonnes)	(Million Tonnes)	(Million Tonnes)	(Billion Cubic Metres)	(GWh)
1	2	3	4	5	6
2005-06	433.27	30.24	130.11	31.33	592,194
2006-07	462.35	30.81	146.55	30.79	639,008
2007-08	502.82	34.65	156.10	31.48	689,780
2008-09	549.57	31.85	160.77	31.75	712,540
2009-10	585.30	34.41	192.77	46.52	761,934
2010-11	589.87	37.69	196.99	51.25	809,455
2011-12	638.84	41.89	204.12	46.48	811,506
2012-13	710.74	46.01	219.21	39.78	908,574
2013-14(p)	739.92	43.90	222.50	34.64	1,179,256
Growth rate of 2013-14 over 2012-13(%)	**4.11**	**-4.58**	**1.50**	**-12.91**	**29.79**
CAGR 2005-06 to 2013-14(%)	**6.13**	**4.23**	**6.14**	**1.12**	**7.95**

(p) - Provisional

GWh = Giga Watt hour = 10^6 x Kilo Watt hour

Sources:
1. Office of Coal Controller, Ministry of Coal
2. Ministry of Petroleum & Natural Gas.
3. Central Electricity Authority.

Table 5.2 : Trends in Availability of Raw Coal and Lignite for Consumption in India

(in Million Tons)

Year	COAL					LIGNITE		
	Production (Coking + Non-coking)	Changes Vendible Stock (Closing - Opening)	Imports	Exports	Availability for Consumption	Production	Changes Vendible Stock (Closing - Opening)	Availability for Consumption
1	2	3	4	5	6=2-3+4-5	7	8	9=7-8
2005-06	407.04	10.37	38.59	1.99	433.27	30.23	-0.01	30.24
2006-07	430.83	10.01	43.08	1.55	462.35	31.29	0.48	30.81
2007-08	457.08	2.43	49.79	1.63	502.82	33.98	-0.67	34.65
2008-09	492.76	0.54	59.00	1.66	549.57	32.42	0.58	31.85
2009-10	532.04	17.55	73.26	2.45	585.30	34.07	-0.34	34.41
2010-11	532.69	7.33	68.92	4.41	589.87	37.73	0.05	37.69
2011-12	539.95	1.85	102.85	2.02	638.94	42.33	0.44	41.89
2012-13	556.40	-10.99	145.79	2.44	710.74	46.45	0.44	46.01
2013-14(p)	565.77	-7.87	168.44	2.15	739.92	44.27	0.37	43.90
Growth rate of 2013-14 over 2012-13(%)	**1.68**	**-28.39**	**15.54**	**-11.87**	**4.11**	**-4.70**	**-16.74**	**-4.58**

Note: Figures in brackets are in negative

Source : Office of the Coal Controller, Ministry of Coal

Table 5.3 : Trends in Availability of Crude Oil, Petroleum Products and Natural Gas in India

Year	Crude Oil*			Petroleum Products*			Natural Gas**		
	Production	Net Imports	Gross Availability	Production @	Net Imports	Gross Availability	Production	Net Imports	Gross Availability
1	**2**	**3**	**4=2+3**	**5**	**6**	**7=5+6**	**8**	**9**	**10-8+9**
2005-06	32.19	99.41	131.60	124.41	-10.02	114.39	31.33	5.06	36.39
2006-07	33.99	111.50	145.49	139.75	-15.96	123.78	30.79	6.81	37.60
2007-08	34.12	121.67	155.79	149.47	-18.38	131.10	31.48	8.32	39.80
2008-09	33.51	132.78	166.28	155.15	-20.38	134.77	31.75	8.06	39.81
2009-10	33.69	159.26	192.95	184.61	-36.31	148.30	46.52	9.15	55.67
2010-11	37.68	163.60	201.28	194.82	-42.26	152.56	51.25	9.93	61.18
2011-12	38.09	171.73	209.82	203.20	-44.99	158.21	46.48	13.21	59.69
2012-13	37.86	184.80	222.66	217.74	-47.63	170.10	39.78	13.14	52.92
2013-14(p)	37.79	189.24	227.03	220.76	-51.15	169.61	34.64	13.03	47.67
Growth rate of 2013-14 over 2012-13(%)	**-0.19**	**2.41**	**1.96**	**1.39**	**7.38**	**-0.29**	**-12.92**	**-0.79**	**-9.91**

*: Million Tons

**: Billion Cubic Meter

.@ Excludes LPG Production from Natural Gas

Source : Ministry of Petroleum & Natural Gas.

CHAPTER 6: CONSUMPTION OF ENERGY RESOURCES

6.1 Consumption of Coal and Lignite

- The estimated total consumption of raw coal by industry has increased from 407.04 MTs during 2005-06 to 571.89 MTs during 2013-14 with a CAGR of 3.85% (Table 6.1). The annual growth rate from 2012-13 to 2013-14 is 0.76%.

- Consumption of Lignite increased from 30.23 MTs in 2005-06 to 43.90 MTs in 2013-14 registering a compound growth of 4.23%. Consumption of Lignite is highest in Electricity Generation sector, accounting for about 83.09% (Table 6.5) of the total lignite consumption.

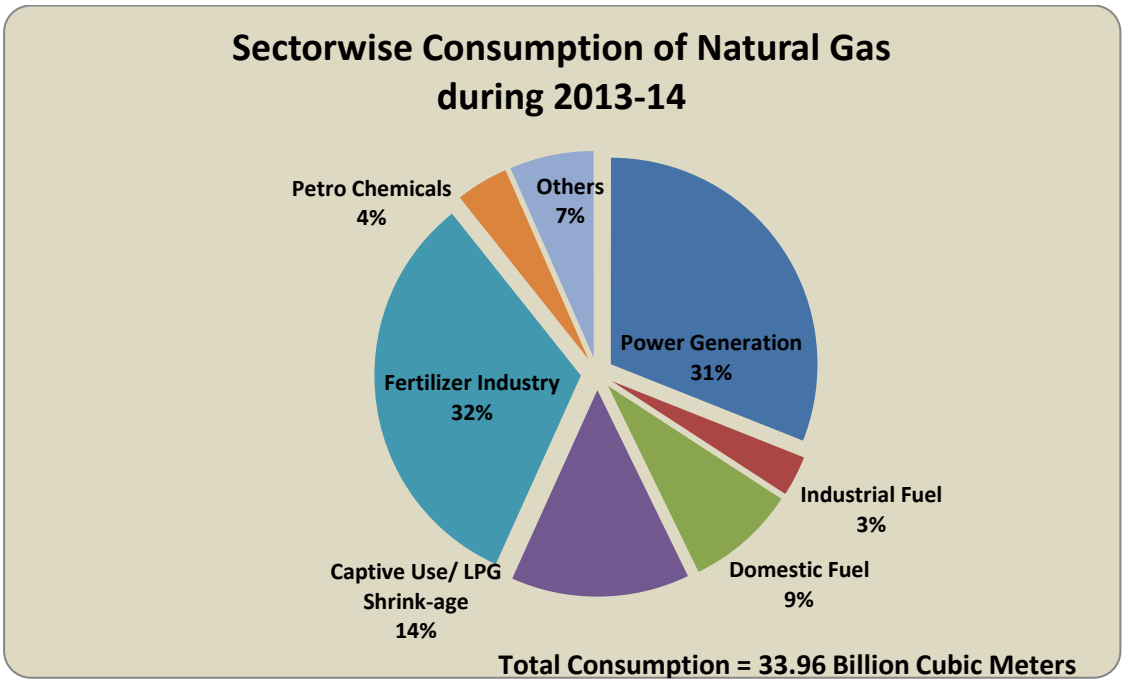
- Electricity generation is the biggest consumer of coal, followed by steel industries. Industry-wise estimates of consumption of coal(Table 6.4) shows that during 2013-14 electricity generating units consumed 427.23 MTs of coal, followed by steel & washery industries (23.13 MTs), cement industries(11.96 MTs) and paper industries (1.67 MTs).

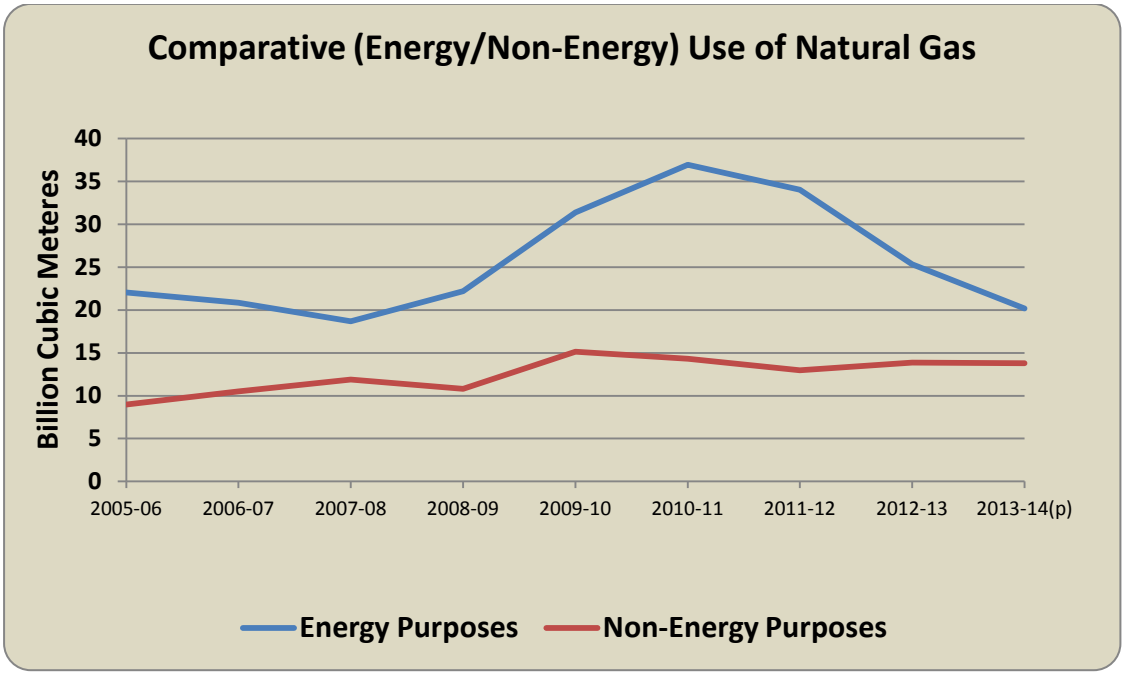
6.2 Consumption of Crude Oil and Natural Gas

- The estimated consumption of crude oil has a steady increase, from 130.11 MMTs during 2005-06 to 222.50 MMTs during 2013-14 with CAGR of 6.14%. It increased from 219.21 MMTs in 2012-13 to 222.50 MMTs in 2013-14 (Table 6.1).

- The maximum use of Natural Gas is in fertilizers industry (32.56%) followed by power generation (31.02%) and 8.60% natural gas was used for domestic fuel (Table 6.8).

- Industry wise off-take of natural gas shows that natural gas has been used both for Energy (59.42%) and Non-energy(40.58%) purposes (Table 6.8).

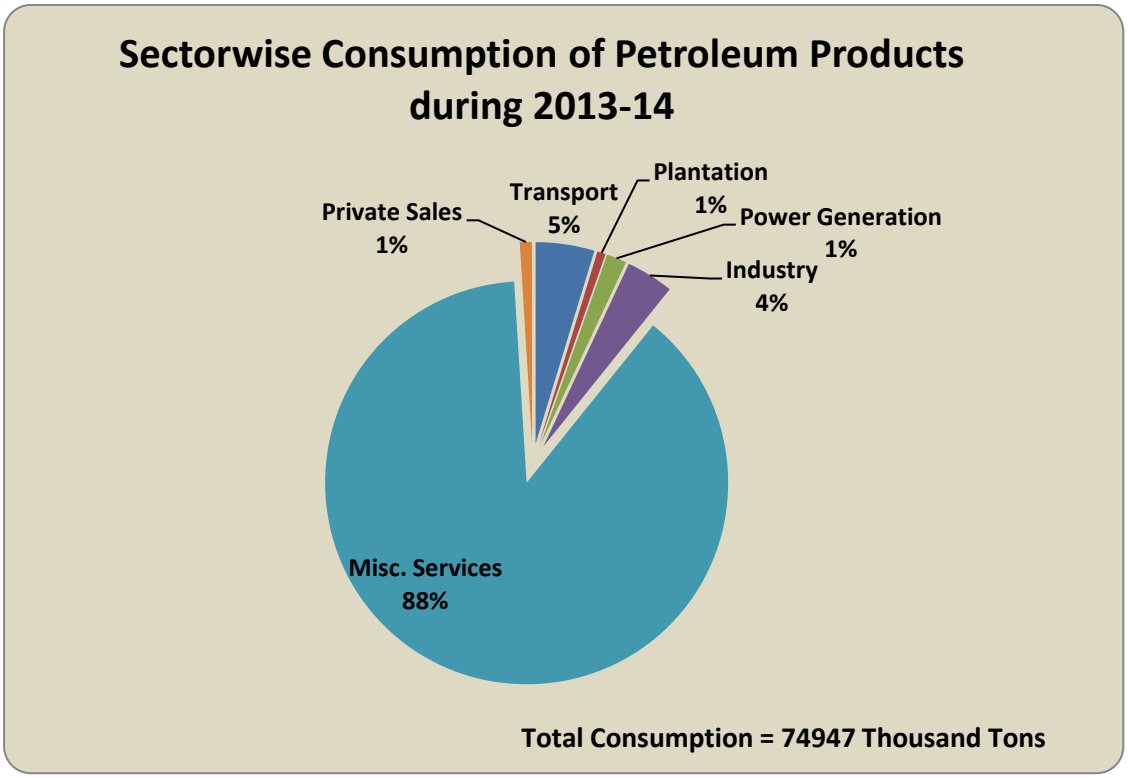




6.3 Consumption of Petroleum Products

- High speed diesel oil accounted for 38.83% of total consumption of all types of petroleum products in 2013-14. This was followed by Refinery (10.15%), Petrol (9.73%), LPG (9.28%) and Naphtha (6.50%). Consumption of Light Diesel oil continuously decreased from 2005-06(0.88 MTs) to 2013-14 (0.39 MTs) (Tables 6.6 & 6.7).

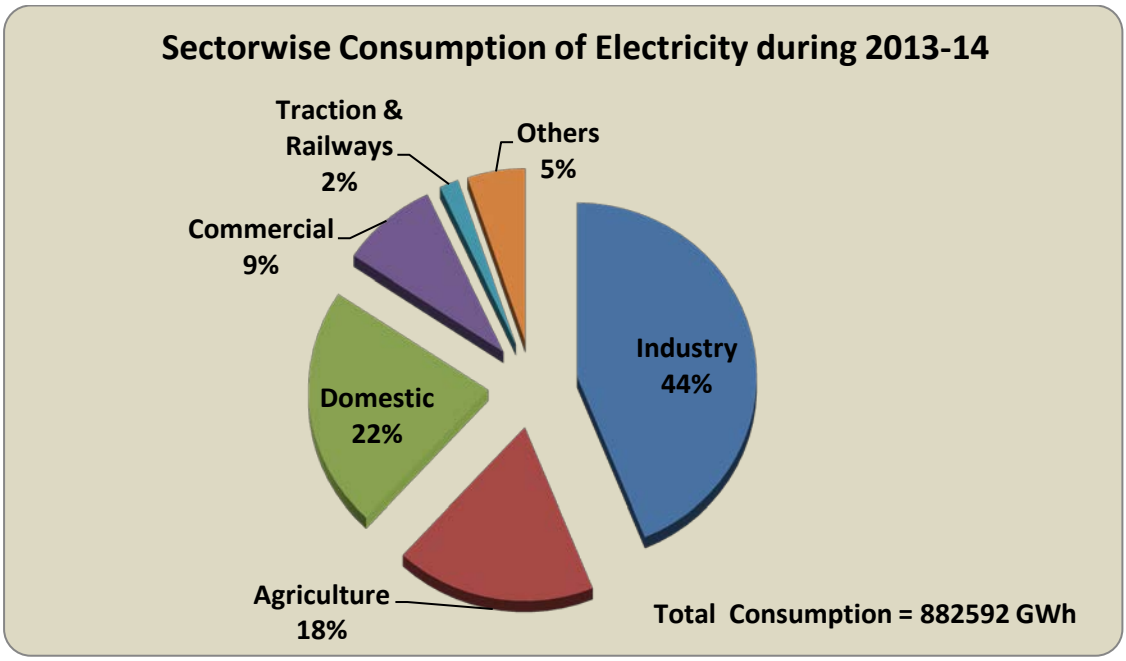
- Sector-wise consumption of different petroleum products reveals that miscellaneous service sector accounts for the lion's share (88.25%) of the total consumption of petroleum products (Table 6.7).



6.4 Consumption of Electricity

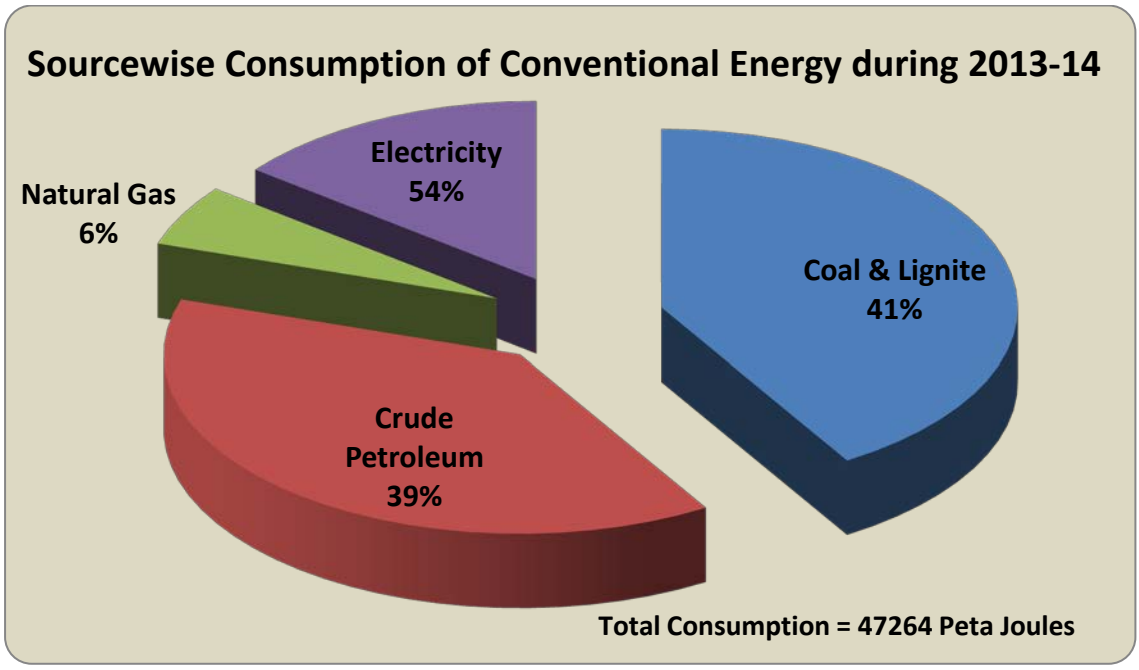
- The estimated electricity consumption increased from 4,11,887 GWh during 2005-06 to 882,592GWh during 2013-14,showing a CAGR of 8.84%(Table 6.9). The increase in electricity consumption is 7.07% from 2012-13 (824,301GWh) to 2013-14 (882,592 GWh).

- Of the total consumption of electricity in 2013-14, industry sector accounted for the largest share (43.83%), followed by domestic (22.46%), agriculture (18.03%) and commercial sectors (8.72%) (Table 6.9).



- The electricity consumption in Industry sector and commercial sector has increased at a much faster pace compared to other sectors during 2005-06 to 2013-14 with CAGRs of 10.97% and 8.82% respectively (Table 6.9).

- Loss of electricity due to transmission has decreased from 30.42% during 2005-06 to 23.04% during 2013-14 (Table 6.10).

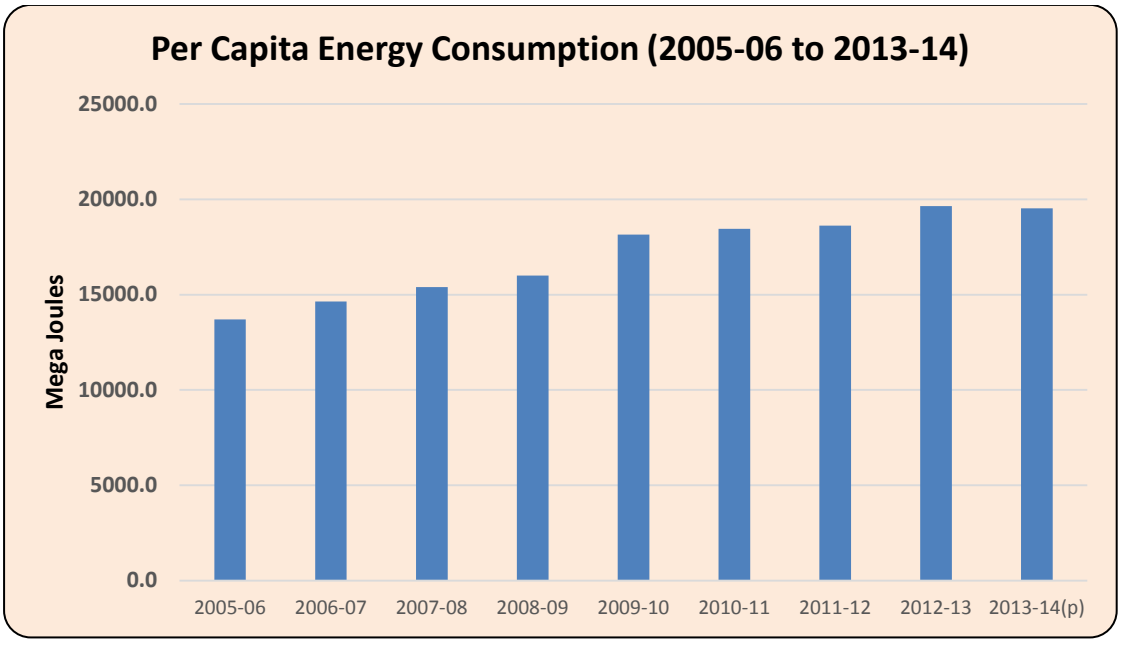


6.5 Per-Capita Energy Consumption & Energy Intensity

- Per-capita Energy Consumption (PEC) during a year is computed as the ratio of the estimate of total energy consumption during the year to the estimated mid-year population of that year. Energy Intensity is defined as the amount of energy consumed for generating one unit of Gross Domestic Product (at constant prices). PEC and Energy intensity are the most used policy indicators, both at national and international levels. In the absence of data on consumption of non-conventional energy from various sources, particularly in rural areas in the developing countries, including India, these two indicators are generally computed on the basis of consumption of conventional energy. The consumption of energy in Peta joules was in the form of Coal and Lignite which accounted for about 41.29% of the total consumption during 2013-14. Crude Petroleum was second (38.70%), while Electricity (14.47%) was third.(Table 6.2)

- The total consumption of energy from conventional sources increased from 23,903 Peta joules during 2012-13 to 24,071 Peta joules during 2013-14, showing an increase of 0.70% (Table 6.2).

- Per-capita Energy Consumption (PEC) (the ratio of the estimate of total energy consumption during the year to the estimated mid-year population of that year) increased from 13694.83 Mega Joules in 2005-06 to 19522.15 Mega Joules in 2013-14, a CAGR of 4.53% (Table 6.3). The annual decrease in PEC for 2013-14 over 2012-13 is 0.60%.



- The Energy Intensity (amount of energy consumed for generating one unit of Gross Domestic Product) (at 2004-05 prices) increased from 0.4656 Mega Joules in 2005-06 to 0.4192 Mega Joules in 2013-14 (Table 6.3).

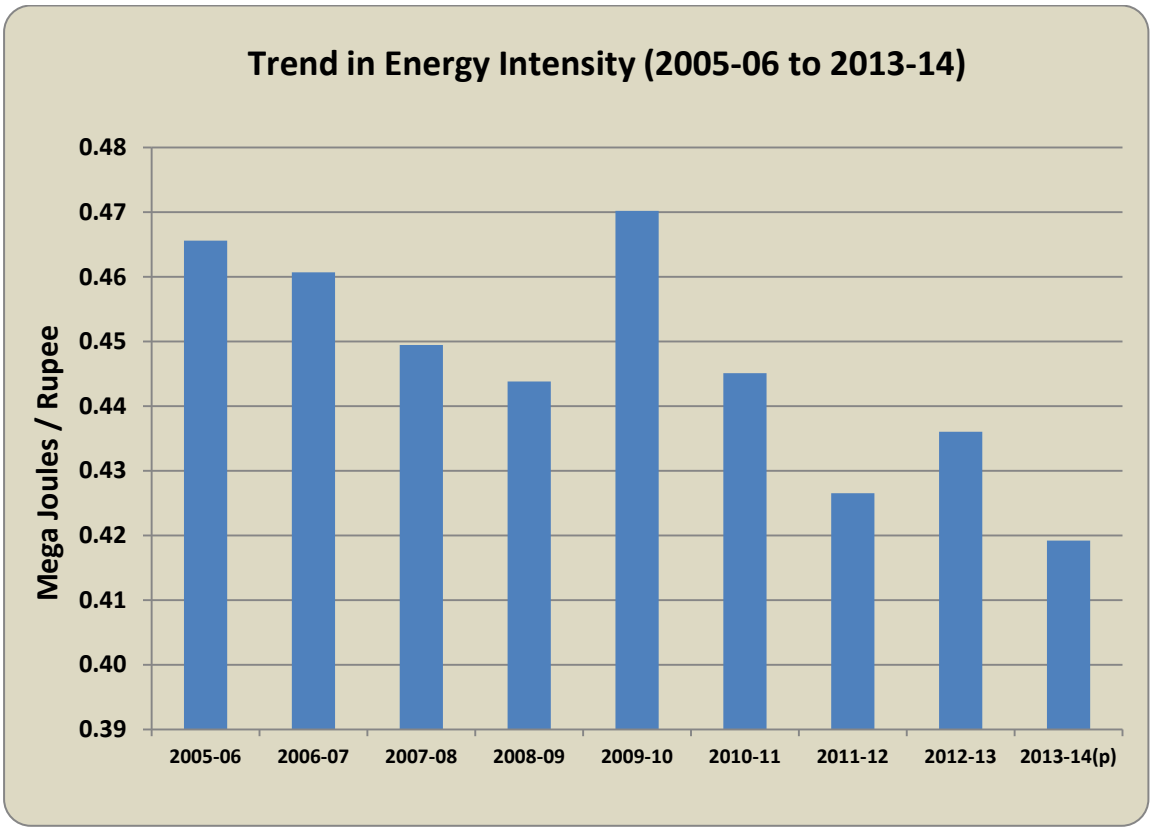

Trend in Energy Intensity (2005-06 to 2013-14)
Mega Joules / Rupee
0.48
0.47
0.46
0.45
0.44
0.43
0.42
0.41
0.40
0.39
2005-06
2006-07
2007-08
2008-09
2009-10
2010-11
2011-12
2012-13
2013-14(p)

Table 6.1: Trends in Consumption of Conventional Sources of Energy in India

Year	Coal #	Lignite	Crude Oil**	Natural Gas *** (Billion Cubic Metres)	Electricity* (GWh)
	(Million Tons)		(MMT)		
1	2	3	4	5	6
2005-06	407.04	30.23	130.11	31.33	411,887
2006-07	430.83	31.29	146.55	30.79	455,748
2007-08	457.08	33.98	156.10	31.48	510,899
2008-09	492.76	32.42	160.77	31.75	562,888
2009-10	532.04	34.07	192.77	46.52	620,251
2010-11	532.69	37.73	196.99	51.25	684,324
2011-12	535.88	41.88	204.12	46.48	755,847
2012-13	567.60	46.31	219.21	39.78	912,057
2013-14(p)	571.89	43.90	222.50	34.64	967,150
Growth rate of 2013-14 over 2012-13(%)	**0.76**	**-5.22**	**1.50**	**-12.93**	**6.04**
CAGR 2005-06 to 2013-14(%)	**3.85**	**4.23**	**6.14**	**1.12**	**9.95**

(p): Provisional

GWh = Giga Watt hour = 10^6 x Kilo Watt hour
*Includes thermal, hydro & nuclear electricity from utilities.
** Crude oil in terms of refinery crude throughput.
# Does not include Lignite and imports.
Sources:
1. Office of Coal Controller, Ministry of Coal
2. Ministry of Petroleum & Natural Gas.
3. Central Electricity Authority.

Table 6.2 : Trends in Consumption of Conventional Energy in India (Peta Joules)

(in Peta Joules)

Year	Coal & Lignite	Crude Petroleum **	Natural Gas	Electricity *	Total
1	**2**	**3**	**4**	**5**	**6= 2 to 5**
2005-06	7,009	5,448	1,207	1,483	15,146
2006-07	7,459	6,136	1,186	1,641	16,421
2007-08	7,926	6,536	1,213	1,839	17,514
2008-09	8,476	6,732	1,223	2,026	18,457
2009-10	9,137	8,071	1,792	2,233	21,233
2010-11	9,207	8,248	1,974	2,464	21,892
2011-12	9,325	8,547	1,790	2,721	22,383
2012-13	9,909	9,178	1,532	3,283	23,903
2013-14(p)	9,939	9,316	1,334	3,482	24,071
Growth rate of 2013-14 over 2012-13(%)	**0.31**	**1.50**	**-12.93**	**6.04**	**0.70**
CAGR 2005-06 to 2013-14(%)	**3.96**	**6.14**	**1.12**	**9.95**	**5.28**

* Includes thermal, hydro & nuclear electricity from utilities.

** Crude oil in terms of refinery crude throughput.

Sources:
1. Office of Coal Controller, Ministry of Coal
2. Ministry of Petroleum & Natural Gas.
3. Central Electricity Authority.

Table 6.3 : Trends in Per-Capita Energy Consumption (PEC) and Energy intensity in India

Year	Energy Consumption (in Peta Joules)	Population # (in Million)	GDP # (Rs. Crore) (2004-05 prices)	Per Capita Energy Consumption (in Mega Joules)	Energy Intensity (Mega Joules per rupee)
2005-06	15146	1106	3253073	13694.83	0.4656
2006-07	16421	1122	3564364	14635.85	0.4607
2007-08	17514	1138	3896636	15389.79	0.4495
2008-09	18457	1154	4158676	15994.06	0.4438
2009-10	21233	1170	4516071	18147.99	0.4702
2010-11	21892	1186	4918533	18458.90	0.4451
2011-12	22383	1202	5247530	18621.62	0.4265
2012-13	23903	1217	5482111	19640.72	0.4360
2013-14(p)	24071	1233	5741791	19522.15	0.4192
Growth rate of 2013-14 over 2012-13(%)	**0.70**	**1.31**	**4.74**	**-0.60**	**-3.85**
CAGR 2005-06 to 2013-14(%)	**5.96**	**1.37**	**7.36**	**4.53**	**-1.30**

* Estimated value based on source-wise availability of Coal, Crude Petroleum, Natural Gas and Electricity(Hydro & Nuclear) as given in table 5.1 and by applying fuel specific conversion factors as given in annex II

Population and GDP figures from M/o Statistics & P.I. Website

Energy Intensity=Amount of energy consumed for producing one unit of Gross Domestic Product.

Table 6.4 : Trends in Industry-wise Consumption of Raw Coal in India

(in Million Tons)

Year	Electricity	Steel & Washery	Cement	Paper	Textile	Others *	Total
1	2	3	4	5	6	7	8=2 to 7
2005-06	306.04	19.66	14.97	2.77	0.29	51.85	395.59
2006-07	321.91	17.30	14.71	2.50	0.30	63.08	419.80
2007-08	350.58	16.99	15.27	2.64	0.37	67.72	453.57
2008-09	377.27	16.58	13.12	2.16	2.53	77.52	489.17
2009-10	390.58	16.45	14.66	2.34	0.27	89.50	513.79
2010-11	395.84	17.26	15.08	2.43	0.28	92.58	523.47
2011-12	410.37	16.05	13.18	2.03	0.26	94.00	535.88
2012-13	446.76	16.15	13.11	2.12	0.30	89.16	567.60
2013-14(p)	427.23	23.13	11.96	1.67	0.36	107.54	571.89
Distribution (%)	**74.70**	**4.04**	**2.09**	**0.29**	**0.06**	**18.80**	**100.00**
Growth rate of 2013-14 over 2012-13(%)	**-4.37**	**43.26**	**-8.77**	**-21.25**	**18.42**	**20.62**	**0.76**
CAGR 2005-06 to 2013-14(%)	**3.78**	**1.82**	**-2.46**	**-5.49**	**2.51**	**8.44**	**4.18**

* Includes Sponge Iron, colliery consmn.,jute, bricks, coal for soft coke, colliery, fertilisers & other industries consumption.
@ From 1996-97 and onwards Cotton includes
'Rayon' also.
Source : Office of the Coal Controller,
Ministry of Coal

Table 6.5 : Trends in Industry-wise Consumption of Lignite in India

(in Million Tons)

Year	Electricity	Steel & Washery	Cement	Paper	Textile	Others *	Total
1	**2**	**3**	**4**	**5**	**6**	**7**	**8=2 to 7**
2005-06	23.36	-	0.79	0.23	1.11	4.86	30.34
2006-07	23.92	-	0.77	0.22	0.84	5.06	30.80
2007-08	26.76	-	0.96	0.35	0.77	5.83	34.66
2008-09	25.71	-	0.34	0.36	-	6.01	32.42
2009-10	28.14	-	0.38	0.82	-	4.09	33.43
2010-11	29.90	-	0.36	0.84	1.18	6.25	38.53
2011-12	32.06	0.03	1.01	0.63	3.67	4.47	41.88
2012-13	37.20	0.05	1.10	0.69	3.47	3.81	46.31
2013-14(p)	36.48	0.03	1.40	0.66	2.83	2.51	43.90
Distribution (%)	**83.09**	**0.06**	**3.18**	**1.51**	**6.44**	**5.71**	**100.00**
Growth rate of 2013-14 over 2012-13(%)	**-1.94**	**-46.94**	**27.35**	**-4.61**	**-18.43**	**-34.13**	**-5.22**
CAGR 2005-06 to 2013-14(%)	**5.08**		**6.54**	**12.74**	**10.99**	**-7.10**	**4.19**

* Includes Sponge Iron, colliery consumption, jute, bricks, coal for soft coke, colliery, chemicals, fertilizers & other industries consumption. And from 2008-09 onwards cotton is included in others.

Source : Office of the Coal Controller, Ministry of Coal

Table 6.6 : Trends in Consumption of Petroleum Products in India

(in Million Tons)

Year	Light Distillates			Middle Distillates			
	LPG	**Petrol**	**Naphtha**	**Kerosene**	**ATF**	**HSDO**	**LDO**
1	2	3	4	5	6	7	8
2005-06	10.46	8.65	12.19	9.54	3.30	40.19	0.88
2006-07	10.85	9.29	13.89	9.51	3.98	42.90	0.72
2007-08	12.17	10.33	13.29	9.37	4.54	47.67	0.67
2008-09	12.34	11.26	13.91	9.30	4.42	51.71	0.55
2009-10	13.14	12.82	10.13	9.30	4.63	56.24	0.46
2010-11	14.33	14.19	10.68	8.93	5.08	60.07	0.46
2011-12	15.35	14.99	11.22	8.23	5.54	64.75	0.42
2012-13	15.60	15.74	12.29	7.50	5.27	69.08	0.40
2013-14(p)	16.34	17.13	11.45	7.17	5.51	68.37	0.39
Growth rate of 2013-14 over 2012-13(%)	**4.71**	**8.79**	**-6.79**	**-4.49**	**4.44**	**-1.03**	**-3.26**
CAGR 2005-06 to 2013-14(%)	**5.08**	**7.89**	**-0.69**	**-3.13**	**5.86**	**6.08**	**-8.78**

(p) : Provisional

Contd…

Table 6.6 (Contd.) : Trends in Consumption of Petroleum Products in India

(in Million Tons)

Year	Heavy Ends				Refinery Fuel	Others*	Total
	Fuel Oils	Lubricants	Bitumen	Petroleum Coke			
	9	10	11	12	13	14	15=2 to 14
2005-06	12.83	2.08	3.51	4.93	9.14	4.66	122.36
2006-07	12.62	1.90	3.83	5.44	10.92	5.83	131.67
2007-08	12.72	2.29	4.51	5.95	11.75	5.45	140.70
2008-09	12.59	2.00	4.75	6.17	11.91	4.60	145.51
2009-10	11.63	2.54	4.93	6.59	14.58	5.40	152.39
2010-11	10.79	2.43	4.54	4.98	16.38	4.57	157.42
2011-12	9.31	2.63	4.64	6.14	17.29	4.92	165.43
2012-13	7.66	3.20	4.68	10.14	18.35	5.51	175.40
2013-14(p)	6.19	2.89	4.94	11.65	17.87	6.18	176.06
Growth rate of 2013-14 over 2012-13(%)	**-19.11**	**-9.54**	**5.60**	**14.96**	**-2.61**	**12.22**	**0.38**
CAGR 2005-06 to 2013-14(%)	**-7.77**	**3.72**	**3.87**	**10.03**	**7.73**	**3.19**	**4.13**

(p) : Provisional

* : Includes those of light & middle distillates and heavy ends and sales through private parties.

Source: Ministry of Petroleum & Natural Gas.

Table 6.7 : Sector-wise (end use) Consumption of Selected Petroleum Products in India

(Thousand Tons)

Petroleum Product	Year	Transport	Plantation	Power Generation	Industry	Misc. Services	Private Sales	Total
1	2	3	4	5	6	7	8	9=3 to 8
High Speed Diesel Oil	2005-06	4,264	431	498	964	30,151	3,884	40,192
	2006-07	4,316	499	433	1,234	34,133	2,279	42,894
	2007-08	5,003	504	313	1,241	40,577	31	47,669
	2008-09	5,293	490	336	1,310	44,220	62	51,711
	2009-10	5,365	594	303	1,502	48,385	94	56,243
	2010-11	5,417	616	166	1,440	52,240	193	60,072
	2011-12	5,529	684	168	1,649	56,651	70	64,751
	2012-13	5,160	617	214	1,628	61,415	47	69,081
	2013-14(p)	3,203	429	204	873	63,577	81	68,367
Growth rate of 2013-14 over 2012-13(%)		**-37.93**	**-30.47**	**-4.67**	**-46.38**	**3.52**	**72.34**	**-1.03**
CAGR 2005-06 to 2013-14(%)		**-3.13**	**-0.05**	**-9.44**	**-1.10**	**8.64**	**-34.95**	**6.08**

(Thousand Tons)

Petroleum Product	Year	Transport	Plantation	Power Generation	Industry	Misc. Services	Private Sales	Total
1	2	3	4	5	6	7	8	9=3 to 8
Light Diesel Oil	2005-06	52	28	65	325	362	49	881
	2006-07	53	13	67	244	343	0	720
	2007-08	36	3	77	200	351	0	667
	2008-09	15	4	175	171	187	0	552
	2009-10	6	3	152	143	153	0	457
	2010-11	5	2	137	127	184	0	455
	2011-12	3	1	127	102	183	0	416
	2012-13	3	1	142	74	178	0	399
	2013-14(p)	4	1	132	64	186	0	387
Growth rate of 2013-14 over 2012-13(%)		**29**	**-23**	**-7**	**-14**	**5**		**-3**
CAGR 2005-06 to 2013-14(%)		**-25**	**-31**	**8**	**-17**	**-7**	**-100**	**-9**

Contd…

Table 6.7 (Contd.) : Sector-wise (End Use) Consumption of Selected Petroleum Products in India

(Thousand Tons)

Petroleum Product	Year	Transport	Plantation	Power Generation	Industry	Misce. Services	Private Sales	Total
1	2	3	4	5	6	7	8	9=3 to 8
Furnace Oil	2005-06	478	0	302	1,828	5,613	700	8,921
	2006-07	502	0	254	1,830	5,600	1,071	9,257
	2007-08	315	0	281	1,634	6,401	839	9,470
	2008-09	469	55	749	2,843	4,390	913	9,419
	2009-10	560	68	688	3,135	4,156	538	9,145
	2010-11	780	70	823	2,773	3,986	374	8,806
	2011-12	371	70	647	2,408	3,345	706	7,547
	2012-13	277	79	587	2,019	2,721	608	6,291
	2013-14(p)	315	75	536	1,833	2,332	654	5,745
Growth rate of 2013-14 over 2012-13(%)		**13.72**	**-5.06**	**-8.69**	**-9.21**	**-14.30**	**7.57**	**-8.68**
CAGR 2005-06 to 2013-14(%)		**-4.53**		**6.58**	**0.03**	**-9.30**	**-0.75**	**-4.77**

(Thousand Tons)

Petroleum Product	Year	Transport	Plantation	Power Generation	Industry	Misce. Services	Private Sales	Total
1	2	3	4	5	6	7	8	9=3 to 8
Low Sulphur Heavy Stock	2005-06	0	0	560	1,390	1,957	0	3,907
	2006-07	0	0	298	1,358	1,705	0	3,361
	2007-08	0	0	344	1,304	1,600	0	3,248
	2008-09	0	1	1,347	1,294	526	0	3,168
	2009-10	0	2	936	1,225	320	0	2,483
	2010-11	0	0	469	1,031	482	0	1,982
	2011-12	0	0	399	1,067	293	0	1,759
	2012-13	0	0	439	778	149	0	1,366
	2013-14(p)	0	0	328	76	44	0	448
Growth rate of 2013-14 over 2012-13(%)				**-25.28**	**-90.23**	**-70.47**		**-67.20**
CAGR 2005-06 to 2013-14(%)				**-5.77**	**-27.60**	**-34.40**		**-21.39**

(p) : Provisional, @ : LSHS sales through pvt. parties included in FO sales. Break-up not available.
** : Included in Miscellaneous services. Break-up is not available.
Source: Ministry of Petroleum & Natural Gas.

Table 6.8 : Industry-wise Off-take of Natural Gas in India

(in Billion Cubic Metres)

Year	Energy Purposes							Non-Energy Purposes				Grand Total
	Power Generation	Industrial Fuel	Tea Plant-ation	Dom-estic Fuel	Captive Use/ LPG Shrink-age	Others	Total	Ferti-lizer Indu-stry	Petro Chem-icals	Others @	Total	
1	2	3	4	5	6	7	8=2 to 7	9	10	11	12=9 to11	13=8+ 12
2005-06	11.88	3.78	0.15	0.08	5.05	1.12	22.05	7.76	1.18	0.04	8.97	31.03
2006-07	11.96	3.21	0.17	0.44	5.03	0.04	20.86	8.50	1.38	0.64	10.51	31.37
2007-08	12.04	3.32	0.16	0.04	1.80	1.32	18.69	9.82	1.43	0.64	11.89	30.58
2008-09	12.60	5.91	0.15	0.10	1.89	1.54	22.19	9.08	1.11	0.61	10.80	32.99
2009-10	21.37	2.32	0.17	0.25	5.43	1.84	31.37	13.17	1.26	0.70	15.14	46.51
2010-11	25.79	0.90	0.19	2.52	6.78	0.77	36.95	11.46	1.31	1.53	14.30	51.26
2011-12	20.77	1.69	0.18	3.19	6.37	1.85	34.04	11.33	1.41	0.23	12.97	47.01
2012-13	14.48	1.06	0.18	2.75	6.19	0.68	25.35	11.50	1.07	1.30	13.87	39.22
2013-14(p)	10.53	1.08	0.20	2.92	4.74	0.71	20.18	11.06	1.40	1.33	13.78	33.96
Distribution (%)	31.02	3.17	0.58	8.60	13.96	2.10	59.42	32.56	4.11	3.90	40.58	100.00
Growth rate of 2013-14 over 2012-13(%)	-27.24	1.70	7.69	6.14	-23.44	4.39	-20.38	-3.79	29.89	1.77	-0.66	-13.40
CAGR 2005-06 to 2013-14(%)	-1.33	-13.02	2.94	50.22	-0.69	-4.89	-0.98	4.01	1.93	49.29	4.88	1.01

@ : Excludes offtakes of natural gas by ONGC.

$: Sales of City Gas Distribution Companies like IGL, MGL, Bhagyanagar Gas, TNGCL, BMC Green Gas,

CUGL & GGCL. Includes Industrial sale, domestic sale and CNG sale.

**: Sponge iron use.

Source : Ministry of Petroleum & Natural Gas.

Table 6.9: Consumption of Electricity by Sectors in India

(in Giga Watt Hour) = (10^6 x Kilo Watt Hour)

Year	Industry	Agriculture	Domestic	Commercial	Traction & Railways	Others	Total Electricity Consumed
1	2	3	4	5	6	7	8=2 to 7
2005-06	151,557	90,292	100,090	35,965	9,944	24,039	411,887
2006-07	171,293	99,023	111,002	40,220	10,800	23,411	455,749
2007-08	189,424	104,182	120,918	46,685	11,108	29,660	501,977
2008-09	209,474	109,610	131,720	54,189	11,425	37,577	553,995
2009-10	236,752	120,209	146,080	60,600	12,408	36,595	612,645
2010-11	272,589	131,967	169,326	67,289	14,003	39,218	694,392
2011-12	352,291	140,960	171,104	65,381	14,206	41,252	785,194
2012-13	365,989	147,462	183,700	72,794	14,100	40,256	824,301
2013-14(p)	386,872	159,144	198,246	76,968	15,182	46,180	882,592
Distribution (%)	**43.83**	**18.03**	**22.46**	**8.72**	**1.72**	**5.23**	**100.00**
Growth rate of 2013-14 over 2012-13(%)	**5.71**	**7.92**	**7.92**	**5.73**	**7.67**	**14.72**	**7.07**
CAGR 2005-06 to 2013-14(%)	**10.97**	**6.50**	**7.89**	**8.82**	**4.81**	**7.52**	**8.84**

Source : Central Electricity Authority.

Table 6.10 : Electricity Generated(from Utilities), Distributed, Sold and Lost in India

(in Giga Watt hour) = (10^6 x Kilo Watt hour)

Year	Gross Electricity Generated from Utilities	Consum-ption in Power Station Auxiliaries	Net Electricity Generated from Utilities	Purchases from Non-Utilities + Imported from Other Countries	Net Electricity Available for Supply	Sold to Ultimate Consumers & Other Countries	Loss in transm-ission	Loss in transm-ission (%)
1	**2**	**3**	**4=2-3**	**5**	**6=4+5**	**7**	**8=6-7**	**9**
2005-06	623,819	41,970	581,849	10,345	592,194	411,887	180,145	30.42
2006-07	670,654	43,577	627,077	11,931	639,008	455,749	183,012	28.64
2007-08	722,626	45,531	677,095	12,685	689,780	501,977	187,620	27.20
2008-09	746,626	47,573	699,053	14,181	713,234	553,995	178,420	25.02
2009-10	796,281	49,706	746,576	14,391	760,967	612,645	193,455	25.42
2010-11	844,846	52,952	791,894	19,839	811,733	694,392	194,537	23.97
2011-12	922,451	56,499	865,952	15,516	811,506	685,194	208,400	25.68
2012-13	963,722	59,799	903,923	20,577	924,500	824,301	226,395	24.49
2013-14(p)	1,022,614	62,250	960,364	20,577	980,941	882,592	226,009	23.04
Growth rate of 2013-14 over 2012-13(%)	**6.11**	**4.10**	**6.24**	**0.00**	**6.11**	**7.07**	**-0.17**	**-5.91**
CAGR 2005-06 to 2013-14(%)	**6.37**	**5.05**	**6.46**	**8.98**	**6.51**	**9.99**	**2.88**	**-3.41**

Source : Central Electricity Authority.

CHAPTER 7: ENERGY COMMODITY BALANCE

7.1 Concept and Definition

- **Commodity balance**: The purpose of commodity balance is to show the sources of supply and various uses of particular energy product with reference to national territory of the compiling country. The balance is compiled for any energy commodity provided that the commodity remains homogeneous at each point in the balance.

- International Recommendations on Energy Statistics (IRES) recommends that the format of energy balance and all applicable concepts are consistently used in the compilation of a commodity balance to ensure data consistency. The major sources for commercial energy in India are coal, oil products, natural gas and electricity. Non-energy producing sectors derive energy from the resources available in primary form such as coal, crude oil, natural gas, hydro-power and nuclear power. Some of the energy resources are converted into other (final) energy products that are used for purposes other than energy generation.

- Coal is used as a final product as well as intermediate product for power generation. Similarly, natural gas is also used directly or as an intermediate in power generation. Many petroleum products, such as HSDO, Naphtha etc. are used as a final product by the non-energy producing sectors and also used for power generation. This indicates that the same energy source can be used in various forms at various stages of consumption. This creates a possibility of over-estimation or under-estimation of energy consumption in totality as well as for different sources.

- **Energy Balance**: An energy balance is a framework to compile data on all energy products entering, exiting and used within a given country during a reference period (e.g. a year). It expresses all data in a common energy unit, which makes it possible to define a "total" product.
- The purposes of compiling an energy balance starting from the various commodity balances are numerous; they are to:

    - provide a comprehensive overview of the energy profile of a country, to monitor energy security, energy markets, relevant policy goals and to formulate adequate energy policies;
    - provide the basis for aggregate socio-economic indicators, as well as for estimates of CO2 emissions;
    - compare different reference periods and different countries;
    - provide a tool to ensure completeness, consistency and comparability of basic statistics;
    - calculate efficiencies of transformation processes, as well as relative shares of different sectors or products in the country's total supply or consumption.

- An energy balance generally takes the form of a matrix of products and flows, with varying levels of disaggregation, although graphical formats also exist (e.g. Sankey diagram).

- Two major components of the energy balance statistics are Total Primary Energy Supply and Total Final Consumption of energy commodity.
- Within a balance, the total final consumption is disaggregated into sectors, like industry, transport, residential, services and others. However, the level of disaggregation of such energy data is not enough to monitor energy efficiency, as no information is given for example on the residential or services end uses, nor on the transport vehicle types or segments. The energy balance will therefore be useful to assess the largest consuming sectors within a country where the energy saving potential will have more impact, before starting more detailed collection programmes on data for energy efficiency indicators.

7.2 Methodology used for Energy Balance

- **Energy Balance (in ktoe) = Quantity of Commodity * Conversion factor**
- **1 toe** = 41868 MJ
- **Conversion factor** = $\frac{\text{Net Calorific Value (NCV)}}{\text{mega joules per tonne of oil equivalent}}$

  where NCV is in kj per kg.
- **Net Calorific Value (NCV)** = Gross calorific value (GCV) - (% Moisture Content)
  - The difference between net and gross calorific values are typically about 5% to 6% of the gross value of solid and liquid fuels and about 10% for Natural gas.
  - Net Calorific Values are, as recommended by IEA for all commodities, except coal.
  - **NCV for Coal**: As per publication "Provisional Coal Statistics 2013-14" :

    Average GCV of Coal in India = 4600 (Average of range 2200-7000)

    Average Moisture Content in Coal in India = 12 (Ranges from 0 to 24 %)
- The Energy Balance has been calculated using the NCVs:

Type of Fuel	Average Net Calorific Value (kj/kg)
Coal	19,259
Lignite	9,546
Crude Oil	42,789
Liquefied Petroleum Gases	47,300
Motor Gasoline	44,800
Kerosene Type Jet Fuel	44,600
Kerosene	43,800
Gas/Diesel Oil	43,300
Naphtha	45,000
Lubricants	42,000
Bitumen	39,000
Paraffin Waxes	40,000
Petroleum Coke	32,000
Non-specified Oil Products	40,000

7.3 Highlights of Energy Balance:

- In 2013-14, primary energy production added up to 596,352 Kilo Tons of Oil equivalent (ktoe). The share of Crude oil accounted for 38.91% and the contribution of coal was 64.11%.(Table 7.2)

- In 2013-14, national energy consumption was 424,509 ktoe. The industrial sector used 52.72% of the total final energy consumption. (Table 7.2)

- Within the industry sector, the most energy-intensive industries were iron and steel, which accounted for 18.22% of the industrial energy use, construction (12.39%) and Chemical and petrochemicals (5.5%).(Table 7.2)

- The transport sector accounted for 6.85% of total final consumption. The consumption of the residential, commercial and public sectors represented 11.81%.(Table 7.2).

- Efforts are being made to reduce the Statistical Balance.

Table 7.1 : Energy Commodity Balance for the year 2013-14(p)

Supply	Coal	Lignite	LPG	Naphtha	Kerosene	High Speed Diesel	Furnance Oil	Electricity
	(000 Tons)							(Gwh)
Production	565766	44271	7890	17038	7338	93742	12920	1022614
From Other Sources			2140	1468	80	16		156642
Imports	168439		6607	1026		84		5609
Exports	2153		227	8332	15	26469		
Intl. marine bunkers								
Stock changes	-7871	368						
Domestic Supply	**739923**	**43903**	**16410**	**11200**	**7403**	**67373**	**12920**	**1184865**
Transfer								
Statistical difference	-430	-4	75	-254	239	-996	7175	76264
Transformation	**488428**	**36476**	**3**	**215**	**0**	**204**	**536**	**62250**
Electricity plants	473312	36476	3	215		204	536	62250
CHP plants								
Heat plants								
Blast furnaces/ gas works								
Coke/pat.fuel/BKB plants	15116							
Petroleum refineries								
Petrochemical industry								
Liquefaction plants								
Other Transform. sector								
Energy Sector	**643**							
Coal mines	643							
Fuel mining and extraction								
Petroleum refineries								
Elec., CHP and heat plants								
Pumped storage (elec.)								
Other energy sector								
Distribution losses								226009
Final Consumption	**740353**	**43907**	**16335**	**11454**	**7164**	**68369**	**5745**	**1108601**
Industry Sector	**251282**	**7431**	**135**	**10155**	**37**	**1559**	**1871**	**401590**
Iron and steel	60320	26				154		
Chemical and petroleum	2817	325	5	9620		103	201	
Non-ferrous metals			85			28	253	
Non-metallic minerals			2			15	958	
Transport equipment			7					
Machinery			15					
Mining & Quarrying						873	39	
Food and tobacco								
Paper, pulp and print	1688	662						
Wood and wood products								
Construction	40194	2035				199	192	
Textile and leather	360	2829	2			46	58	
Non-specified	145903	1554	19	535	37	141	170	14718
Transport Sector			**299**			**3202**	**316**	**15182**
International aviation								
Domestic aviation						1		
Road			195			205	6	
Rail						2631	3	15182
Pipeline transport								
Domestic navigation						365	307	
Non-specified			104					
Other Sectors			**15901**	**240**	**7127**	**63527**	**2369**	**403570**
Residential			14412		7012			198246
Comm. And public services								76968
Agriculture/forestry			4			429	75	159144
Fishing								
Non-specified			1485	240	115	63098	2294	46180
Non-Energy Use				**844**		**81**	**653**	

Statistical Difference= Estimated Production - Estimated Consumption

Final consumption = Transformation+Energy sector+Total Industrial Consumption+Consumption by Other sectors+Non energy Use

Table 7.2 : Energy Balance of India for 2013-14(p)

(in Kilotonne of Oil Equivalent)

	Coal	Crude Oil	Oil Products	Natural Gas	Nuclear
Production	270,342	38,642	-	3,144	8,913
Imports	108,982	193,401	17,360	6,752	-
Exports	-1,450	-	-68,278	-	-
International marine bunkers	-	-	-	-	-
International aviation bunkers	-	-	-	-	-
Stock changes	4,481	-	1,996	-	-
Total primary energy supply	**382,355**	**232,043**	**-48,923**	**9,896**	**8,913**
Transfers	-	-	-	-	-
Statistical differences	125,463	-	-10,322	20,500	-
Main activity producer electricity plants	-327,114	-	-442	-9,055	-8,913
Autoproducer electricity plants	-	-	-3	-4,076	-
Oil refineries	-	-232,043	221,013	-	-
Coal transformation	-9,387	-	-	-	-
Liquefaction plants	-	-	-	-	-
Non-specified (transformation)	-	-	-	-	-
Energy industry own use	-373	-	-	-926	-
Losses	-	-	-	-	-
Final consumption	**170,944**	**-**	**161,323**	**16,339**	**-**
Industry	**170,944**	**-**	**18,664**	**926**	**-**
Iron and steel	40,634	-	159	-	-
Chemical and petrochemical	1,971	-	10,452	-	-
Non-ferrous metals	-	-	125	-	-
Non-metallic minerals	-	-	18	-	-
Transport equipment	-	-	8	-	-
Machinery	-	-	17	-	-
Mining and quarrying	-	-	903	-	-
Food and tobacco	-	-	-	-	-
Paper, pulp and print	1,288	-	-	-	-
Wood and wood products	-	-	-	-	-
Construction	27,536	-	206	-	-
Textile and leather	887	-	50	-	-
Non-specified (industry)	98,627	-	6,727	926	-
Transport	**-**	**-**	**27,798**	**-**	**-**
Road	-	-	18,760	-	-
Domestic aviation	-	-	5,823	-	-
Rail	-	-	2,721	-	-
Pipeline transport	-	-	-	-	-
Domestic navigation	-	-	377	-	-
Non-specified (transport)	-	-	117	-	-
Other	**-**	**-**	**91,883**	**3,292**	**-**
Residential	-	-	23,970	2,511	-
Commercial and public services	-	-	-	-	-
Agriculture/forestry	-	-	448	168	-
Fishing	-	-	-	-	-
Non-specified (other)	-	-	67,465	613	-
Non-energy use	**-**	**-**	**22,977**	**12,121**	**-**
Non-energy use industry/transformation/energy	-	-	22,893	1,474	-
Non-energy use in transport	-	-	-	-	-
Non-energy use in other	-	-	84	10,647	-
Memo: feedstock use in petchemical industry	-	-	-	1,199	-
Elect. output in GWh	**-**	**-**	**-**	**-**	**34,200**
Elec output-main activity producer ele plants	-	-	-	-	34,200

Table 7.2(contd) : Energy Balance of India for 2013-14(p)

(in Kilotonne of Oil Equivalent)

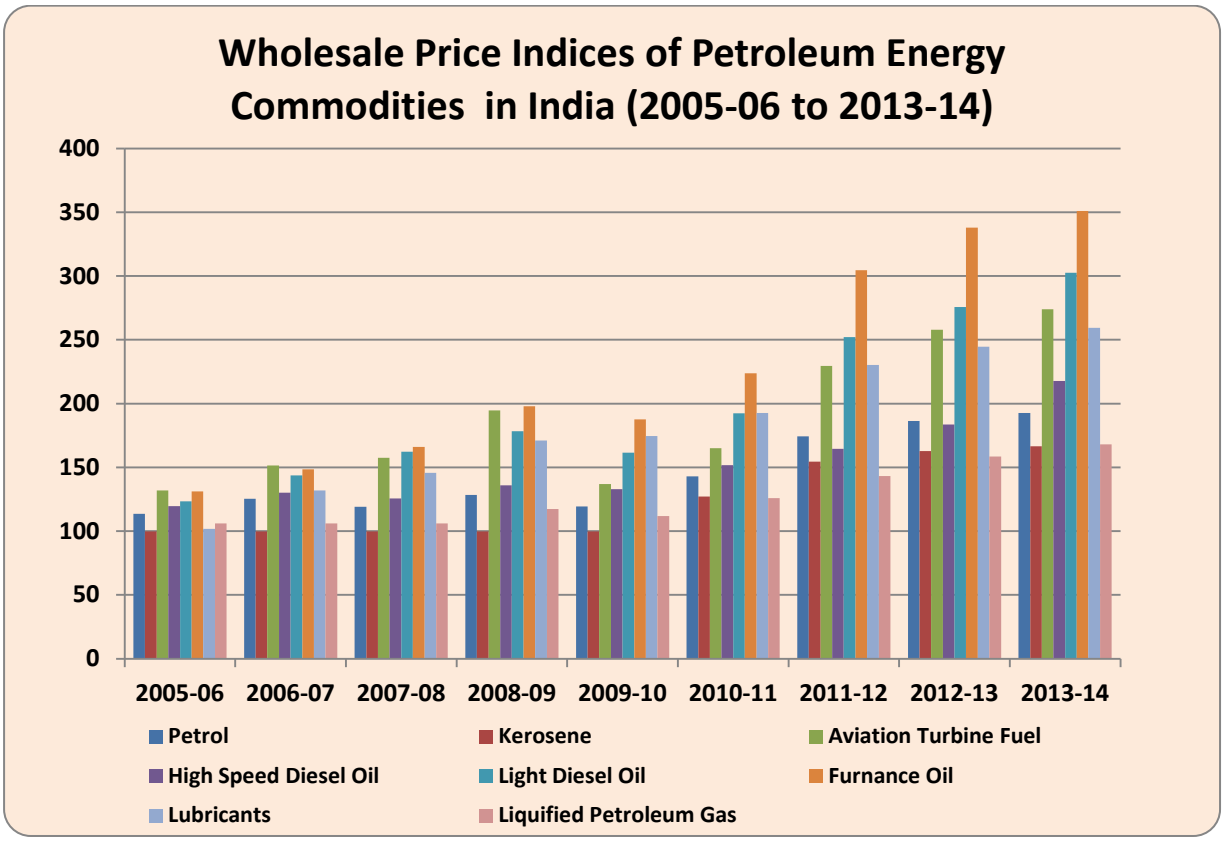
	Hydro	Geothermal	Electricity	Total
Production	11,587	-	-	332,628
Imports	-	-	482	326,976
Exports	-	-	-	-69,728
International marine bunkers	-	-	-	-
International aviation bunkers	-	-	-	-
Stock changes	-	-	-	6,477
Total primary energy supply	**11,587**	**-**	**482**	**596,352**
Transfers	-	-	-	-
Statistical differences	-	-	-10,059	125,582
Main activity producer electricity plants	-11,587	-	87,945	-269,166
Auto producer electricity plants	-	-	13,471	9,392
Oil refineries	-	-	-	-11,030
Coal transformation	-	-	-	-9,387
Liquefaction plants	-	-	-	-
Non-specified (transformation)	-	-	-	-
Energy industry own use	-	-	-	-1,299
Losses	-	-	-15,936	-15,936
Final consumption	**-**	**-**	**75,903**	**424,509**
Industry	**-**	**-**	**33,271**	**223,805**
Iron and steel	-	-	-	40,793
Chemical and petrochemical	-	-	-	12,423
Non-ferrous metals	-	-	-	125
Non-metallic minerals	-	-	-	18
Transport equipment	-	-	-	8
Machinery	-	-	-	17
Mining and quarrying	-	-	-	903
Food and tobacco	-	-	-	-
Paper, pulp and print	-	-	-	1,288
Wood and wood products	-	-	-	-
Construction	-	-	-	27,742
Textile and leather	-	-	-	937
Non-specified (industry)	-	-	33,271	139,551
Transport	**-**	**-**	**1,306**	**29,104**
Road	-	-	-	18,760
Domestic aviation	-	-	-	5,823
Rail	-	3,073,258	1,306	4,027
Pipeline transport	-	3,073,258	-	-
Domestic navigation	-	-	-	377
Non-specified (transport)	-	-	-	117
Other	**-**	**-**	**41,326**	**136,501**
Residential	-	-	17,049	43,530
Commercial and public services	-	-	6,619	6,619
Agriculture/forestry	-	-	13,686	14,303
Fishing	-	-	-	-
Non-specified (other)	-	-	3,971	72,049
Non-energy use	**-**	**-**	**-**	**35,098**
Non-energy use industry/transformation/energy	-	-	-	24,367
Non-energy use in transport	-	-	-	-
Non-energy use in other	-	-	-	10,731
Memo: feedstock use in pet chemical industry	-	-	-	1,199
Elect. output in GWh	**134,731**	**3,073,258**	**-**	**3,242,191**
Elec output-main activity producer ele plants	134,731	3,073,258	-	3,242,191

CHAPTER 8: WHOLE SALE PRICE INDEX OF ENERGY COMMODITIES

8.1 The Wholesale Price Index of Petroleum Products

- Wholesale Price Index of Petroleum Products recorded an increase ranging from 2.22% to 18.68% from 2012-13 to 2013-14 (Table 8.1).

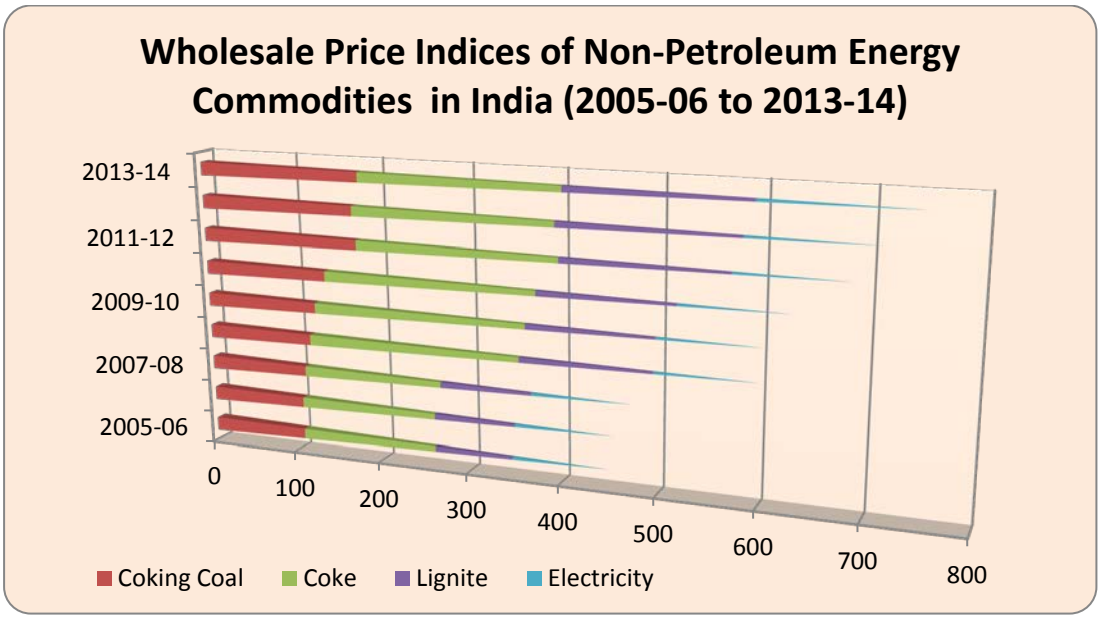
- The maximum increase was observed in High Speed Diesel Oil (18.68%) followed by Light Diesel Oil (9.69%).



8.2 The Wholesale Price Index of Non-Petroleum Products

- The wholesale price index remained constant for Coke at 219.3 for the period 2013-14 over 2012-13.

- Wholesale Price Index of Electricity recorded an increase of 22.23% during 2013-14 over 2012-13.



8.2 Inter-Year Movement of WPI

- The yearly movement of index shows that from 2005-06 to 2009-10, the WPI of Kerosene has not changed mainly due to administered prices, whereas for Electricity and Lubricants the WPI has increased continuously from 2005-06. The trend is same in almost all other products also.

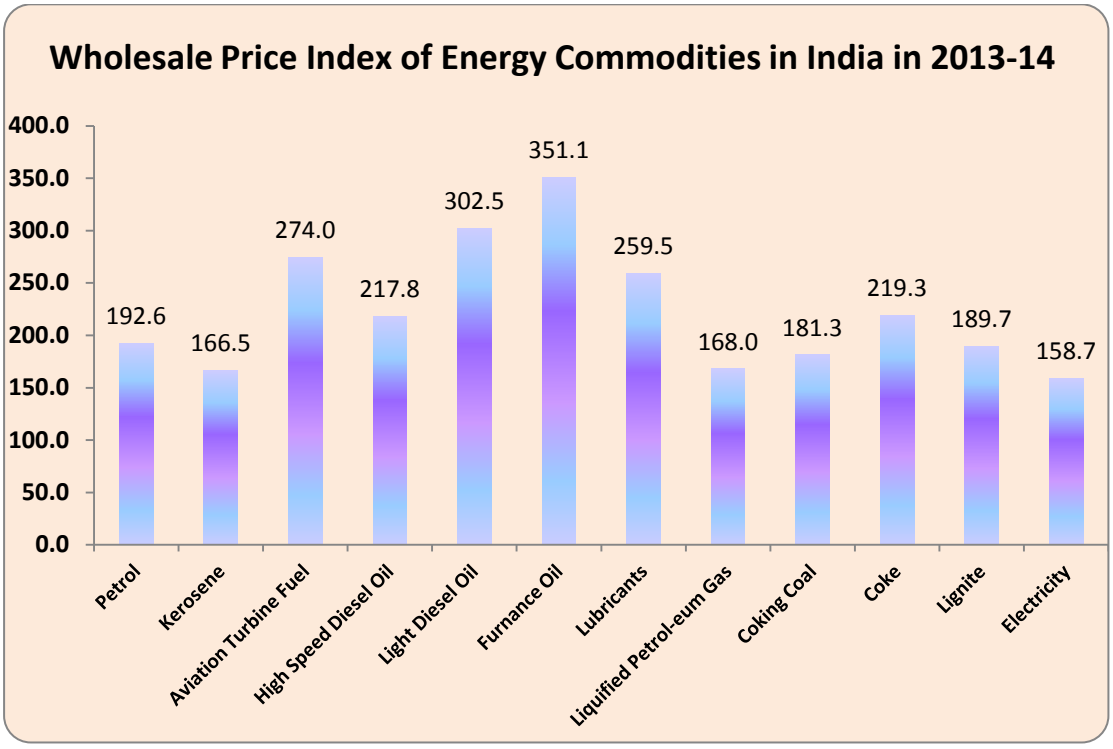


Table 8.1 : Wholesale Price Index of Energy Commodities in India

(2004-05=100)

	Petroleum Products								Coking Coal	Coke	Lignite	Electricity
Year	**Petrol**	**Kero-sene**	**Aviation Turbine Fuel**	**High Speed Diesel Oil**	**Light Diesel Oil**	**Furnace Oil**	**Lubri-cants**	**Liquified Petrol-eum Gas**				
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**
2005-06	113.6	99.9	132.0	119.7	123.4	131.2	101.9	106.1	106.7	152.7	85.7	102.6
2006-07	125.3	99.9	151.6	130.2	143.8	148.4	131.8	106.1	106.7	152.7	88.5	105.3
2007-08	119.1	99.9	157.4	125.6	162.3	166.0	145.8	106.1	111.4	155.4	99.1	106.2
2008-09	128.3	99.9	194.5	135.8	178.3	197.9	171.1	117.2	119.0	234.4	140.0	106.4
2009-10	119.3	99.9	137.0	133.0	161.5	187.6	174.5	111.9	126.3	234.4	134.9	107.4
2010-11	143.0	127.2	164.9	151.7	192.5	223.7	192.6	125.9	139.2	233.1	144.1	113.2
2011-12	174.4	154.4	229.4	164.5	252.0	304.6	230.4	143.2	177.1	219.3	172.6	115.0
2012-13	186.3	162.9	257.9	183.6	275.7	337.8	244.6	158.5	173.4	219.3	187.0	129.8
2013-14	192.6	166.5	274.0	217.8	302.5	351.1	259.5	168.0	181.3	219.3	189.7	158.7
Increase in 2013-14 over 2012-13 (%)	**3.39**	**2.22**	**6.26**	**18.68**	**9.69**	**3.92**	**6.10**	**5.96**	**4.56**	**0.00**	**1.42**	**22.23**

Source : Office of the Economic Advisor, Ministry of Commerce & Industry.

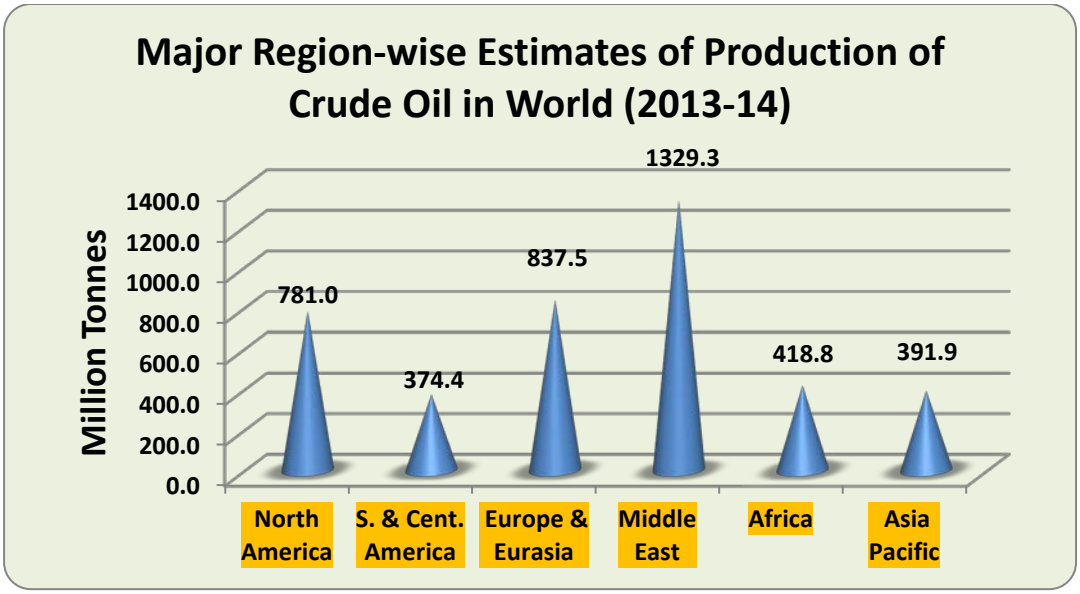
CHAPTER 9: WORLD PRODUCTION AND CONSUMPTION OF CRUDE OIL & NATURAL GAS

9.1 Production and consumption of crude oil

- The total estimated production of crude oil in the world has increased from about 3950 MT in 2007-08 to about 4114.8 MT during 2012-13, and further increased to 4132.9 MT during 2013-14 (Table 9.1). The production increased by 0.4% from 2012-13 to 2013-14.

- Geographical distribution of total world production during 2013-14 across major regions reveals that Middle East accounted for the highest share (32.31%), followed by Europe & Eurasia (20.35%), North America (18.98%), Africa (10.18%), Asia Pacific (9.48%) and South & Central America (9.10%). (Table 9.1)

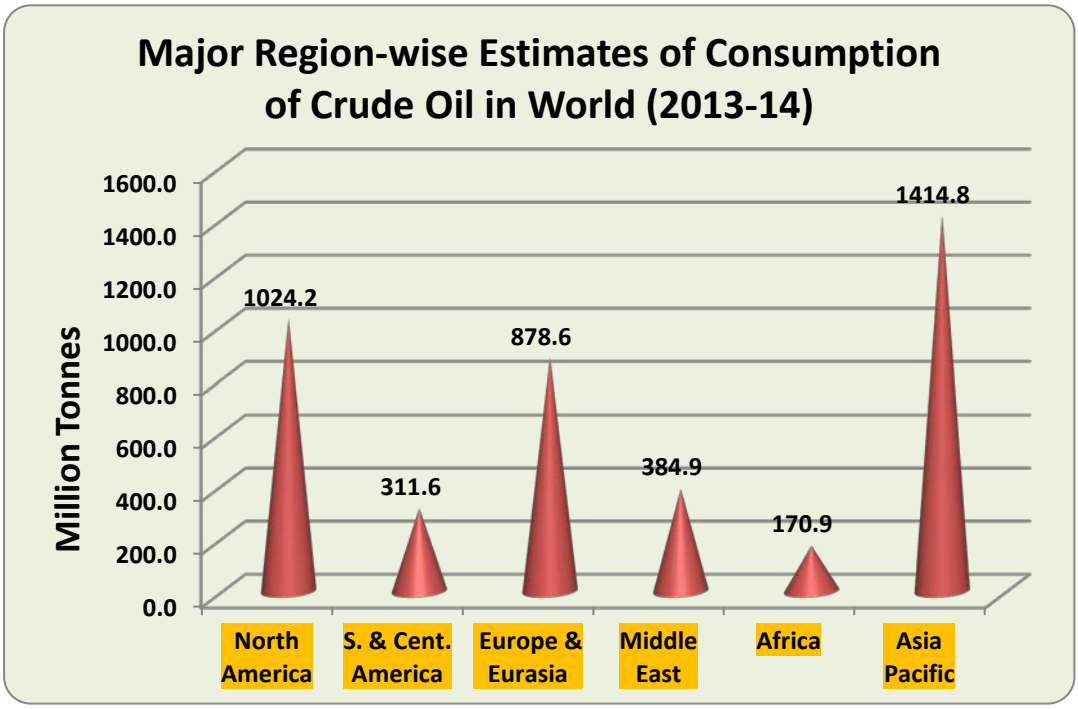
- Distribution of total world production according to countries shows that Saudi Arabia and Russian Federation were the first and second highest producers with 13.12% and 12.86% respectively. They were followed by USA (10.80%), China (5.04%), Canada (4.67%), Iran (4.02%), UAE(4.01), Kuwait(3.66), Mexico (3.43%) and Venezuela (3.27%). India has accounted for only 1.02% of the world production.



- Major region-wise consumption (Table 9.2) shows that Asia Pacific accounted for the highest share (33.8%) of total world consumption, followed by North America (24.47%), and Europe & Eurasia (20.99%). African countries accounted for the lowest share in the world consumption (4.1%).

- Country-wise distribution of consumption reveals that the United States was the largest consumer of crude oil, consuming 19.86% of the world consumption during 2013-14. China was the second largest consumer (12.1%), followed by Japan (5%), India (4.2%) and Russian federation (3.66%).

- India was the fourth largest consumer of crude oil in the world and the third largest crude oil consumer in the Asia-Pacific region after China and Japan.



9.2 Production and Consumption of Natural Gas

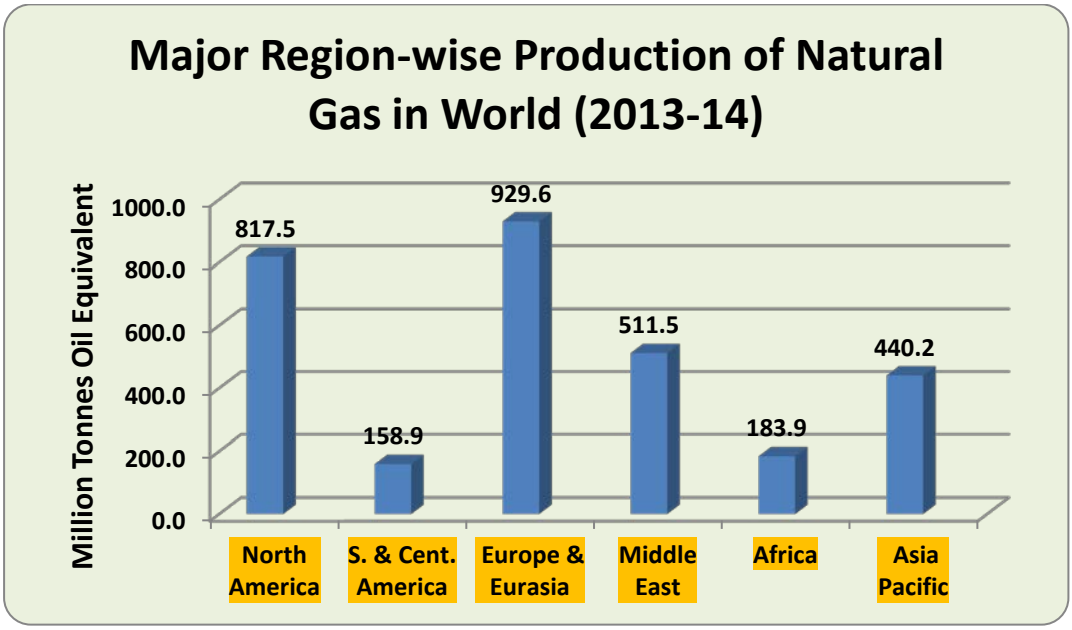
- The total world production of Natural Gas increased from 2674.2 million Tons oil equivalent (Mtoe) in 2007-08 to 3041.6 Mtoe in 2013-14. The production has increased by 0.8% from 2012-13 to 2013-14 (Table 9.3).

- Distribution of production of natural gas over major regions shows that Europe & Eurasia (30.56%) and North America (26.88%) are the highest and the second highest producers, together accounting for 57.44% of the total world production.

- Country-wise, USA was the largest producer of natural gas (20.62%) in the world during 2013-14, followed by the Russian Federation (17.90%) and Iran (4.93%). India's share in the total world production of natural gas during 2013-14 was only 1% (30.3 Mtoe).(Table 9.3)

- The growth in production of natural gas from 2012-13 to 2013-14 was highest in Middle East (4.2%), followed by South & Central America (1.3%) and Asia Pacific (0.9%) respectively.(Table 9.3)
- The total world consumption of natural gas has increased from 2666.6 Mtoe in 2005-06 to 3020.9 Mtoe in 2013-14 (Table 9.4).

❖ United States of America was the largest consumer of natural gas, consuming 22.21% of the world consumption during 2013-14 while Europe & Eurasia accounted for 31.73% of the total world consumption.(Table 9.4)



❖ Country-wise distribution of consumption of natural gas indicates that USA was the largest consumer (22.21%), followed by Russian federation (12.5%), Iran(4.83%) and China (4.82%) respectively. India with a consumption of 46.3 Mtoe accounted for only 1.53% of total world consumption.(Table 9.4)

❖ Consumption of natural gas over major regions shows that Europe & Eurasia (31.73%) and North America (27.76%) are the highest and the second highest consumers, together accounting for 59.49% of the total world consumption. (Table 9.4)

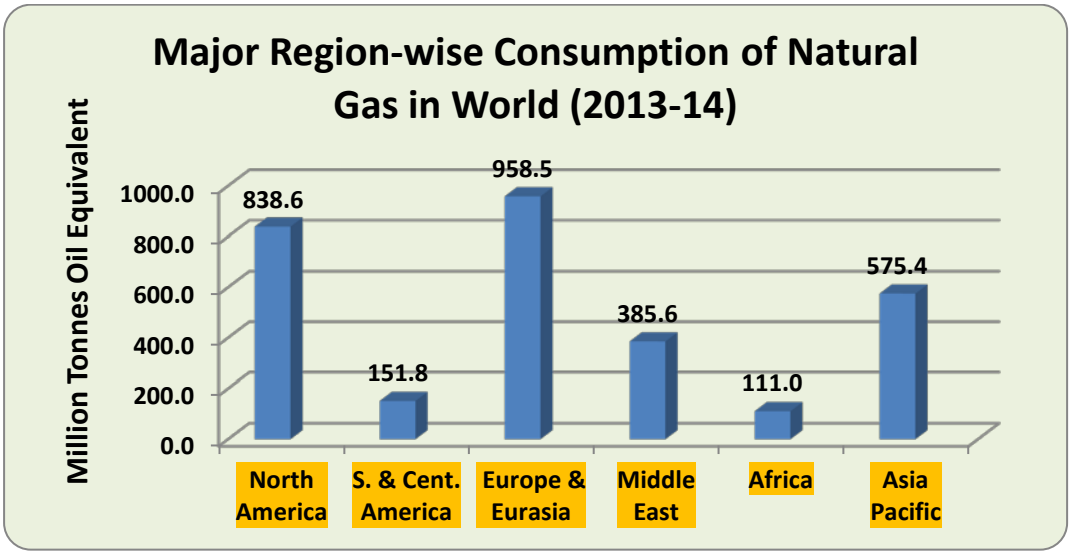


Table 9.1:Country-wise Estimates of Production of Crude Oil*

(in Million tonnes)

Country/ Region	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	% Change 2013-14 over 2012-13	2013-14 % Share of World's Total Production
North America									
USA	305.2	302.3	322.4	332.9	345.7	394.1	446.2	13.2	10.80
Canada	155.3	152.9	152.8	160.3	169.8	182.6	193.0	5.7	4.67
Mexico	172.2	156.9	146.7	145.6	144.5	143.9	141.8	-1.5	3.43
Total North America	**632.7**	**612.0**	**621.9**	**638.8**	**660.0**	**720.6**	**781.0**	**8.4**	**18.98**
South and Central America									
Argentina	38.0	36.5	34.9	34.0	32.2	31.0	30.5	-1.8	0.74
Brazil	95.2	98.8	105.6	111.4	114.2	112.2	109.9	-2.0	2.66
Colombia	28.0	31.1	35.3	41.4	48.2	49.9	52.9	6.1	1.28
Ecuador	27.5	27.2	26.1	26.1	26.8	27.1	28.2	4.1	0.68
Peru	4.6	4.7	4.8	5.1	4.9	4.8	4.6	-3.7	0.11
Trinidad & Tobago	8.2	8.7	7.6	7.4	6.9	6.0	5.9	-1.6	0.14
Venezuela	165.5	165.6	155.7	145.7	141.5	136.6	135.1	-1.1	3.27
Other S. & Cent. America	7.1	7.1	6.6	6.9	7.0	7.1	7.3	2.8	0.18
Total S. & Cent. America	**374.1**	**379.7**	**376.7**	**377.9**	**381.7**	**374.7**	**374.4**	**-0.1**	**9.10**
Europe and Eurasia									
Azerbaijan	42.6	44.5	50.4	50.8	45.6	43.4	46.2	6.5	1.12
Denmark	15.2	14.0	12.9	12.2	10.9	10.1	8.7	-13.8	0.21
Italy	5.9	5.2	4.6	5.1	5.3	5.4	5.6	3.8	0.14
Kazakhstan	68.4	72.0	78.2	81.6	82.4	81.3	83.8	3.1	2.03
Norway	118.6	114.7	108.8	98.9	93.8	87.5	83.2	-4.9	2.01
Romania	4.7	4.7	4.5	4.3	4.2	4.1	4.1	-0.3	0.10
Russian Federation	496.8	493.7	500.8	511.8	518.5	526.2	531.4	1.0	12.86
Turkmenistan	9.8	10.3	10.4	10.7	10.7	11.0	11.4	3.6	0.28
United Kingdom	76.7	72.0	68.2	62.8	51.9	45.0	40.6	-9.9	0.98
Uzbekistan	4.9	4.8	4.5	3.6	3.6	3.2	2.9	-8.4	0.07
Other Europe & Eurasia	21.6	20.6	19.9	19.2	19.2	19.2	19.6	2.3	0.47
Total Europe & Eurasia	**865.2**	**856.6**	**863.1**	**861.0**	**846.1**	**836.4**	**837.5**	**0.1**	**20.35**
Middle East									
Iran	210.9	214.5	205.5	208.8	208.2	174.9	166.1	-5.0	4.02
Iraq	105.1	119.3	119.9	121.5	136.7	152.4	153.2	0.5	3.71
Kuwait	129.9	136.1	121.2	122.5	139.7	152.5	151.3	-0.8	3.66
Oman	35.3	37.7	40.3	42.9	44.1	45.8	46.1	0.7	1.12
Qatar	57.9	65.0	62.4	72.1	78.2	83.3	84.2	1.0	2.04
Saudi Arabia	488.9	509.9	456.7	473.8	526.0	547.0	542.3	-0.9	13.12
Syria	20.1	20.3	20.0	19.2	16.3	8.2	2.8	-65.8	0.07
United Arab Emirates	139.6	141.4	126.2	133.3	151.3	154.1	165.7	7.5	4.01
Yemen	15.9	14.8	14.3	13.5	10.6	8.3	7.4	-11.2	0.18
Other Middle East	9.3	9.3	9.4	9.4	10.0	10.1	10.2	0.5	0.25
Total Middle East	**1213.0**	**1268.2**	**1176.1**	**1217.2**	**1321.0**	**1336.8**	**1329.3**	**-0.6**	**32.31**

Contd….

Table 9.1(Contd.):Country-wise Estimates of Production of Crude Oil*

(in Million tonnes)

Country/ Region	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	% Change 2013-14 over 2012-13	2013-14 % Share of World's Total
Africa									
Algeria	86.5	85.6	77.2	74.1	73.5	73.1	68.9	-5.7	1.67
Angola	82.1	93.1	87.6	90.5	83.8	86.9	87.4	0.6	2.11
Chad	7.5	6.7	6.2	6.4	6.0	5.3	5.0	-5.8	0.12
Rep. of Congo (Brazzaville)	11.4	12.1	13.9	15.1	15.1	15.3	14.5	-5.2	0.35
Egypt	33.8	34.7	35.3	35.0	35.3	35.4	34.5	-2.5	0.83
Equatorial Guinea	15.9	16.1	14.2	12.6	11.6	13.2	14.6	10.3	0.35
Gabon	12.3	12.0	12.0	12.7	12.7	12.3	11.8	-3.8	0.29
Libya	85.3	85.5	77.4	77.7	22.5	71.1	46.5	-34.6	1.13
Nigeria	110.2	102.8	106.6	121.3	118.2	116.2	111.3	-4.2	2.69
South Sudan	-	-	-	-	-	1.5	4.9	220.3	0.12
Sudan	23.1	23.7	23.4	22.9	22.3	4.1	6.0	48.1	0.15
Tunisia	4.6	4.2	4.0	3.8	3.2	3.1	3.0	-2.9	0.07
Other Africa	9.7	9.5	9.2	8.3	11.5	11.6	10.4	-10.5	0.25
Total Africa	**482.2**	**486.0**	**466.8**	**480.6**	**415.7**	**449.0**	**418.8**	**-6.7**	**10.18**
Asia Pacific									
Australia	24.3	24.8	24.6	25.4	21.7	19.9	17.9	-10.1	0.43
Brunei	9.5	8.6	8.3	8.5	8.1	7.8	6.6	-15.3	0.16
China	186.3	190.4	189.5	203.0	202.9	207.5	208.1	0.3	5.04
India	**37.9**	**37.9**	**37.2**	**40.8**	**42.3**	**42.0**	**42.0**	**-0.1**	**1.02**
Indonesia	47.8	49.4	48.4	48.6	46.3	44.6	42.7	-4.3	1.03
Malaysia	33.8	34.0	32.2	32.0	28.9	29.7	29.6	-0.5	0.72
Thailand	13.2	14.0	14.6	14.8	14.8	16.2	16.6	2.3	0.40
Vietnam	16.3	15.2	16.7	15.3	15.5	17.0	17.0	-0.2	0.41
Other Asia Pacific	13.9	14.8	14.4	13.8	13.1	12.5	11.4	-8.9	0.28
Total Asia Pacific	**383.1**	**389.3**	**385.8**	**402.3**	**393.6**	**397.3**	**391.9**	**-1.4**	**9.48**
TOTAL WORLD	**3950.2**	**3991.8**	**3890.3**	**3977.8**	**4018.1**	**4114.8**	**4132.9**	**0.4**	**100.00**

* Includes crude oil, shale oil, oil sands and NGLs (the liquid content of natural gas where this is recovered separately). Excludes liquid fuels from other sources such as biomass & coal derivatives.

^ Less than 0.05.

Note: Annual changes and shares of total are calculated using million tonnes per annum figures.

Source : Ministry of Petroleum & Natural Gas.

Table 9.2 : COUNTRY-WISE ESTIMATES OF CONSUMPTION OF CRUDE OIL*

(in Million tonnes)

Country/ Region	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	% Change 2013-14 over 2012-13	2013-14 % Share of World's Total Consumption
North America									
US	928.8	875.4	833.0	850.1	834.9	817.0	831.0	1.7	**19.86**
Canada	102.3	101.2	95.2	101.3	105.0	104.3	103.5	-0.8	**2.47**
Mexico	92.0	91.6	88.5	88.5	90.3	92.3	89.7	-2.8	**2.14**
Total North America	**1123.1**	**1068.2**	**1016.8**	**1039.9**	**1030.2**	**1013.6**	**1024.2**	**1.0**	**24.47**
South and Central America									
Argentina	24.0	24.7	24.0	26.9	26.9	28.5	29.4	3.2	**0.70**
Brazil	101.8	108.6	109.1	118.1	121.9	125.8	132.7	5.5	**3.17**
Chile	17.0	17.8	17.4	15.4	16.8	17.3	17.6	1.7	**0.42**
Colombia	10.7	10.8	11.1	11.6	12.4	13.4	13.9	3.7	**0.33**
Ecuador	8.5	8.7	8.9	10.3	10.5	10.9	11.6	6.4	**0.28**
Peru	7.1	8.0	8.1	8.5	9.2	9.5	10.0	5.3	**0.24**
Trinidad & Tobago	1.7	1.8	1.7	1.9	1.7	1.7	1.8	5.9	**0.04**
Venezuela	29.7	34.8	35.2	32.1	31.9	33.0	36.2	9.7	**0.86**
Other S. & Cent. America	61.6	57.8	57.0	58.4	59.0	59.1	58.4	-1.2	**1.40**
Total S. & Cent. Ameri	**262.1**	**272.9**	**272.5**	**283.2**	**290.3**	**299.2**	**311.6**	**4.1**	**7.45**
Europe and Eurasia									
Austria	13.4	13.4	12.8	13.4	12.5	12.5	12.5	0.0	**0.30**
Azerbaijan	4.5	3.6	3.3	3.2	4.0	4.2	4.6	9.2	**0.11**
Belarus	8.0	8.3	9.4	7.5	8.6	8.6	8.7	1.2	**0.21**
Belgium	33.7	36.8	32.2	33.5	32.3	30.4	31.0	2.0	**0.74**
Bulgaria	4.8	4.8	4.3	3.9	3.8	3.9	4.1	5.1	**0.10**
Czech Republic	9.7	9.9	9.7	9.2	9.0	8.9	8.6	-3.4	**0.21**
Denmark	9.4	9.5	8.3	8.4	8.3	7.8	7.8	0.0	**0.19**
Finland	10.6	10.5	9.9	10.4	9.7	9.0	8.9	-1.1	**0.21**
France	91.4	90.8	87.5	84.5	83.7	81.0	80.3	-0.9	**1.92**
Germany	112.5	118.9	113.9	115.4	112.0	111.4	112.1	0.6	**2.68**
Greece	21.7	21.3	20.1	17.9	17.0	15.1	14.0	-7.3	**0.33**
Hungary	7.7	7.5	7.1	6.7	6.4	5.9	6.0	1.7	**0.14**
Republic of Ireland	9.4	9.0	8.0	7.6	6.7	6.5	6.7	3.1	**0.16**
Italy	84.0	80.4	75.1	73.1	70.5	64.2	61.8	-3.7	**1.48**
Kazakhstan	11.3	11.0	8.9	9.3	12.3	13.1	13.8	5.3	**0.33**
Lithuania	2.8	3.1	2.6	2.7	2.6	2.7	2.7	0.0	**0.06**
Netherlands	50.7	47.3	45.9	45.9	46.1	43.7	41.4	-5.3	**0.99**
Norway	10.7	10.4	10.6	10.8	10.6	10.5	10.6	1.0	**0.25**
Poland	24.2	25.3	25.3	26.7	26.6	25.7	24.0	-6.6	**0.57**
Portugal	14.4	13.6	12.8	12.5	11.6	10.9	10.8	-0.9	**0.26**
Romania	10.3	10.4	9.2	8.8	9.1	9.2	9.0	-2.2	**0.22**
Russian Federation	130.0	133.9	128.2	134.3	143.5	148.9	153.1	2.8	**3.66**
Slovakia	3.6	3.9	3.7	3.9	3.9	3.6	3.5	-2.8	**0.08**
Spain	80.3	77.9	73.5	69.6	68.5	64.2	59.3	-7.6	**1.42**
Sweden	16.9	15.7	15.5	16.2	14.8	14.6	14.3	-2.1	**0.34**
Switzerland	11.3	12.1	12.3	11.4	11.0	11.2	11.8	5.4	**0.28**
Turkey	33.6	31.9	32.5	31.8	31.1	31.4	33.1	5.4	**0.79**
Turkmenistan	5.2	5.4	5.2	5.7	6.0	6.1	6.3	3.3	**0.15**
Ukraine	14.7	14.9	13.5	12.6	13.1	12.5	12.2	-2.4	**0.29**
United Kingdom	79.2	77.9	74.4	73.5	71.1	71.0	69.8	-1.7	**1.67**
Uzbekistan	4.6	4.5	4.3	3.7	3.5	3.3	3.3	0.0	**0.08**
Other Europe & Eurasia	32.5	33.1	32.4	32.6	32.5	32.0	32.5	1.6	**0.78**
Total Europe & Eurasia	**957.4**	**957.0**	**912.5**	**906.5**	**902.4**	**884.0**	**878.6**	**-0.6**	**20.99**

contd……..

Table 9.2(Contd.) : COUNTRY-WISE ESTIMATES OF CONSUMPTION OF CRUDE OIL

(in Million Tonnes)

Country/ Region	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	% Change 2013-14 over 2012-13	2013-14 % Share of World's Total Consumption
Middle East									
Iran	89.4	93.3	95.5	86.7	88.2	89.5	92.9	3.8	**2.2**
Israel	12.4	12.2	11.4	10.9	11.5	13.6	10.6	-22.1	**0.3**
Kuwait	17.9	19.0	20.3	21.6	20.4	21.6	21.8	0.9	**0.5**
Qatar	5.3	6.1	6.0	6.5	7.8	8.0	8.5	6.0	**0.2**
Saudi Arabia	98.0	106.8	115.8	124.2	125.1	131.3	135.0	2.8	**3.2**
United Arab Emirates	28.2	29.4	27.7	30.1	33.0	34.3	35.6	3.8	**0.9**
Other Middle East	62.4	69.4	70.3	74.2	75.2	79.5	80.5	1.3	**1.9**
Total Middle East	**313.6**	**336.1**	**347.0**	**354.2**	**361.2**	**377.8**	**384.9**	**1.9**	**9.2**
Africa									
Algeria	12.9	14.0	14.9	14.8	15.5	16.7	17.5	4.8	**0.4**
Egypt	30.6	32.6	34.4	36.3	33.7	35.2	35.7	1.4	**0.9**
South Africa	26.2	25.7	24.7	26.6	27.4	27.3	27.2	-0.4	**0.6**
Other Africa	75.7	80.5	82.1	86.5	81.9	86.8	90.5	4.3	**2.2**
Total Africa	**145.4**	**152.8**	**156.0**	**164.2**	**158.5**	**166.0**	**170.9**	**3.0**	**4.1**
Asia Pacific									
Australia	42.4	43.2	42.8	43.6	45.8	47.3	47.0	-0.6	**1.1**
Bangladesh	4.2	4.2	3.7	4.3	5.5	5.8	5.7	-1.7	**0.1**
China	370.6	377.6	391.0	440.4	464.1	490.1	507.4	3.5	**12.1**
China Hong Kong SAR	16.1	14.6	16.6	17.9	18.1	17.3	17.7	2.3	**0.4**
India	138.1	144.7	152.6	155.4	163.0	173.6	175.2	0.9	**4.2**
Indonesia	60.9	60.4	61.6	66.4	72.3	73.2	73.8	0.8	**1.8**
Japan	232.6	226.3	201.8	204.1	204.9	217.8	208.9	-4.1	**5.0**
Malaysia	30.8	29.5	29.2	29.3	31.1	30.7	31.2	1.6	**0.7**
New Zealand	7.2	7.2	6.9	7.0	7.0	7.0	7.1	1.4	**0.2**
Pakistan	19.3	19.4	20.8	20.6	20.8	20.0	22.0	10.0	**0.5**
Philippines	14.1	12.4	13.2	13.2	12.8	13.0	13.7	5.4	**0.3**
Singapore	50.4	53.7	57.0	62.9	65.5	65.4	65.9	0.8	**1.6**
South Korea	107.6	103.1	103.7	105.0	105.8	108.8	108.4	-0.4	**2.6**
Taiwan	51.2	45.8	44.0	45.3	42.5	41.9	43.4	3.6	**1.0**
Thailand	41.6	41.2	44.2	44.3	46.6	49.6	50.4	1.6	**1.2**
Vietnam	13.3	14.1	14.6	15.6	17.0	17.2	17.4	1.2	**0.4**
Other Asia Pacific	16.5	15.6	16.4	16.8	19.3	19.5	19.6	0.5	**0.5**
Total Asia Pacific	**1216.9**	**1213.0**	**1220.0**	**1292.1**	**1342.1**	**1398.2**	**1414.8**	**1.2**	**33.8**
TOTAL WORLD	**4018.5**	**4000.0**	**3924.9**	**4040.0**	**4084.8**	**4138.8**	**4185.0**	**1.1**	**100.0**

Notes: Growth rates are adjusted for leap years.

* Inland demand plus international aviation and marine bunkers and refinery fuel and loss. Consumption of fuel ethanol and biodiesel is also i
Differences between these world consumption figures and world production statistics are accounted for by stock changes, consumption of non-petroleum additives and definition,measurement or conversion of oil supply and demand data.substitute fuels, and unavoidable

Source : Ministry of Petroleum & Natural Gas.

Table 9.3: Country-wise Estimates of Production of Natural Gas*

(Million tonnes oil equivalent)

Country/ Region	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	% Change 2013-14 over 2012-13	2013-14 % Share of World's Total Consumption
North America									
USA	498.6	521.7	532.7	549.5	589.8	620.8	627.2	1.0	**20.62**
Canada	164.4	158.9	147.6	143.9	143.7	140.4	139.3	-0.8	**4.58**
Mexico	48.3	48.0	53.4	51.8	52.4	51.2	51.0	-0.4	**1.68**
Total North America	**711.3**	**728.6**	**733.7**	**745.2**	**786.0**	**812.4**	**817.5**	**0.6**	**26.88**
South and Central America									
Argentina	40.3	39.7	37.3	36.1	34.9	34.0	32.0	-5.8	**1.05**
Bolivia	12.4	12.9	11.1	12.8	14.4	16.5	18.8	13.9	**0.62**
Brazil	10.1	12.6	10.7	13.1	15.1	17.3	19.2	11.0	**0.63**
Colombia	6.8	8.2	9.5	10.1	9.9	10.8	11.4	5.8	**0.37**
Peru	2.4	3.1	3.1	6.5	10.2	10.7	11.0	2.8	**0.36**
Trinidad & Tobago	38.0	37.8	39.3	40.3	38.6	38.5	38.6	0.3	**1.27**
Venezuela	32.5	29.5	27.9	24.7	24.8	26.5	25.6	-3.4	**0.84**
Other S. & Cent. America	3.5	3.3	3.8	3.2	2.8	2.6	2.3	-11.5	**0.08**
Total S. & Cent. America	**146.0**	**146.9**	**142.6**	**146.9**	**150.6**	**156.8**	**158.9**	**1.3**	**5.22**
Europe and Eurasia									
Azerbaijan	8.8	13.3	13.3	13.6	13.3	14.0	14.5	3.3	**0.48**
Denmark	8.3	9.1	7.6	7.4	5.9	5.2	4.4	-15.4	**0.14**
Germany	12.9	11.7	11.0	9.6	9.0	8.1	7.4	-9.0	**0.24**
Italy	8.0	7.6	6.6	6.8	6.9	7.1	6.4	-9.9	**0.21**
Kazakhstan	13.6	15.2	14.8	14.3	15.7	16.5	16.6	0.6	**0.55**
Netherlands	54.5	60.0	56.4	63.5	57.8	57.5	61.8	7.5	**2.03**
Norway	81.3	90.1	94.0	96.5	91.1	103.3	97.9	-5.2	**3.22**
Poland	3.9	3.7	3.7	3.7	3.8	3.8	3.8	-0.4	**0.12**
Romania	10.4	10.3	10.1	9.8	9.8	9.8	9.9	0.6	**0.33**
Russian Federation	532.9	541.6	474.9	530.0	546.3	533.1	544.3	2.1	**17.90**
Turkmenistan	58.9	59.5	32.7	38.1	53.6	56.1	56.1	0.0	**1.84**
Ukraine	16.9	17.1	17.3	16.7	16.8	16.7	17.3	3.6	**0.57**
United Kingdom	64.9	62.7	53.7	51.4	40.7	35.0	32.8	-6.3	**1.08**
Uzbekistan	53.2	56.0	54.0	53.7	51.3	51.2	49.7	-3.0	**1.63**
Other Europe & Eurasia	9.7	9.2	9.1	9.1	8.5	7.8	6.7	-14.1	**0.22**
Total Europe & Eurasia	**938.1**	**967.0**	**859.2**	**924.1**	**930.5**	**925.3**	**929.6**	**0.5**	**30.56**
Middle East									
Bahrain	10.6	11.4	11.5	11.8	12.0	12.4	14.2	14.5	**0.47**
Iran	112.5	119.2	129.8	137.1	143.9	149.1	149.9	0.5	**4.93**
Iraq	1.3	1.7	1.0	1.2	0.8	0.6	0.6	0.0	**0.02**
Kuwait	10.9	11.5	10.3	10.6	12.2	14.0	14.0	0.0	**0.46**
Oman	21.6	21.7	22.3	24.4	23.9	27.0	27.8	3.0	**0.91**
Qatar	56.9	69.3	80.4	105.0	130.7	135.7	142.7	5.2	**4.69**
Saudi Arabia	67.0	72.4	70.6	78.9	83.0	89.4	92.7	3.7	**3.05**
Syria	5.0	4.8	5.0	7.2	6.4	4.8	4.0	-16.7	**0.13**
United Arab Emirates	45.3	45.2	43.9	46.2	47.1	48.9	50.4	3.1	**1.66**
Yemen	-	-	0.7	5.6	8.5	6.8	9.3	36.8	**0.31**
Other Middle East	2.7	3.3	2.7	3.0	4.0	2.4	5.9	145.8	**0.19**
Total Middle East	**333.8**	**360.3**	**378.3**	**431.0**	**472.5**	**491.1**	**511.5**	**4.2**	**16.82**

Contd….

Table 9.3(Contd.): Country-wise Estimates of Production of Natural Gas*

(Million tonnes oil equivalent)

Country/ Region	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	% Change 2013-14 over 2012-13	2013-14 % Share of World's Total Consumption
Africa									
Algeria	76.3	77.2	71.6	72.4	74.4	73.4	70.7	-3.6	**2.32**
Egypt	50.1	53.1	56.4	55.2	55.3	54.8	50.5	-7.8	**1.66**
Libya	13.8	14.3	14.3	15.1	7.1	11.0	10.8	-1.6	**0.36**
Nigeria	33.2	32.6	23.4	33.6	36.5	39.0	32.5	-16.7	**1.07**
Other Africa	11.1	14.2	14.7	16.6	16.7	16.6	19.4	16.9	**0.64**
Total Africa	**184.5**	**191.4**	**180.4**	**192.8**	**190.0**	**194.7**	**183.9**	**-5.6**	**6.05**
Asia Pacific									
Australia	36.0	34.4	38.1	41.0	40.5	39.0	38.6	-1.0	**1.27**
Bangladesh	14.3	15.3	16.7	17.9	18.1	19.0	19.7	3.7	**0.65**
Brunei	11.0	10.9	10.3	11.1	11.5	11.3	11.0	-2.7	**0.36**
China	62.3	72.3	76.7	85.4	92.4	96.4	105.3	9.2	**3.46**
India	**27.1**	**27.5**	**35.3**	**45.8**	**41.5**	**36.3**	**30.3**	-16.5	**1.00**
Indonesia	60.9	62.7	64.7	73.8	68.3	64.0	63.4	-0.9	**2.08**
Malaysia	58.1	58.2	57.0	58.7	58.7	59.8	62.1	3.8	**2.04**
Myanmar	12.2	11.2	10.4	11.2	11.5	11.5	11.8	3.0	**0.39**
Pakistan	33.1	33.8	34.6	35.7	35.2	37.1	34.7	-6.5	**1.14**
Thailand	23.4	25.9	27.8	32.7	33.3	37.3	37.6	0.9	**1.24**
Vietnam	6.4	6.7	7.2	8.5	7.6	8.4	8.8	4.8	**0.29**
Other Asia Pacific	15.6	16.5	16.7	16.3	16.5	16.4	16.9	3.0	**0.56**
Total Asia Pacific	**360.4**	**375.4**	**395.6**	**437.8**	**435.2**	**436.4**	**440.2**	**0.9**	**14.47**
TOTAL WORLD	**2674.2**	**2769.8**	**2689.9**	**2877.9**	**2964.8**	**3016.8**	**3041.6**	**0.8**	**100.00**

* Excluding gas flared or recyled.

Source : Ministry of Petroleum & Natural Gas.

Table 9.4 : Country-wise Estimates of Consumption of Natural Gas

(in Million Tonnes Oil Equivalent)

Country/ Region	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	% Change 2013-14 over 2012-13	2013-14 % Share of World's Total Consumption
North America									
USA	596.3	600.8	590.1	619.3	628.8	657.3	671.0	2.1	**22.21**
Canada	86.6	86.5	85.4	85.5	90.8	90.2	93.1	3.2	**3.08**
Mexico	57.1	59.6	65.2	65.2	69.0	71.6	74.5	4.1	**2.47**
Total North America	**740.0**	**746.9**	**740.7**	**770.1**	**788.5**	**819.1**	**838.6**	**2.4**	**27.76**
South and Central America									
Argentina	39.5	40.0	38.9	39.0	41.1	42.6	43.2	1.4	**1.43**
Brazil	19.1	22.4	18.1	24.1	24.0	28.5	33.9	18.9	**1.12**
Chile	4.1	2.4	2.8	4.8	4.8	4.9	3.9	-20.4	**0.13**
Colombia	6.7	6.8	7.8	8.2	8.0	8.9	9.6	7.9	**0.32**
Ecuador	0.4	0.4	0.5	0.5	0.5	0.6	0.5	-16.7	**0.02**
Peru	2.4	3.1	3.1	4.9	5.5	6.1	5.9	-3.3	**0.20**
Trinidad & Tobago	19.7	19.2	19.9	20.9	20.8	20.0	20.2	1.0	**0.67**
Venezuela	32.5	30.9	29.0	26.1	26.8	28.3	27.5	-2.8	**0.91**
Other S. & Cent. America	4.0	4.3	4.5	4.8	5.2	6.4	7.1	10.9	**0.24**
Total S. & Cent. America	**128.5**	**129.4**	**124.6**	**133.3**	**136.7**	**146.3**	**151.8**	**3.8**	**5.02**
Europe and Eurasia									
Austria	8.0	8.6	8.4	9.1	8.5	8.1	7.6	-6.6	**0.25**
Azerbaijan	7.2	8.2	7.0	6.7	7.3	7.7	7.8	1.3	**0.26**
Belarus	17.0	17.3	14.5	17.7	16.5	16.5	16.5	0.0	**0.55**
Belgium	14.9	14.8	15.1	17.0	14.9	15.2	15.1	-0.7	**0.50**
Bulgaria	2.9	2.9	2.1	2.3	2.6	2.5	2.4	-4.0	**0.08**
Czech Republic	7.8	7.8	7.4	8.4	7.6	7.4	7.6	3.1	**0.25**
Denmark	4.1	4.1	4.0	4.5	3.8	3.5	3.4	-3.1	**0.11**
Finland	3.5	3.6	3.2	3.6	3.1	2.7	2.6	-3.7	**0.09**
France	38.3	39.4	37.6	42.2	36.4	38.0	38.6	1.6	**1.28**
Germany	74.6	73.1	70.2	75.0	67.1	70.5	75.3	6.8	**2.49**
Greece	3.3	3.5	2.9	3.2	4.0	3.7	3.2	-13.5	**0.11**
Hungary	11.8	12.6	11.5	11.3	9.3	9.2	7.7	-16.3	**0.25**
Republic of Ireland	4.3	4.5	4.3	4.7	4.1	4.0	4.0	0.0	**0.13**
Italy	70.0	70.0	64.4	68.6	64.3	61.8	57.8	-6.5	**1.91**
Kazakhstan	8.3	8.0	7.7	8.1	8.6	9.4	10.3	9.6	**0.34**
Lithuania	3.3	2.9	2.5	2.8	3.1	3.0	2.4	-20.0	**0.08**
Netherlands	33.3	34.7	35.0	39.2	34.3	32.8	33.4	1.8	**1.11**
Norway	3.8	3.9	3.7	3.7	3.9	3.9	4.0	2.6	**0.13**
Poland	12.4	13.5	13.0	14.0	14.1	14.9	15.0	0.7	**0.50**
Portugal	3.9	4.3	4.2	4.6	4.7	4.0	3.7	-7.5	**0.12**
Romania	14.5	14.3	11.9	12.2	12.5	12.2	11.2	-8.2	**0.37**
Russian Federation	379.8	374.4	350.7	372.8	382.1	374.6	372.1	-0.7	**12.32**
Slovakia	5.1	5.2	4.4	5.0	4.6	4.4	4.9	11.4	**0.16**
Spain	31.6	34.8	31.1	31.2	29.0	28.2	26.1	-7.4	**0.86**
Sweden	0.9	0.8	1.0	1.4	1.1	1.0	1.0	0.0	**0.03**
Switzerland	2.6	2.8	2.7	3.0	2.7	2.9	3.3	13.8	**0.11**
Turkey	32.5	33.8	32.1	35.1	40.2	40.7	41.1	1.0	**1.36**
Turkmenistan	19.1	18.5	17.9	20.4	21.1	23.8	20.0	-16.0	**0.66**
Ukraine	56.9	54.0	42.1	47.0	48.4	44.6	40.5	-9.2	**1.34**
United Kingdom	81.9	84.1	78.3	84.8	70.3	66.3	65.8	-0.8	**2.18**
Uzbekistan	41.3	43.8	39.2	41.0	44.2	42.2	40.7	-3.6	**1.35**
Other Europe & Eurasia	16.4	15.8	13.3	14.4	14.9	14.5	13.4	-7.4	**0.44**
Total Europe & Eurasia	**1015.4**	**1020.1**	**943.4**	**1014.8**	**989.4**	**974.2**	**958.5**	**-1.6**	**31.73**

Contd…

Table 9.4(Contd.) : Country-wise Estimates of Consumption of Natural Gas*

(in Million Tonnes Oil Equivalent)

Country/ Region	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	% Change 2013-14 over 2012-13	2013-14 % Share of World's Total Consumption
Middle East									
Iran	113.0	121.3	128.9	137.6	146.2	145.4	146.0	0.4	**4.83**
Israel	2.5	3.7	4.1	4.8	4.5	2.3	6.2	165.5	**0.21**
Kuwait	10.9	11.5	11.1	13.1	15.3	16.3	16.0	-1.8	**0.53**
Qatar	17.4	17.4	18.0	18.4	20.7	21.1	23.3	10.4	**0.77**
Saudi Arabia	67.0	72.4	70.6	78.9	83.0	89.4	92.7	3.7	**3.07**
United Arab Emirates	44.3	53.5	53.2	54.7	56.2	59.0	61.5	4.2	**2.04**
Other Middle East	29.1	32.9	35.0	39.8	36.6	38.0	39.9	5.0	**1.32**
Total Middle East	**284.2**	**312.7**	**320.9**	**347.2**	**362.6**	**371.5**	**385.6**	**3.8**	**12.76**
Africa									
Algeria	21.9	22.8	24.5	23.7	25.1	27.8	29.1	4.6	**0.96**
Egypt	34.5	36.8	38.3	40.6	44.7	47.3	46.3	-2.2	**1.53**
South Africa	3.1	3.4	3.0	3.5	3.5	3.6	3.5	-2.8	**0.12**
Other Africa	27.1	28.2	24.3	29.2	30.1	31.8	32.1	0.9	**1.06**
Total Africa	**86.6**	**91.1**	**90.1**	**97.0**	**103.4**	**110.6**	**111.0**	**0.4**	**3.67**
Asia Pacific									
Australia	23.9	23.0	22.7	22.8	23.0	16.7	16.1	-3.6	**0.53**
Bangladesh	14.3	15.3	16.7	17.9	18.1	19.0	19.7	3.7	**0.65**
China	63.5	73.2	80.6	96.2	117.5	131.7	145.5	10.5	**4.82**
China Hong Kong SAR	2.5	2.9	2.8	3.4	2.7	2.5	2.4	-5.1	**0.08**
India	**36.1**	**37.2**	**46.7**	**56.7**	**55.0**	**52.9**	**46.3**	**-12.5**	**1.53**
Indonesia	28.2	30.0	33.6	36.3	33.5	32.2	34.6	7.4	**1.15**
Japan	81.2	84.4	78.7	85.1	95.0	105.3	105.2	-0.1	**3.48**
Malaysia	30.1	30.4	29.7	31.6	28.8	31.2	30.6	-1.9	**1.01**
New Zealand	3.6	3.4	3.6	3.9	3.5	3.8	4.0	5.3	**0.13**
Pakistan	33.1	33.8	34.6	35.7	35.2	37.1	34.7	-6.5	**1.15**
Philippines	3.2	3.4	3.4	3.2	3.2	3.3	3.0	-9.1	**0.10**
Singapore	7.8	7.4	7.3	7.6	7.9	8.5	9.5	11.8	**0.31**
South Korea	31.2	32.1	30.5	38.7	41.7	45.2	47.3	4.6	**1.57**
Taiwan	9.6	10.5	10.2	12.7	14.0	14.7	14.7	0.3	**0.49**
Thailand	31.8	33.6	35.3	40.6	41.9	46.1	47.0	1.9	**1.56**
Vietnam	6.4	6.7	7.2	8.5	7.6	8.4	8.8	4.8	**0.29**
Other Asia Pacific	5.4	5.1	4.6	5.2	5.6	5.9	6.0	1.7	**0.20**
Total Asia Pacific	**411.8**	**432.3**	**448.1**	**506.0**	**534.2**	**564.5**	**575.4**	**1.9**	**19.05**
TOTAL WORLD	**2666.6**	**2732.5**	**2667.8**	**2868.3**	**2914.8**	**2986.2**	**3020.9**	**1.2**	**100.0**

^ Less than 0.05.

The difference between these world consumption figures and the world production statistics is due to variations in stocks at storage facilities and liquefaction plants, together with unavoidable disparities in the definition, measurement or conversion of gas supply and demand data.

Source : Ministry of Petroleum & Natural Gas.

ANNEX- I

DEFINITIONS OF ENERGY PRODUCTS.

1. Solid fuels

i. **Hard Coal**: Coals with a gross calorific value (moist, ash-free basis) which is not less than 24 MJ/kg or which is less than 24 MJ/kg provided that the coal has a vitrinite mean random reflectance greater than or equal to 0.6 per cent. Hard coal comprises anthracite and bituminous coals.

ii. **Lignite**: Brown coal with a gross calorific value (moist, ash-free basis) less than 20 MJ/kg.

iii. **Coke**: Products derived directly or indirectly from the various classes of coal by carbonisation or pyrolysis processes, or by the aggregation of finely divided coal or by chemical reactions with oxidising agents, including water.

iv. **Proved Reserves**: The coal resource of an area falling within 200 m radius from a borehole. Point (or observation point).

v. **Indicated Reserves:** Those resources occurring in the area falling between radii of 200m and 1 Km from the borehole point.

vi. **Inferred Reserves**: Those resources occurring in the area falling between radii of 1 Km and 2 Km from the borehole point.

2. Liquid fuels

i. **Crude petroleum** A mineral oil of fossil origin extracted by conventional means from underground reservoirs, and comprises liquid or near-liquid hydrocarbons and associated impurities such as sulphur and metals.

Remark: Conventional crude oil exists in the liquid phase under normal surface temperature and pressure, and usually flows to the surface under the pressure of the reservoir. This is termed “conventional” extraction. Crude oil includes condensate from condensate fields, and “field” or “lease” condensate extracted with the crude oil.
The various crude oils may be classified according to their sulphur content (“sweet” or “sour”) and API gravity (“heavy” or “light”). There are no rigorous specifications for the classifications but a heavy crude oil may be assumed to have an API gravity of less than 20º and a sweet crude oil may be assumed to have less than 0.5% sulphur content.

ii. **Liquefied petroleum** LPG refers to liquefied propane (C3H8) and butane (C4H10) or mixtures of both. Commercial grades are usually mixtures of the gases with small amounts of propylene, butylene, isobutene and isobutylene stored under pressure in containers.
Remark: The mixture of propane and butane used varies according to purpose and season of the year. The gases may be extracted from natural gas at gas separation plants

or at plants re-gasifying imported liquefied natural gas. They are also obtained during the refining of crude oil.
LPG may be used for heating and as a vehicle fuel. Certain oil field practices also use the term LPG to describe the high vapour pressure components of natural gas liquids.

iii. **Motor gasoline** A mixture of some aromatics (e.g., benzene and toluene) and aliphatic hydrocarbons in the C5 to C12 range. The distillation range is 25ºC to 220ºC.
Remark: Additives are blended to improve octane rating, improve combustion performance, reduce oxidation during storage, maintain cleanliness of the engine and improve capture of pollutants by catalytic converters in the exhaust system. Motor gasoline may also contain bio-gasoline products.

iv. **Naphtha's** Light or medium oils distilling between 30ºC and 210ºC which do not meet the
specification for motor gasoline.

Remark: Different naphthas are distinguished by their density and the content of paraffins, isoparaffins, olefins, naphthenes and aromatics. The main uses for naphthas are as feedstock for high octane gasolines and the manufacture of olefins in the petrochemical industry

v. **Kerosene** Mixtures of hydrocarbons in the range C9 to C16 and distilling over the temperature interval 145ºC to 300°C, but not usually above 250ºC and with a flash point above 38ºC.

Remark: The chemical compositions of kerosenes depend on the nature of the crude oils from which they are derived and the refinery processes that they have undergone. Kerosenes obtained from crude oil by atmospheric distillation are known as straight-run kerosenes. Such streams may be treated by a variety of processes to produce kerosenes that are acceptable for blending as jet fuels. Kerosenes are primarily used as jet fuels. They are also used as domestic heating and cooking fuels, and as solvents. Kerosenes may include components or additives derived from biomass.

vi. **Gasoline-type Jet fuels** Light hydrocarbons for use in aviation turbine power units, distilling between 100ºC and 250ºC. They are obtained by blending kerosene and gasoline or naphtha in such a way that the aromatic content does not exceed 25 per cent in volume, and the vapour pressure is between 13.7 kPa and 20.6 kPa.

Remark: Gasoline-type jet fuel is also known as “aviation turbine fuel”.

vii. **Gas oil / Diesel oil** Gas oils are middle distillates, predominantly of carbon number range C11 to C25 and with a distillation range of 160ºC to 420°C.

Remark: The principal marketed products are fuels for diesel engines (diesel oil), heating oils and marine fuel. Gas oils are also used as middle distillate feedstock for the petrochemical industry and as solvents.

viii. **Fuel oil** Comprises residual fuel oil and heavy fuel oil. Residual fuel oils have a distillation range of 350ºC to 650ºC and a kinematic viscosity in the range 6 to 55 cSt at 100ºC. Their flash point is always above 60ºC and their specific gravity is above

0.95. Heavy fuel oil is a general term describing a blended product based on the residues from various refinery processes.

Remark: Other names commonly used to describe fuel oil include: bunker fuel, bunker C, fuel oil No. 6, industrial fuel oil, marine fuel oil and black oil. Residual and heavy fuel oil are used in medium to large industrial plants, marine applications and power stations in combustion equipment such as boilers, furnaces and diesel engines. Residual fuel oil is also used as fuel within the refinery.

ix. **Lubricants** Oils, produced from crude oil, for which the principal use is to reduce friction between sliding surfaces and during metal cutting operations.

Remark: Lubricant base stocks are obtained from vacuum distillates which result from further distillation of the residue from atmospheric distillation of crude oil. The lubricant base stocks are then further processed to produce lubricants with the desired properties.

x. **Petroleum coke** Petroleum coke is a black solid obtained mainly by cracking and carbonizing heavy hydrocarbon oils, tars and pitches. It consists mainly of carbon (90 to 95 per cent) and has a low ash content.
The two most important categories are "green coke" and "calcined coke".

xi. Green coke (raw coke) is the primary solid carbonization product from high boiling hydrocarbon fractions obtained at temperatures below 630ºC. It contains 4-15 per cent by weight of matter that can be released as volatiles during subsequent heat treatment at temperatures up to approximately 1330ºC.
Calcined coke is a petroleum coke or coal-derived pitch coke obtained by heat treatment of green coke to about 1330ºC. It will normally have a hydrogen content of less than 0.1 per cent by weight.

Remark: In many catalytic operations (e.g., catalytic cracking) carbon or catalytic coke is deposited on the catalyst, thus deactivating it. The catalyst is reactivated by burning off the coke which is used as a fuel in the refining process. The coke is not recoverable in a concentrated form

xii. **Bitumen (Asphalt)** A solid, semi-solid or viscous hydrocarbon with a colloidal structure, being brown to black in color.

Remark: It is obtained as a residue in the distillation of crude oil and by vacuum distillation of oil residues from atmospheric distillation. It should not be confused with the nonconventional primary extra heavy oils which may also be referred to as bitumen. In addition to its major use for road pavements, bitumen is also used as an adhesive, a waterproofing agent for roof coverings and as a binder in the manufacture of patent fuel. It may also be used for electricity generation in specially designed power plants. Bitumen is also known in some countries as asphalt but in others asphalt describes the mixture of bitumen and stone aggregate used for road pavements.

xiii. **Refinery gas** is a non-condensable gas collected in petroleum refineries (it is also known as still gas).

3. Gaseous fuels

i. **Natural Gas:** A mixture of gaseous hydrocarbons, primarily methane, but generally also including ethane, propane and higher hydrocarbons in much smaller amounts and some noncombustible gases such as nitrogen and carbon dioxide.

Remark: The majority of natural gas is separated from both "non-associated" gas originating from fields producing hydrocarbons only in gaseous form, and "associated" gas produced in association with crude oil. The separation process produces natural gas by removing or reducing the hydrocarbons other than methane to levels which are acceptable in the marketable gas. The natural gas The natural gasliquids (NGL) removed in the process are distributed separately.

ii. **Coke-oven gas** : A gas produced from coke ovens during the manufacture of coke oven coke.

iii. **Biogases:** Gases arising from the anaerobic fermentation of biomass and the gasification of solid biomass (including biomass in wastes).

Remark: The biogases from anaerobic fermentation are composed principally of methane and carbon dioxide and comprise landfill gas, sewage sludge gas and other biogases from anaerobic fermentation.
Biogases can also be produced from thermal processes (by gasification or pyrolysis) of biomass and are mixtures containing hydrogen and carbon monoxide (usually known as syngas) along with other components. These gases may be further processed to modify their composition and can be further processed to produce substitute natural gas.
The gases are divided into two groups according to their production: biogases from anaerobic fermentation and biogases from thermal processes. They are used mainly as a fuel but can be used as a chemical feedstock.

4. Electricity

i. **Installed capacity**: The net capacity measured at the terminals of the stations, i.e., after deduction of the power absorbed by the auxiliary installations and the losses in the station transformers.

ii. **Utilities**: undertakings of which the essential purpose is the production, transmission and distribution of electric energy. These may be private companies, cooperative organisations, local or regional authorities, nationalised undertakings or governmental organisations.

iii. **Non-Utilities**: An Independent Power Producer which is not a public utility, but which owns facilities to generate electric power for sale to utilities and end users. They may be privately held facilities, corporations, cooperatives such as rural solar or wind energy producers, and non-energy industrial concerns capable of feeding excess energy into the system

iv. **Hydro Electricity**: refers to electricity produced from devices driven by fresh, flowing or falling water.

v. **Thermal Electricity** comprises conventional thermal plants of all types, whether or not equipped for the combined generation of heat and electric energy. Accordingly, they include steam-operated generating plants, with condensation (with or without extraction) or with back-pressure turbines, and plants using internal combustion engines or gas turbines whether or not these are equipped for heat recovery.

vi. **Nuclear Electricity** is defined as the heat released by the reactors during the accounting period and is obtained by dividing the generation of nuclear electricity by average efficiency of all nuclear power stations.

vii. **Production** is defined as the capture, extraction or manufacture of fuels or energy in forms which are ready for general use. In energy statistics, two types of production are distinguished, primary and secondary. Primary production is the capture or extraction of fuels or energy from natural energy flows, the biosphere and natural reserves of fossil fuels within the national territory in a form suitable for use. Inert matter removed from the extracted fuels and quantities reinjected flared or vented are not included. The resulting products are referred to as "primary" products.
Secondary production is the manufacture of energy products through the process of transformation of primary fuels or energy. The quantities of secondary fuels reported as production include quantities lost through venting and flaring during and after production. In this manner, the mass, energy and carbon within the primary source(s) from which the fuels are manufactured may be balanced against the secondary fuels produced. Fuels, electricity and heat produced are usually sold but may be partly or entirely consumed by the producer. comprises gross production, i.e. the amount of electric energy produced, including that consumed by station auxiliaries and any losses in the transformers that are considered integral parts of the station. Included is the total production of electric energy produced by pump storage installations.

viii. **Imports of energy products** comprise all fuel and other energy products entering the national territory. Goods simply being transported through a country (goods in transit) and goods temporarily admitted are excluded but re-imports, which are domestic goods exported but subsequently readmitted, are included. The bunkering of fuel outside the reference territory by national merchant ships and civil aircraft engaged in international travel is excluded from imports. Fuels delivered to national merchant ships and civil aircraft which are outside of the national territory and are engaged in international travel should be classified as "International Marine" or "Aviation Bunkers", respectively, in the country where such bunkering is carried out (see paragraph 5.12). Note that the "country of origin" of energy products should be recorded as a country from which goods were imported**.**

ix. **Exports of energy products** comprise all fuel and other energy products leaving the national territory with the exception that exports exclude quantities of fuels delivered for use by merchant (including passenger) ships and civil aircraft, of all nationalities, during international transport of goods and passengers. Goods simply being transported through a country (goods in transit) and goods temporarily withdrawn are excluded but re-exports, foreign goods exported in the same state as previously imported, are included. Fuels delivered to foreign merchant ships and civil aircraft engaged in international travel are classified as "International Marine" or "Aviation Bunkers", respectively. Note that "country of destination" of energy products (that is country of

the last known destination as it is known at the time of exportation) should be recorded as a country to which these products are exported to**.**

x. **Losses** refer to losses during the transmission, distribution and transport of fuels, heat and electricity. Losses also include venting and flaring of manufactured gases, losses of geothermal heat after production and pilferage of fuels or electricity. Production of secondary gases includes quantities subsequently vented or flared. This ensures that a balance can be constructed between the use of the primary fuels from which the gases are derived and the production of the gases.

xi. **Energy Industries Own Use** refers to consumption of fuels and energy for the direct support of the production, and preparation for use of fuels and energy. Quantities of fuels which are transformed into other fuels or energy are not included here but within the transformation use. Neither are quantities which are used within parts of the energy industry not directly involved in the activities listed in the definition. These quantities are reported within final consumption.

5. Non-commercial Energy Sources

i. **Fuelwood, wood residues and by-products:** Fuel wood or firewood (in log, brushwood, pellet or chip form) obtained from natural or managed forests or isolated trees. Also included are wood residues used as fuel and in which the original composition of wood is retained.
Remark: Charcoal and black liquor are excluded.

ii. **Charcoal** The solid residue from the carbonisation of wood or other vegetal matter through slow pyrolysis.

iii. **Bagasse** The fuel obtained from the fiber which remains after juice extraction in sugar cane processing.

ANNEX -II

Conversion Factors

1 Kilogram	=	2.2046 pounds	
1 Pound	=	454 gms	
1 Cubic Meter	=	35.3 cubic feet (gas)	
1 Metric tonne	=	1 Tonne	
	=	1000 kilograms	
1 joule	=	0.23884 calories	
1 kilo joules	=	10^3joules	= 238.84 calories
1 mega joule	=	10^6 joules	= $238.84x10^3$ calories
1 giga joule	=	10^9 joules	= $238.84x10^6$ calories
1 tera joule	=	10^{12}joules	= $238.84x10^9$ calories
1 peta joule	=	10^{15} joules	= $238.84x10^{12}$ calories

One million tonnes of coal in

1970-81	=	20.93 peta joules of energy.
1982-38	=	19.98 peta joules of energy.
1984-89	=	19.62 peta joules of energy.
1990-96	=	17.81 peta joules of energy.
1997-99	=	17.08 peta joules of energy.
1999-00	=	16.93 peta joules of energy.
2000-01	=	16.88 peta joules of energy.
2001-02	=	16.87 peta joules of energy.
2002-03	=	16.68 peta joules of energy.
2003-04	=	16.69 peta joules of energy.
2004-05	=	16.60 peta joules of energy.
2005-06	=	16.03 peta joules of energy.
2006-14	=	16.14 peta joules of energy

One million tonnes of oil equivalent (MTOE)	=	41.87 peta joules of energy.
	=	$4.1868x10^4$ terajoules (TJ)
	=	42 giga joules
	=	11.6 Mwh
One billion cubic metre of natural gas	=	38.52 peta joules of energy.
One million cubic metre of natural gas	=	38.52 tera joules of energy.
	=	.03852 peta joules of energy.
One billion kilowatt hour of electricity	=	3.60 peta joules of energy.

ANNEX-III

Abbreviations

ATF	:	Aviation Turbine Fuel
HSDO	:	High Speed Diesel Oil
LDO	:	Light Diesel Oil
LSHS	:	Low Sulphur Heavy Stock
LPG	:	Liquefied Petroleum Gas
MS/MOGAS	:	Motor Spirit/Motor Gasoline
F.O.	:	Furnace Oil
M.T.O.	:	Mineral Turpentine Oil
PET-COKE	:	Petroleum Coke
SBPS	:	Special Boiling Point Spirit
SKO	:	Superior Kerosene Oil
CPEs	:	Centrally Planned Economies
N.C.W.	:	Non-communist World
O.P.E.C.	:	Organisation of Petroleum Exporting Countries
O.E.C.D.	:	Organisation for Economic Cooperation & Development
EMEs	:	Emerging Market Economies (includes countries of South & Central America, Africa, Middle-east, Non-OECD Asia & Non-OECD Europe)
MW	:	Megawatt
KW	:	Kilowatt
(P)	:	Provisional

ANNEX- IV

Energy Data Collection Mechanisms

I. Coal and Coal Derivatives

I.1 Organsiational set up: The Coal controller's Office is a subordinate office of M/o Coal having headquarter in Kolkata and five field offices at Dhanbad, Ranchi, Bilaspur and Nagpur, apart from Kolkata. The Statistical Division of coal controller's Office, working under overall guidance of Coal Controller located at Kolkata is having a Deputy Director General and Deputy Director from Indian Statistical Service.

I.2. Current Activities: Statistics division of Coal Controller's Office (CCO) is looking after all work related to coal and lignite statistics. Major role of this division are as under:-

- Collection, compilation, analysis and dissemination of Coal Statistics
- Undertake Annual Survey of Coal and Lignite Industry to assess production, dispatch, stock at pithead etc.
- To monitor the progress of captive coal and lignite blocks
- To maintain a database of washeries in India

I.3 Details of data flows/ items:

- **Data items-** The organization is collecting data on the following items on regular basis:-

ITEMS	PERIODICITY
1.Reserve (from GSI)	Annual
2.Production (from coal/ lignite company)	Monthly
3.Despatches (from coal/ lignite company)	-do-
4. Pit head closing stock (")	-do-
5. Price (for non-captive coal mines)	-do-
6. Wagon Loading (Rail)(from CIL/ SCCL)	-do-
7. Import & Export (DGC&S)	-do-
8. Coal consumption in steel (from SAIL/RINL/TSL)	Monthly
9. Coal consumption in power & cement sector (from CEA etc.)	Annual
10. Captive coal & lignite mining	Monthly
11. Washery in India	Monthly
12. World Coal Statistics (from IEA)	Annual
13.Colliery-wise production data	Annual

- **Data sources and Act/ Order/ Rule etc.**
  The data are collected from different coal/ lignite companies under the statutory powers vested with the Coal Controller under the provisions of Collection of Statistics Act, 2008, the Colliery Control Rule, 2004 and Coal Mines (Conservation & Development) Act, 1974 and publications of CIL, SAIL and DGCIS.

- **Methodology of Data Collection**

  Monthly Data- Data are collected from coal companies (Private and Public) on monthly basis on some major parameters.

  Annual survey- Complete enumeration (through mailed questionnaire) and sample check by physical inspection in Annual Survey of Coal and Lignite Industries.

  Coverage:- Entire coal and lignite producing sector.
  Response:- 100%

- Details of data items being compiled and periodicity

ITEMS	PERIODICITY
1. Coal production data for PMO	Monthly
2. Data for Infrastructure Bulletin of MOSPI through MOC	Monthly
3. Data for IIP(Covering Washed Coal, Middlings, Hard Coke)	Monthly
4. Data for IIP of Mineral Sector (Coal & Lignite – state-wise)	Monthly
5. Provisional Coal Statistics	Annual
6. Coal Directory of India- Vol I & II	Annual
7. U. N. Annual energy Report- through CSO	Annual
8. IEA(for energy balance in case of non-OECD country: India)	Annual
9. Ad-hoc Reports	As and when required

II. Petroleum and Natural Gas

The Ministry of Petroleum and Natural Gas is mandated to take measures for exploration and exploitation of petroleum resources including natural gas and coal bed methane, and also distribution, marketing and pricing of petroleum products.

II.1. Organizational set up and activities

Ministry of Petroleum has an Economic and Statistics Division headed by an Economic Adviser. The Division provides economic inputs to the Divisions of the Ministry after detailed analysis of the plan and programmes. An exhaustive data base is maintained on production and trade of crude oil, natural gas, petroleum products and stages of capacity creation by the petroleum industry. The Economic and Statistics Division is involved in the plan formulation exercise of the public sector enterprises associated with petroleum exploration, production, refining and marketing. Also, all issues pertaining to foreign investment policy in the petroleum sector and issues relating to Double Taxation Avoidance Agreement (DTAA) on Income & Capital etc. are handled in the Division.

The Division brings out the following reports for monitoring the performance of Petroleum & Natural gas products:

- **Monthly & Quarterly Reports on Petroleum Statistics:** Collection, compilation and submission of Reports on:

  (i) Production of Crude Oil, Natural Gas and Petroleum Products- to Ministries/Department/Committees etc. on monthly basis.
  (ii) Quarterly report on Production Performance- to Ministry of Statistics & Programme Implementation;
  (iii) Import/Export of Crude Oil and Petroleum Products- to the designated Ministries/Departments.
  (iv) Joint Organisations Data Initiative Statistics - to United Nations Statistics Division.

- **Publication of Annual Basic Statistics on Petroleum & Natural Gas Products and Annual Indian Petroleum & Natural Gas Statistics**

II.2. Details of the data flows and items

Data Collected: Production of Crude Oil, all Petroleum Products, Natural Gas, LNG, Imports/Exports of Oil & Petroleum products, Consumption of Petroleum Products and Refinery intake etc. on monthly basis and apart from these data other related data for publication of "Basic Statistics on Indian Petroleum & Natural Gas Products" and "Indian Petroleum & Natural Gas Statistics" being collected annually.

Periodicity & Data Sources: The data being collected on monthly, quarterly, annual basis from all Public Sector Undertakings and Private Oil Companies including oil refineries.

Methods of Data Collection: Data collected through electronic mail, FAX as well as hard copy by post.

Data Dissemination Methods: Monthly, Quarterly and Annual Progress Reports circulated to all concerned and also uploaded on Ministry's web site for the public user.

II.3. Provisions under which statutory returns are collected for the petroleum sector:

(i) For returns on crude oil and natural gas

Principal Legislation: THE OILFIELDS (REGULATION AND DEVELOPMENT) ACT, 1948(53 of 1948) (8TH SEPTEMBER, 1948)

Subordinate Legislation: THE PETROLEUM AND NATURAL GAS RULES, 1959(As amended from time to time)

Section 14*:* Royalty on petroleum and furnishing of returns and particulars:

(2) The lessee shall, within the first seven days of every month or within such further time as the Central Government or the State Government, as the case may be, may allow, furnish or cause to be furnished to the Central Government or the State Government as the case may be a full and proper return showing the quantity of all crude oil, casing head condensate and natural gas obtained during the preceding month from mining operations conducted pursuant to the lease. The monthly return required to be furnished shall be, as nearly as may be, in the form specified in the schedule annexed to these rules.

(ii) For returns on refinery output (petrol, diesel etc)

Principal Legislation:THE INDUSTRIES (DEVELOPMENT AND REGULATION) ACT, 1951, (ACT NO. 65 OF 1951)

Subordinate Legislation: Scheduled Industries (Submission of Production Returns) Rules, 1979.

Section 6: However, collection of data is also governed by the Gazette of India (Extraordinary) Part II-Section 3-Sub Section (i) order No.G.S.R.272(E) dated 16.04.1999 wherein clause 8 states that "Every oil refining company shall furnish to the Central Government or an agency nominated by Central Government any and every information that may be asked for in regard to the procurement, stocking, movements (onshore or offshore), transfers, imports, exports and sales of crude oil and or all products at such period, in such manner and from such of the sources, as may be specified from time to time".

III. Electricity

III.1 Organisational Setup

The Central Electricity Authority (CEA) is the nodal authority for supply of electricity data. It is a statutory organization under M/o Power. constituted under Section 3 of the repealed Electricity (Supply) Act, 1948. It was established as a part-time body in the year 1951 and made a full-time body in the year 1975.

With the objective of reforming the Power Sector, the Electricity Act, 2003 (No. 36 of 2003) has been enacted and the provisions of this Act have been brought into force with effect from 10th June, 2003.

III.2 Functions

As per section 73 of the Electricity Act, 2003, the Central Electricity Authority shall perform such functions and duties as the Central Government may prescribe or direct, and in particular to -

a) advise the Central Government on the matters relating to the national electricity policy, formulate short-term and perspective plans for development of the electricity system and coordinate the activities of the planning agencies for the optimal utilization of resources to sub serve the interests of the national economy and to provide reliable and affordable electricity to all consumers;
b) specify the technical standards for construction of electrical plants, electric lines and connectivity to the grid;
c) specify the safety requirements for construction, operation and maintenance of electrical plants and electric lines;
d) specify the Grid Standards for operation and maintenance of transmission lines;
e) specify the conditions for installation of meters for transmission and supply of electricity;
f) promote and assist in the timely completion of schemes and projects for improving and augmenting the electricity system;
g) promote measures for advancing the skills of persons engaged in electricity industry;
h) advise Central Government on any matter on which its advice is sought or make recommendation to that Government on any matter if, in the opinion of the Authority, the recommendation would help in improving the generation, transmission, trading, distribution and utilization of electricity;
i) collect and record the data concerning the generation, transmission, trading, distribution and utilization of electricity and carry out studies relating to cost, efficiency, competitiveness and such like matters;
j) make public from time to time the information secured under this Act, and provide for the publication of reports and investigations;
k) promote research in matters affecting the generation, transmission, distribution and trading of electricity;
l) carry out, or cause to be carried out, any investigation for the purpose of generating or transmitting or distributing electricity;
m) advise any State Government, licensees or the generating companies on such matters which shall enable them to operate and maintain the electricity system under their ownership or control in an improved manner and where necessary, in coordination with any other Government, licensee or the generating company owning or having the control of another electricity system;

n) advise the Appropriate Government and the Appropriate Commission on all technical matters relating to generation, transmission and distribution of electricity; and
o) discharge such other functions as may be provided under this Act.

III.3. Details of the data Flows/ Items

In exercise of the powers conferred by section 177, read with section 74 and clause (i) of section 73 of the Electricity Act, 2003, the Central Electricity Authority published the regulations vide Extra Ordinary Gazette notification dated 19th April 2007, namely:- **Central Electricity Authority (Furnishing of Statistics, Returns and Information) Regulations,2007**

(a) Sources of Statistics, Returns and Information

All licensees, generating companies and person(s) mentioned below, but not limited to, shall furnish to the Authority such statistics, returns or other information relating to generation, transmission, distribution, trading and utilization of electricity at such times and in such form and manner as specified under these regulations-

- **Licensees**
  - (i) Transmission Licensees;
  - (ii) Distribution Licensees;
  - (iii) Trading Licensees;
  - (iv) Central Transmission Utility;
  - (v) State Transmission Utilities;
  - (vi) Appropriate Governments who are responsible for transmitting, distributing or trading of electricity;
  - (vii) Damodar Valley Corporation established under sub-section (1) of section 3 of the Damodar Valley Corporation Act, 1948 (14 of 1948);
  - (viii) Any person engaged in the business of transmission or supply of electricity under the provisions of the repealed laws or any act specified in the Schedule;
  - (ix) Any person who intends to generate and distribute electricity in a rural area as notified by the State Government;
  - (x) State Electricity Boards;
  - (xi) Local authorities including Cantonment Boards;
  - (xii) Deemed licensees and entities exempted from license.
  - (xiii) Bhakra Beas Management Board.

- **Generating companies**
  - (i) Generating companies established by appropriate Governments;
  - (ii) Independent Power Producers;
  - (iii) Appropriate Governments responsible for generating electricity;
  - (iv) Bhakra Beas Management Board;
  - (v) Any person engaged in the business of generating electricity under the provisions of the repealed laws or any act specified in the Schedule;
  - (vi) Damodar Valley Corporation.

- **Person(s) generating electricity for own use:**

  (i) All captive power producers;
  (ii) Any other person including Co-operative Society, Association of persons, body of individuals, etc. engaged in generating electricity for its or his own use.

- **Other entities**

  (i) National Load Despatch Centre;
  (ii) Regional Load Despatch Centre(s);
  (iii) State Load Despatch Centre(s);
  (iv) Regional Power Committee(s);
  (v) High voltage or extra high voltage consumers of electricity.

(b) Formats for furnishing of statistics, returns or information –

The entities shall furnish the statistics, returns and information as per the formats annexed to these regulations titled "List of formats, frequency(ies) and target date(s)". These formats can also be obtained from the website of the Central Electricity Authority. (website www.cea.nic.in)

(c) Time schedule for furnishing of statistics, returns or information –

The time schedule or targets for furnishing of statistics, returns or information is specified by the Authority on its prescribed formats.

(d) Frequency of submission of statistics, returns or information –

The frequency of submission i.e. daily, weekly, monthly, quarterly or annually is specified by the Authority in its prescribed formats.

(e) Manner of furnishing the statistics, returns or information –

The statistics, returns or information in the prescribed formats shall be furnished to the Authority preferably electronically or by post or courier or fax.

III.4 Data collection problems

The Central Electricity Authority is receiving data from various Public and Private Entities/ Utilities / Organizations/Industries. Though, it is mandatory to these organizations to furnish the correct, complete data in time, yet the following problems are being faced in collection of data.

1. Delay in furnishing data.
2. Furnishing incomplete/ incorrect data.
3. Non submission of data.

For smooth collection of the electricity data, CEA is installing electronic data collection system titled as Information Management System (IMS), ,where all the returns of electricity data can be directly furnished by concerned party (licensees, generating companies, entities etc.)

IV. New and Renewable Energy

IV.1. Nodal ministry

Ministry of New and Renewable Energy (MNRE) is the nodal Ministry of the Government of India at the National level for all matters relating to new and renewable energy. The Ministry has been facilitating the implementation of broad spectrum programmes including harnessing renewable power, renewable energy to rural areas for lighting, cooking and motive power, use of renewable energy in urban, industrial and commercial applications and development of alternate fuels and applications. In addition, it supports research, design and development of new and renewable energy technologies, products and services.

IV.2. Organisational setup

It is broadly organized into eight Groups dealing with 'Bio-Energy, Research & Development and TIFAD(Technology Information Forecasting, Assessment and Databank), Solar Energy', and Remote Village Electrification', Biomass and Wind Power', 'Energy for Urban, Industrial & Commercial Applications', 'Small Hydro and Information & Public Awareness', 'Hydrogen Energy' and 'Administration and Coordination'. In addition, the Ministry has an Integrated Finance Division, which is functioning under the Special Secretary and Financial Adviser. The Ministry is classified as a Scientific Ministry.

IV.3. Current responsibilities

Formulating policies and programmes for the development of new and renewable sources of energy;

(a) Coordinating and intensifying research and development activities in new and renewable sources of energy;

(b) Ensuring implementing of Government's policies in regard to all matters concerning new and renewable sources of energy.

IV.4. Data flows

The basic data being compiled includes year wise and month wise no. of systems installed, their capacities. locations, etc. and is obtained from various stakeholders i.e. State Government Departments/Nodal Agencies, NGOs, Private Entrepreneurs, etc. Annual statistical information regarding achievements under different programmes/schemes is being included in the yearly Annual Report of the Ministry.




CSO, SARDAR PATEL BHAVAN,

SANSAD MARG, NEW DELHI - 110 001