

|| Chapter - 5 ||

Availability of Energy Resources



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Availability

The availability of and access to energy and energy sources are particularly essential for poverty reduction and further improvements in standards of living.

Data on availability of energy resources within the national territory of a given country during a reference period along with reliable and timely monitoring of the supply and use of energy becomes indispensable for sound decision-making.

Data items, particularly, on mineral and energy resources are important for the assessment of their availability in the environment, as well as for the assessment of their depletion. This information is often used in the compilation of asset accounts in the SNA, as well as in SEEA-Energy accounts to assess their availability in the long run.

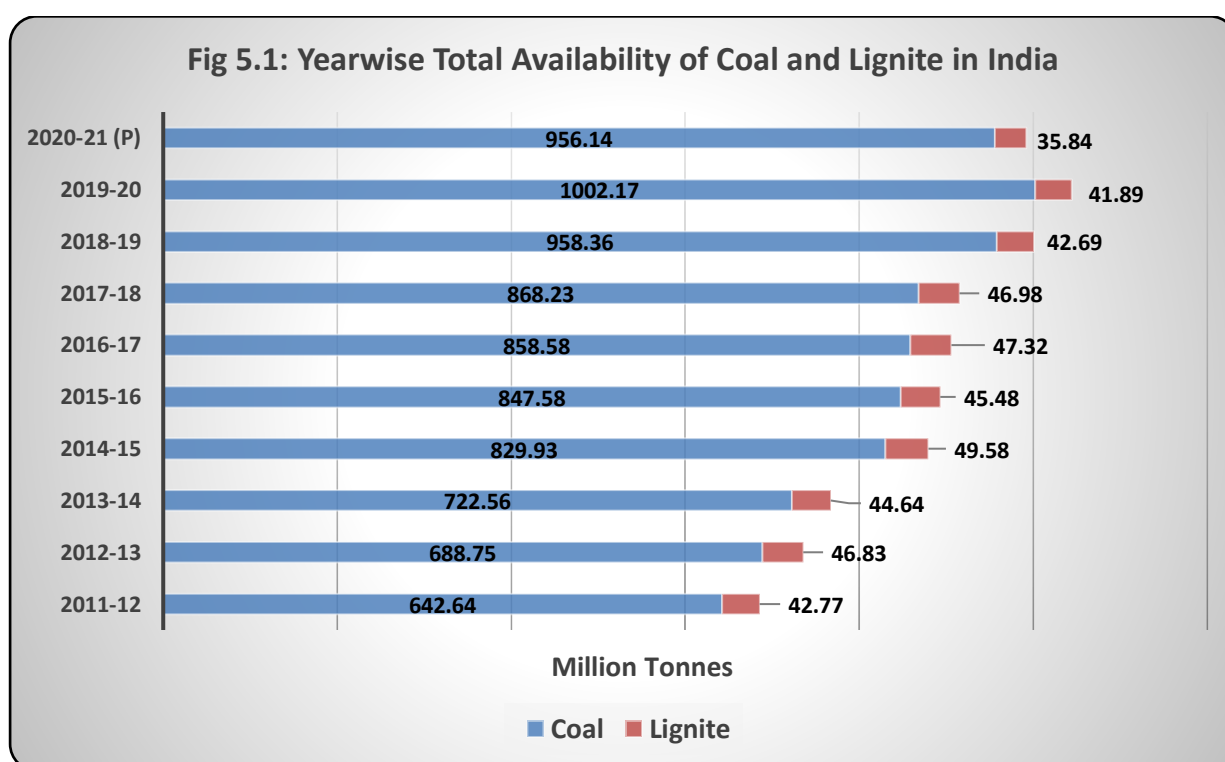
More importantly, it is essential for countries to track their depletion of energy related natural resources, as this directly affects their availability for future generations and increasing dependence of an economy on trade to balance the deficit. Thus, there has been a thrust to rely on renewable and cleaner forms of energy in the recent years, world over, - to bridge the gap between demand and supply without affecting the environment drastically.

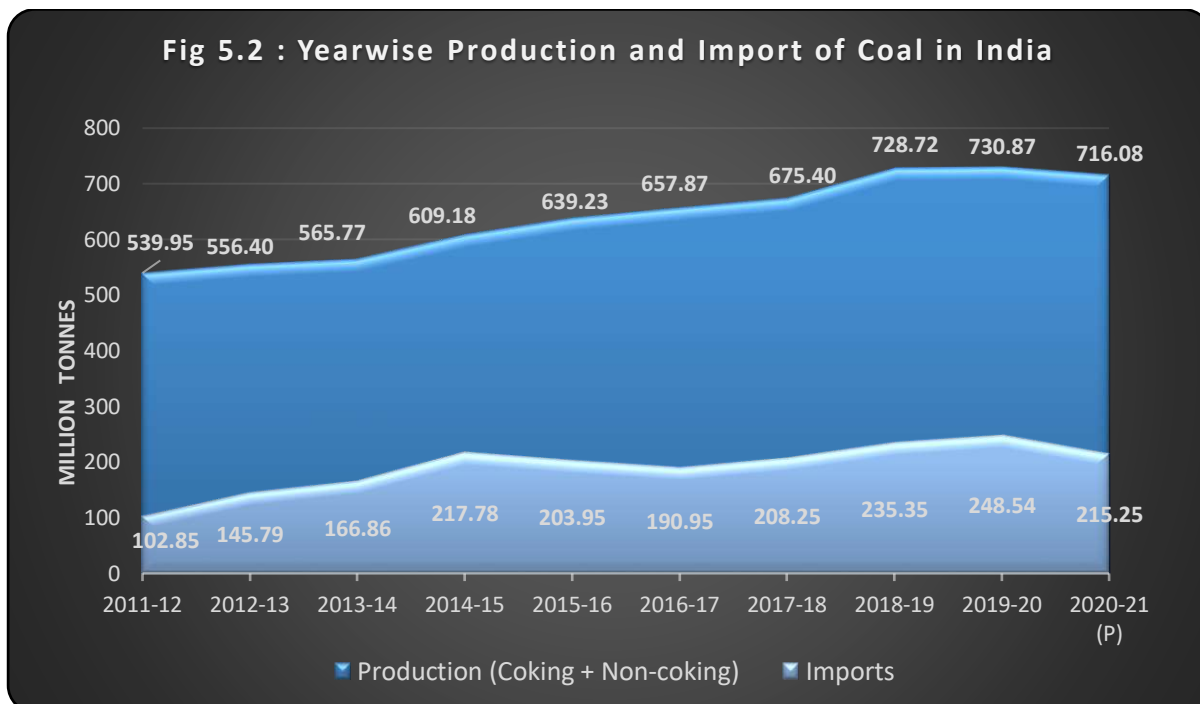
The necessity of Energy security in the current world and availability of energy being an enabler of life improvement, access and availability of Clean Energy for all has been recognized as an agenda point of the Sustainable Development Goals which are to be achieved by countries till 2030.

This chapter presents the availability of primary energy resources, petroleum products and electricity in the economy.

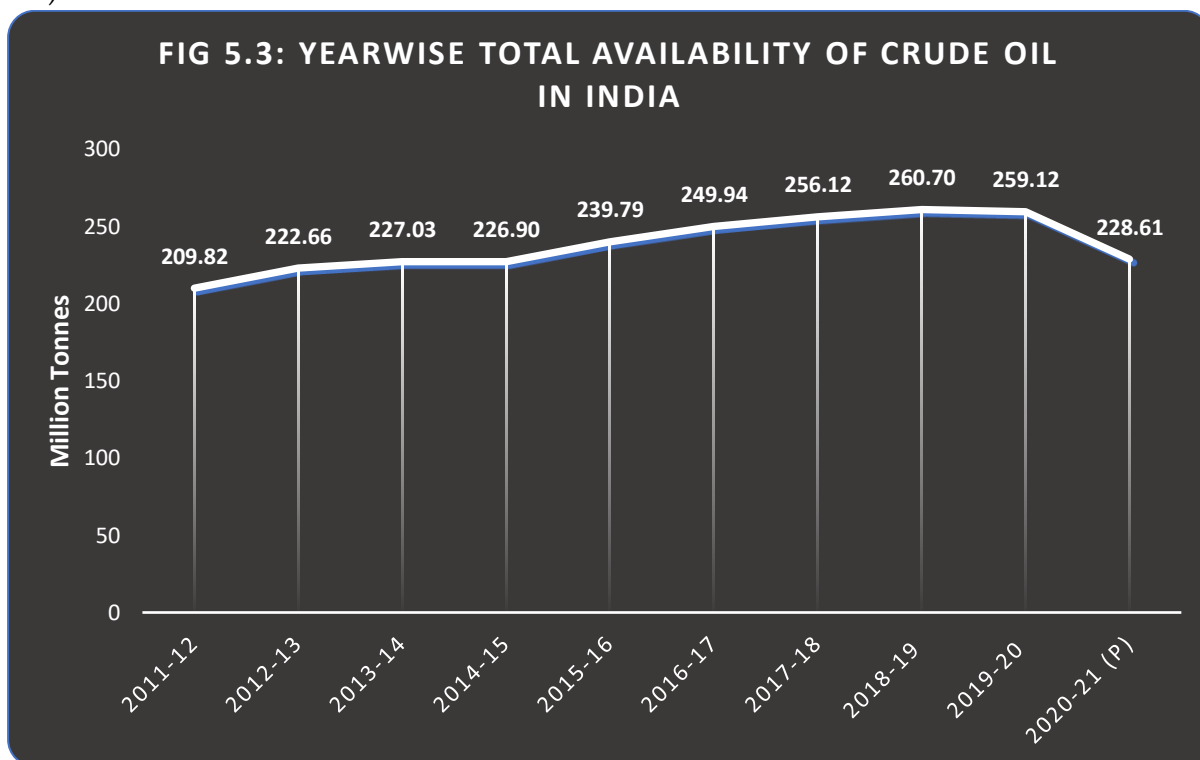
Highlights

- Over the year 2020-21, in comparison to the year 2019-20, the availability of energy resources has experienced a decline in all the energy resources. Where, Coal and Natural Gas has been declined by 4.59% and 5.45% respectively during FY:2020-21(P), in comparison with previous financial year; the availability of Lignite and Crude oil has been decreased by 14.43% and 11.78% respectively during FY:2020-21, w.r.t FY:2019-20. (Table 5.1).
- India, being one of the largest reservoirs of Coal, has displayed a steady increase in availability of Coal during the period from 2011-12 to 2020-21(P) with a CAGR of about 4.51%, except for small decline of 4.59% from 2019-20 to 2020-21 (P). The total availability of Coal in 2020-21(P) stood at 956.14 MT as compared to 1002.17 MT in 2019-20 indicating a total decrease of 46.03 MT in a year. Out of the 956.14 MT available for consumption in 2020-21(P), a major portion (74.89%) is produced domestically and 215.25 MT is imported (Table 5.1 & 5.2). An overview of availability of Coal and Lignite in India is given below,



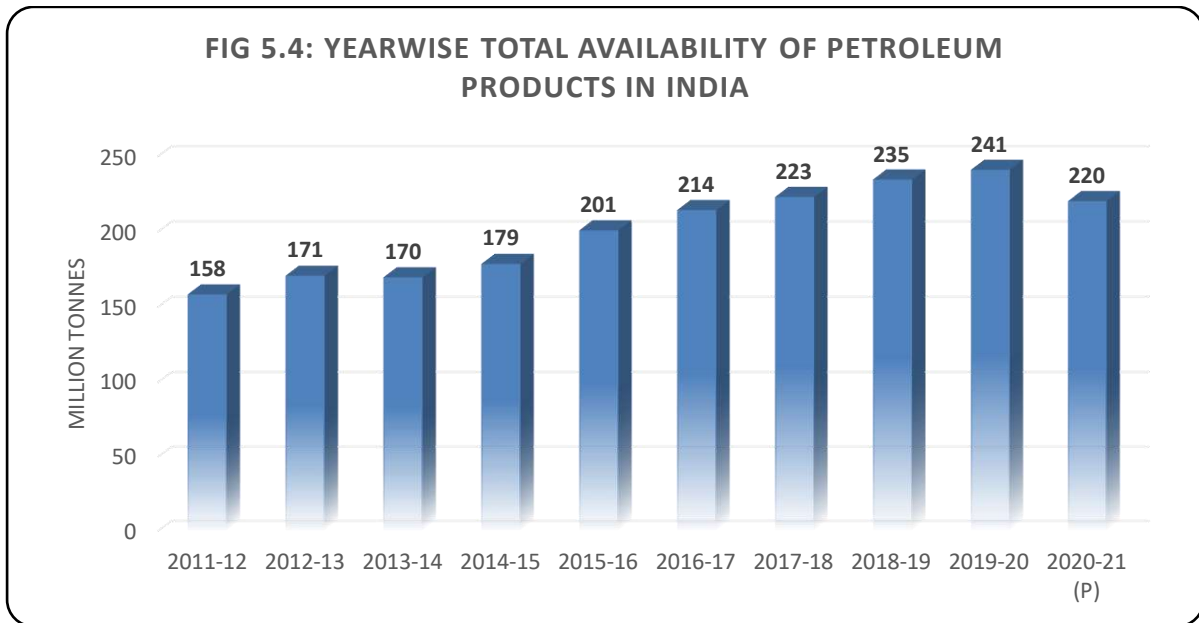


- Though the total availability of crude oil has decreased by 11.78% over last year (from 259.12 MT in 2019-20 to 228.61 MT during 2020-21(P)), the CAGR between 2011-12 to 2020-21(P) has remained positive (0.96%) and has experienced a growth over a period of ten years. This decline in 2020-21 is because of marginal decrease in production of domestic crude oil and huge decrease (- 12.71%) in net import (Table 5.3).



- Like in all developing countries, India has also experienced a steady growth rate of Petroleum Products over time. A production of 203.20 MTs in 2011-12 to 262.94 MTs

in 2019-20 i.e., an increase of over 29% has been registered. But during 2020-21 the same has decreased to 233.51 MTs and as a consequence the total supply has also reduced significantly from 241.04 MTs in 2019-20 to 220.23 MTs in 2020-21(P). The CAGR of total availability of Petroleum products between 2011-12 to 2020-21(P) has still shown a growth of 3.74% (Table 5.3).



- Electricity available for supply has increased from 8,81,466 GWh in 2011-12 to 13,09,187 GWh in 2020-21(P), thus recording a CAGR of 4.49% during this period. However, there is a decrease of 1.05% in the availability of electricity (from 13,23,0148 GWh during 2019-20 to 13,09,187 GWh) during 2020-21(P).

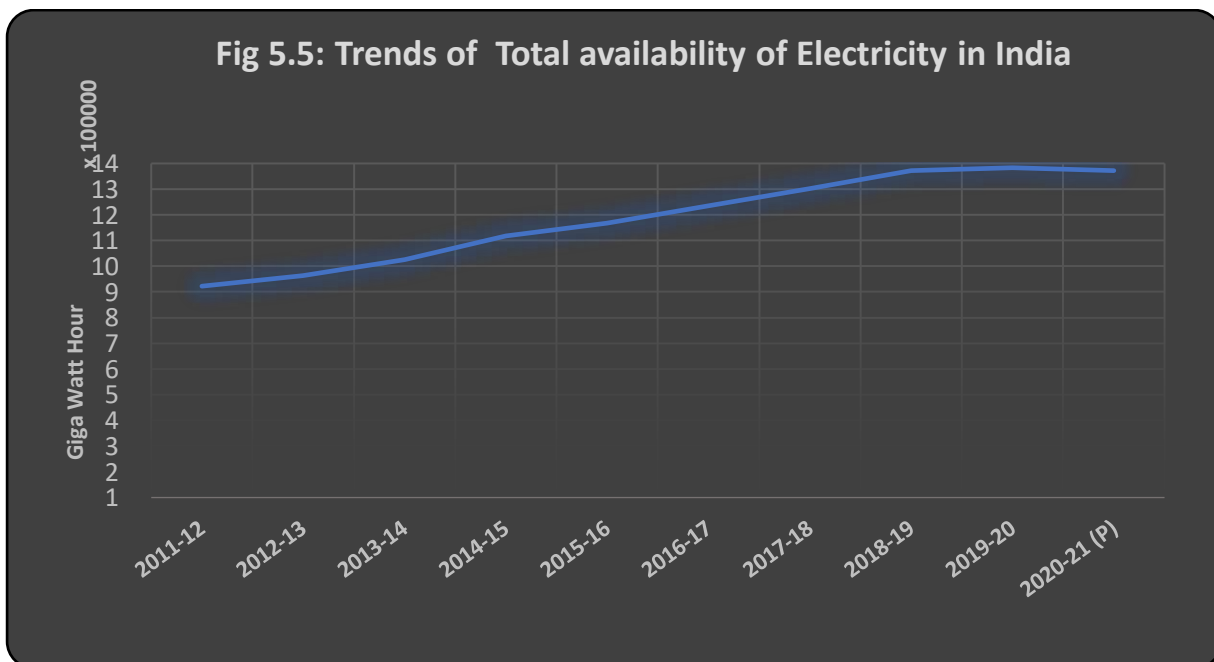


Table 5.1 : Yearwise Availability of Energy Resources

Year	Coal (Million Tonnes)	Lignite (Million Tonnes)	Crude Oil (Million Tonnes)	Natural Gas (Billion Cubic Metres)
2010-11	642.64	42.77	209.82	64.56
2011-12	688.75	46.83	222.66	57.19
2012-13	722.56	44.64	227.03	52.37
2013-14	829.93	49.58	226.90	51.30
2014-15	847.58	45.48	239.79	52.51
2015-16	858.58	47.32	249.94	55.70
2016-17	868.23	46.98	256.12	59.17
2017-18	958.36	42.69	260.70	60.79
2018-19	1002.17	41.89	259.12	64.14
2019-20 (P)	956.14	35.84	228.61	60.65
Growth rate of 2020-21 over 2019-20(%)	-4.59	-14.43	-11.78	-5.45
CAGR 2011-12 to 2020-21 (%)	4.51	-1.95	0.96	-0.69

(P) - Provisional
Note: Availability is defined as below:
Coal/lignite: Production+Net Imports+change in stocks
Crude Oil: Production +Net Imports
Natural gas:Net Production i.e. (Gross production -Flared - Losses) + Net imports
Sources: 1. Office of Coal Controller, Ministry of Coal
2. Ministry of Petroleum & Natural Gas
3. Central Electricity Authority

Table 5.2 : Yearwise Availability of Coal and Lignite

Year	Coal					Lignite				
	Production (Coking + Non-coking)	Imports	Exports	Change of Vendible Stock (closing stock- Opening stock)	Availability for Consumption	Production	Imports	Exports	Change of Vendible Stock (closing stock- Opening stock)	Availability for Consumption
1	2	3	4	5	6=2+3-4+5	7	8	9	10	11=7+8-9+10
2011-12	539.95	102.85	2.01	1.85	642.64	42.33	0.000	0.000	0.44	42.77
2012-13	556.40	145.79	2.44	-10.99	688.75	46.45	0.001	0.069	0.44	46.83
2013-14	565.77	166.86	2.19	-7.87	722.56	44.27	0.001	0.002	0.37	44.64
2014-15	609.18	217.78	1.24	4.21	829.93	48.27	0.001	0.003	1.32	49.58
2015-16	639.23	203.95	1.58	5.97	847.58	43.84	0.001	0.001	1.63	45.48
2016-17	657.87	190.95	1.77	11.53	858.58	45.23	0.019	0.005	2.07	47.32
2017-18	675.40	208.25	1.50	-13.92	868.23	46.64	0.010	0.004	0.33	46.98
2018-19	728.72	235.35	1.31	-4.40	958.36	44.28	0.019	0.079	-1.54	42.69
2019-20	730.87	248.54	1.03	23.79	1002.17	42.10	0.054	0.093	-0.18	41.89
2020-21 (P)	716.08	215.25	2.95	27.75	956.14	36.61	0.019	0.187	-0.60	35.84
Growth rate of 2020-21 over 2019-20(%)	-2.02	-13.39	186.00	16.65	-4.59	-13.04	-65.24	-	-	-14.43

(P): Provisional Total may not tally due to rounding off
Source : Office of the Coal Controller, Ministry of Coal

Table 5.3 : Yearwise Availability Crude Oil, Petroleum Products and Natural Gas.

Year	Crude Oil (Million Tonne)			Petroleum Products (Million Tonne)			Natural Gas (Billion Cubic Meter)*		
	Production	Net Imports	Availability	Production	Net Imports	Availability	Production	Net Imports	Availability
1	2	3	4=2+3	5	6	7=5+6	8	9	10 = 8+9
2011-12	38.09	171.73	209.82	203.20	-44.99	158.21	46.56	18.00	64.56
2012-13	37.86	184.80	222.66	217.74	-47.05	170.68	39.57	17.61	57.19
2013-14	37.79	189.24	227.03	220.76	-51.17	169.59	34.57	17.80	52.37
2014-15	37.46	189.43	226.90	221.14	-42.63	178.50	32.69	18.61	51.30
2015-16	36.94	202.85	239.79	231.92	-31.08	200.84	31.12	21.39	52.51
2016-17	36.01	213.93	249.94	243.55	-29.23	214.32	30.85	24.85	55.70
2017-18	35.68	220.43	256.12	254.40	-31.37	223.03	31.73	27.44	59.17
2018-19	34.20	226.50	260.70	262.36	-27.75	234.61	32.05	28.74	60.79
2019-20	32.17	226.95	259.12	262.94	-21.90	241.04	30.26	33.89	64.14
2020-21 (P)	30.49	198.11	228.61	233.51	-13.28	220.23	27.78	32.86	60.65
Growth rate of 2020-21 over 2019-20(%)	-5.21	-12.71	-11.78	-11.19	-39.34	-8.64	-8.17	-3.03	-5.45
CAGR 2011-12 to 2020-21 (%)	-2.44	1.60	0.96	1.56	-12.68	3.74	-5.58	6.92	-0.69

* : Availability of natural gas is equal to indigenous net production (Gross production-Flared/Losses) + net imports

(P): Provisional: Total may not tally due to rounding off.

Source : Ministry of Petroleum & Natural Gas.

Table 5.4 : Yearwise Availability of Electricity

(in Giga Watt hour = 10⁶ Kilo Watt hour)

Year	Gross Electricity Generated from	Consumption in Power Station Auxiliaries	Net Electricity Generated from Utilities	Purchases from Non-Utilities + Net Import from Other Countries	Net Electricity Available for Supply
1	2	3	4=2-3	5	6=4+5
2011-12	9,22,451	56,499	8,65,952	15,514	8,81,466
2012-13	9,64,489	64,109	9,00,380	20,849	9,21,229
2013-14	10,26,649	70,161	9,56,488	17,948	9,74,436
2014-15	11,16,850	76,268	10,40,582	13,773	10,54,355
2015-16	11,67,584	79,302	10,88,282	15,947	11,04,228
2016-17	12,35,358	81,044	11,54,314	8,977	11,63,290
2017-18	13,03,455	82,148	12,21,307	11,198	12,32,505
2018-19	13,71,779	83,386	12,88,393	19,291	13,07,685
2019-20	13,83,417	83,301	13,00,116	22,932	13,23,048
2020-21 (P)	13,73,187	82,000	12,91,187	18,000	13,09,187
Growth rate of 2020-21 over 2019-20(%)	-0.74	-1.56	-0.69	-21.51	-1.05
CAGR 2011-12 to 2020-21 (%)	4.52	4.23	4.54	1.67	4.49

(P): Provisional

Source: Central Electricity Authority.