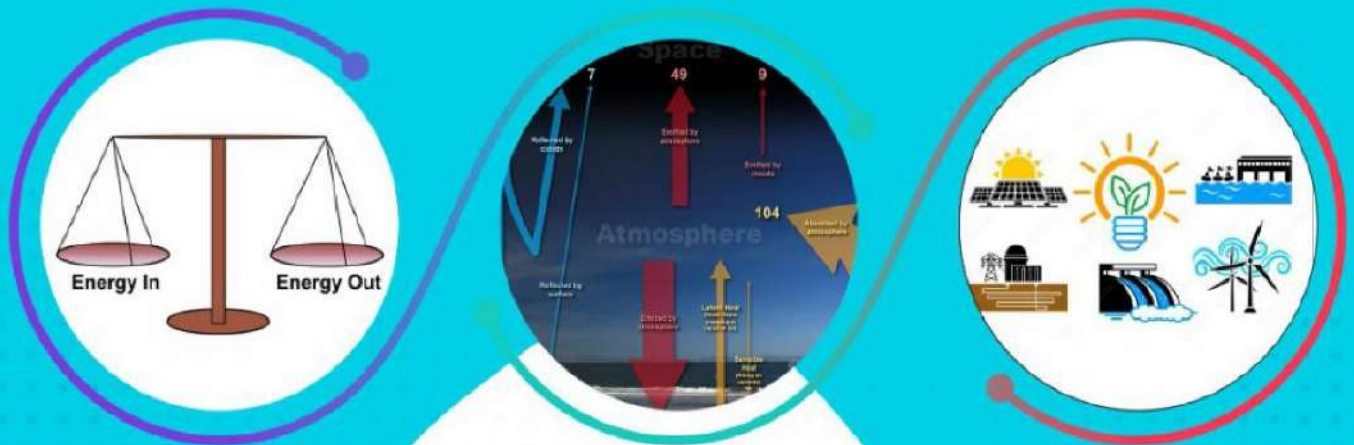


Chapter

7

Energy Balance and Sankey Diagram



CHAPTER 7

Energy Balance and Sankey Diagram

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 also used as a final product or intermediate 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 complete data on all energy products entering, existing and used within a given country during a reference period (e.g. a year). It expresses all data in common energy units, which makes it possible to define a “total” product.

The purpose 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 data of different reference periods and different countries;
- Provide a tool to ensure completeness, consistency and comparability of basic statistics;

Chapter 7: Energy Balance and Sankey Diagram

- 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 (TPES) and Total Final Consumption (TFC) 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 available, 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.

A note on Methodology used for Energy Balance

Energy (in KToe) = Quantity of Commodity * Conversion factor

where 1 Toe = 41868 MJ

Therefore, Conversion factor = $\frac{\text{Net Calorific Value (NCV)}}{\text{Mega joules per ton of oil equivalent}}$

where Net Calorific Value (NCV) is in kj per kg and

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.

Sankey Diagram

The concept of data visualization in the digital age has revived interest in a style of chart called a Sankey diagram. This style of diagram makes it easy to see the dominant flows within a system and highlights where losses occur. The Sankey diagram is very useful tool to represent an entire input and output energy flow in energy system after carrying out energy balance calculation. The thicker the line, the greater the amount of energy involved.

The data of Energy Balance (Table 7.2) is used to construct the Sankey diagram, in which flows of energy are traced from energy sources to end-use consumption. The resulting diagram provides a convenient and clear snapshot of existing energy transformations in India which can usefully be compared with a similar global analysis. It gives a basis for examining and communicating future energy scenarios.

Highlights

- In this 31st edition of Energy Statistics, attempt has been made to generate the Energy Balance table of India using the domestic conversion factors (especially for Coal). Since Coal has always having the dominant share of Energy resources in India, thus a shift of conversion factors from IEA to Domestic, results in a significant reduction of Energy supplied and consumed in India. The final version of Energy Balance table of India from 2012-13 to 2020-21 have also been computed and added based, on the audited final database, received from all the source Ministries and using the domestic conversion factors.
- In 2022-23 (P), Primary Energy Supply added up to 8,50,349 Kilo Tonne of Oil equivalent (ktoe) (Table 7.2) an increase of 14.33% over previous year.
- Two major contributors to the total energy supply in the country were Coal which accounted for 57.82% of the total and Crude Oil which accounted for 31.48%.
- In 2022-23 (P), the Total Final Consumption (TFC) was 5,51,550 ktoe. An increase of close to 7% over last year, which clearly signifies the growth story of India. The industrial sector was the largest consumer of energy in the country with this sector itself using almost half (49%) of the total final energy consumption.
- Within the industry sector, the most energy intensive industries were iron and steel, which accounted for 15.15% of the industrial energy use followed by Chemicals and petrochemicals 4.56 % and construction 1.08%.
- The consumption of the residential, agriculture, commercial & public sectors, Non-specified(others) and non-energy purpose represented 39.3% of the total final consumption in the country, whereas, transport sector accounted for 11.7% of Total Final Consumption.
- The Energy Balance table of India, based on the final audited figures as available from different Ministries and on Domestic conversion factors have been computed from the FY: 2012-13 to FY: 2020-21. The same can be found in *Annexure – IV*.

Chapter 7: Energy Balance and Sankey Diagram

Table-7.1 : Energy Commodity Balance for 2021-22 (Final)

Table-7.1 : Energy Commodity Balance for 2021-22 (Final)															
Supply	Coal	Lignite	LPG	Naphtha	Kerosene	Diesel (HSD+LDO)	Fuel Oil	Lubricants	Bitumin	Petrol/Motor Spirit	ATF	Petroleum Coke	Other Petroleum Products*	Natural Gas	Electricity
	(000 tonnes)													MMSCM	(GWh)
Production	778210	47492	12238	19994	1916	107980	8327	1173	5111	40238	10294	15508	31525	34024	1484463
From Other Sources															209311
Imports	208627	11	17043	237	0	43	8980	3058	2581	671	0	4213	2189	31028	7974
Exports	-1316	-17	-513	-6861	-14	-32407	-1757	-10	-6	-13482	-5186	-187	-2330	0	-9249
Stock changes	-40159	-1592													
Domestic Supply	945362	45894	28769	13370	1902	75616	15550	4221	7685	27426	5108	19535	31385	65052	1692498
Transfer															
Statistical difference	82669	3191	-515	-124	-409	2060	-9289	319	131	3423	-100	-5279	-19088	2301	-16559
Transformation	710049	38757	0	6	0	502	341	0	0	0	0	0	0	10157	0
Electricity plants	710049	38757	0	6		502	341							10157	
Energy industry own use	0	0	0	0	0	0	0	0	0	0	0	0	0	20308	86756
Oil and Gas extraction															5767
Petroleum refineries															5312
Own use in electricity, CHP and heat plants															86756
Other energy sector															9229
Distribution losses														95	272418
Final Consumption	317982	10328	28253	13240	1493	77174	5921	4540	7816	30849	5008	14255	12297	36793	1316765
Industry Sector	317982	10328	2422	13240	0	3138	2410	0	0	0	0	14255	12297	829	556481
Iron and steel	75305	262		0		228	913								
Chemical and petroleum	1307			11904		136	581								
Non-ferrous metals						27	390								
Machinery						140	19								
Mining & Quarrying						1551	127								
Paper, pulp and print	1244	2106													
Construction	7329	2684				758	184								
Textile and leather	80	2080				239	33								
Non-specified	232717	3197	2419	1336		60	162					14255	12297	829	556481
Transport Sector	0	0	123	0	0	4095	1209	0	0	30849	5008	0	0	12661	21935
Road			123			1696	172			30849				12175	
Domestic Aviation						3									
Rail						1749	0								21935
Pipeline transport														486	
Domestic navigation						648	1036				5008				
Non-specified							0								
Other Sectors	0	0	25708	0	1493	69941	2301	4540	7816	0	0	0	0	1226	738349
Residential			25502			1292									339780
Comm. And public services						64									97121
Agriculture/forestry			30			548	71							156	228451
Non-specified			177			138	69393	2230	4540	7816				1070	72996
Non-Energy Use														22077	

Statistical Difference is defined as final consumption + use for transformation processes and consumption by energy industry own use + losses - domestic supply
 Final consumption = Total Consumption in Transport + Total Industrial Consumption+Consumption by Other sectors+Non energy Use
 * Include Paraffin waxes, petroleum jelly, LSWR, MTBE and reformate, BGO, Benzene, MTO, CBFS and Sulfur etc.

Chapter 7: Energy Balance and Sankey Diagram

Table-7.2 : Energy Balance of India for 2021-22 (Final)

All figures in KToE

	Coal	Lignite	Crude Oil	Oil Products	Natural Gas	Nuclear	Hydro	Solar, Wind, Others	Electricity	Total
Production	3,12,681	10,828	30,344	0	31,471	12,278	13,071	15,284	0	4,25,957
Imports	1,15,989	3	2,17,054	39,912	28,701	0	0	0	686	4,02,343
Exports	-886	-4	0	-65,588	0	0	0	0	-795	-67,274
Stock changes	-16,917	-363	0	0	0	0	0	0	0	-17,280
Total primary energy supply	4,10,867	10,464	2,47,397	-25,677	60,172	12,278	13,071	15,284	-110	7,43,747
Statistical differences	34,522	727	24,500	-26,525	2,128	0	0	0	-1,424	33,928
Main activity producer electricity plants	-2,85,689	-8,837	0	-863	-9,395	-12,278	-13,040	-14,698	1,27,664	-2,17,136
Autoproducer electricity plants	0	0	0	0	0	0	-31	-586	18,001	17,384
Oil refineries	0	0	-2,47,021	2,59,358	0	0	0	0	0	12,337
Energy industry own use	0	0	0	0	-18,784	0	0	0	-7,461	-26,246
Losses	0	0	-24,876	0	-87	0	0	0	-23,428	-48,392
Final consumption	1,59,700	2,355	0	2,06,293	34,033	0	0	0	1,13,242	5,15,623
Industry	1,59,700	2,355	0	45,286	767	0	0	0	47,857	2,55,964
Iron and steel	37,820	60	0	1,136	0	0	0	0	0	39,016
Chemical and petrochemical	656	0	0	13,507	0	0	0	0	0	14,163
Non-ferrous metals	0	0	0	413	0	0	0	0	0	413
Machinery	0	0	0	164	0	0	0	0	0	164
Mining and quarrying	0	0	0	1,731	0	0	0	0	0	1,731
Paper, pulp and print	625	480	0	0	0	0	0	0	0	1,105
Construction	3,681	612	0	965	0	0	0	0	0	5,258
Textile and leather	40	474	0	280	0	0	0	0	0	794
Non-specified (industry)	1,16,877	729	0	27,091	767	0	0	0	47,857	1,93,321
Transport	0	0	0	43,912	11,712	0	0	0	1,886	57,510
Road	0	0	0	35,073	11,262	0	0	0	0	46,335
Domestic aviation	0	0	0	5,338	0	0	0	0	0	5,338
Rail	0	0	0	1,810	0	0	0	0	1,886	3,696
Pipeline transport	0	0	0	0	450	0	0	0	0	450
Domestic navigation	0	0	0	1,691	0	0	0	0	0	1,691
Non-specified (transport)	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	1,17,096	1,134	0	0	0	63,498	1,81,728
Residential	0	0	0	30,160	0	0	0	0	29,221	59,381
Commercial and public services	0	0	0	67	0	0	0	0	8,352	8,419
Agriculture/forestry	0	0	0	671	144	0	0	0	19,647	20,462
Non-specified (other)	0	0	0	86,198	990	0	0	0	6,278	93,466
Non-energy use	0	0	0	0	20,421	0	0	0	0	20,421
Non-energy use industry/transformation/energy	0	0	0	0	20,421	0	0	0	0	20,421
Non-energy use in transport	0	0	0	0	0	0	0	0	0	0
Non-energy use in other	0	0	0	0	0	0	0	0	0	0
Elec. output in GWh	0	0	0	0	0	47,112	1,51,984	1,77,725	0	3,76,821
Elec output-main activity producer ele plants	0	0	0	0	0	47,112	1,51,627	1,70,912	0	3,69,652
Elec output-autoproducer electricity plants	0	0	0	0	0	0	357	6,813	0	7,170
Final consumption refers to End Use Consumption										

Chapter 7: Energy Balance and Sankey Diagram

Table 7.3: Energy Balance of Petroleum Products for 2021-22(Final)

All figures in KToE

	LPG	Naphtha	Kerosene	Diesel (HSD+ LDO)	Fuel Oil	Lubricants	Bitumin	Petrol/Motor Spirit	ATF	Petroleum Coke	Other Petroleum Products*	Petroleum Products Total
Production	13,826	21,490	2,002	1,11,761	8,202	1,177	4,761	43,056	10,965	11,853	30,264	2,59,358
Imports	19,255	255	0	45	8,846	3,068	2,404	718	0	3,220	2,102	39,912
Exports	-579	-7,374	-15	-33,542	-1,731	-10	-6	-14,427	-5,524	-143	-2,237	-65,588
Stock changes	0	0	0	0	0	0	0	0	0	0	0	0
Total primary energy supply	32,501	14,370	1,987	78,264	15,317	4,235	7,159	29,347	5,442	14,931	30,129	2,33,681
Statistical differences	-586	-134	-427	2,132	-9,150	320	122	3,662	-107	-4,035	-18,324	-26,525
Main activity producer electricity plants	0	-7	0	-520	-336	0	0	0	0	0	0	-863
Autoproducer electricity plants	0	0	0	0	0	0	0	0	0	0	0	0
Oil refineries	13,826	21,490	2,002	1,11,761	8,202	1,177	4,761	43,056	10,965	11,853	30,264	2,59,358
Energy industry own use	0	0	0	0	0	0	0	0	0	0	0	0
Losses	0	0	0	0	0	0	0	0	0	0	0	0
Final consumption	31,915	14,230	1,561	79,876	5,831	4,555	7,281	33,009	5,335	10,896	11,805	2,06,293
Industry	2,733	14,230	0	3,248	2,374	0	0	0	0	10,896	11,805	45,286
Iron and steel	0	0	0	236	900	0	0	0	0	0	0	1,136
Chemical and petrochemical	0	12,794	0	140	572	0	0	0	0	0	0	13,507
Non-ferrous metals	0	0	0	28	384	0	0	0	0	0	0	413
Machinery	0	0	0	144	19	0	0	0	0	0	0	164
Mining and quarrying	0	0	0	1,605	125	0	0	0	0	0	0	1,731
Paper, pulp and print	0	0	0	0	0	0	0	0	0	0	0	0
Construction	0	0	0	784	181	0	0	0	0	0	0	965
Textile and leather	0	0	0	247	33	0	0	0	0	0	0	280
Non-specified (industry)	2,733	1,436	0	62	159	0	0	0	0	10,896	11,805	27,091
Transport	139	0	0	4,238	1,190	0	0	33,009	5,335	0	0	43,912
Road	139	0	0	1,755	170	0	0	33,009	0	0	0	35,073
Domestic aviation	0	0	0	3	0	0	0	0	5,335	0	0	5,338
Rail	0	0	0	1,810	0	0	0	0	0	0	0	1,810
Pipeline transport	0	0	0	0	0	0	0	0	0	0	0	0
Domestic navigation	0	0	0	671	1,021	0	0	0	0	0	0	1,691
Non-specified (transport)	0	0	0	0	0	0	0	0	0	0	0	0
Other	29,043	0	1,561	72,390	2,267	4,555	7,281	0	0	0	0	1,17,096
Residential	28,810	0	1,350	0	0	0	0	0	0	0	0	30,160
Commercial and public services	0	0	67	0	0	0	0	0	0	0	0	67
Agriculture/forestry	33	0	0	567	70	0	0	0	0	0	0	671
Non-specified (other)	200	0	144	71,823	2,196	4,555	7,281	0	0	0	0	86,198
Non-energy use	0	0	0	0	0	0	0	0	0	0	0	0
Non-energy use industry/transformation/energy	0	0	0	0	0	0	0	0	0	0	0	0
Non-energy use in transport	0	0	0	0	0	0	0	0	0	0	0	0
Non-energy use in other	0	0	0	0	0	0	0	0	0	0	0	0
Elect. output in GWh												0
Elec output-main activity producer ele plants	0	0	0	0	0	0	0	0	0	0	0	0
Elec output-autoproducer electricity plants	0	0	0	0	0	0	0	0	0	0	0	0

Final consumption refers to End Use Consumption

* Include Paraffin waxes, petroleum jelly, LSWR, MTBE and reformat, BGO, Benzene, MTO, CBFS and Sulfur etc.

Chapter 7: Energy Balance and Sankey Diagram

Table 7.4 : Energy Commodity Balance for 2022-23(P)

Supply	Coal	Lignite	LPG	Naphtha	Kerosene	Diesel (HSD+LDO)	Fuel Oil	Lubricants	Bitumin	Petrol/Motor Spirit	ATF	Petroleum Coke	Other Petroleum Products*	Natural Gas	Electricity
	(000 tonnes)													MMSCM	(GWh)
Production	893190	44990	12832	17036	948	114421	9242	1301	5144	42817	15000	16044	31756	34450	1617813
From Other Sources															226000
Imports	237668	23	18309	897	0	328	8563	2152	2787	1069	0	8664	1774	26304	7843
Exports	-1163	-2	-534	-5714	-11	-28536	-1841	-12	-9	-13118	-7264	-284	-3717	0	-10253
Stock changes	15572	-1833													
Domestic Supply	1145268	43178	30607	12219	937	86214	15964	3441	7922	30768	7737	24424	29813	60754	1841403
Transfer															
Statistical difference	-30052	3666	-2103	-61	-448	409	-9010	299	119	4208	-371	-6079	-13998	3566	-55539
Transformation	785128	38957	1	19	0	426	437	0	0	0	0	0	0	8153	0
Electricity plants	785128	38957	1	19		426	437								8153
Energy industry own use	0	0	0	0	0	0	0	0	0	0	0	0	0	17954	102919
Oil and Gas extraction															5511
Petroleum refineries															3909
Own use in electricity, CHP and heat plants															102919
Other energy sector															8534
Distribution losses														107	279545
Final Consumption	330088	7888	28503	12139	490	86196	6517	3740	8041	34976	7366	18345	15814	38106	1403400
Industry Sector	330088	7888	2839	12139	0	1738	2308	0	0	0	0	18345	15814	865	595000
Iron and steel	78898	123		0		158	871								
Chemical and petroleum	948			10434		86	525								
Non-ferrous metals						20	382								
Machinery						64	18								
Mining & Quarrying			5			1066	94								
Paper, pulp and print	1203	920													
Construction	8228	1445				179	193								
Textile and leather	92	2624				126	24								
Non-specified	240719	2776	2835	1705		39	200					18345	15814	865	595000
Transport Sector	0	0	108	0	0	2615	1561	0	0	34976	7366	0	0	13792	25000
Road			108			148	178			34976					12028
Domestic Aviation						1									
Rail						1715	0								25000
Pipeline transport															1764
Domestic navigation						750	1382				7366				
Non-specified							0								
Other Sectors	0	0	25555	0	490	81844	2648	3740	8041	0	0	0	0	1131	783400
Residential			25382		308										362000
Comm. And public services					54										105100
Agriculture/forestry			22			312	54							154	240800
Non-specified			152		127	81532	2594	3740	8041					976	75500
Non-Energy Use														22319	

P: Provisional

Statistical Difference is defined as final consumption + use for transformation processes and consumption by energy industry own use + losses - domestic supply

Final consumption = Total Consumption in Transport + Total Industrial Consumption + Consumption by Other sectors + Non energy Use

* Include Paraffin waxes, petroleum jelly, LSWR, MTBE and reformate, BGO, Benzene, MTO, CBFS and Sulfur etc.

Chapter 7: Energy Balance and Sankey Diagram

Table 7.5: Energy Balance of India for 2022-23 (P)

All figures in KToE

	Coal	Lignite	Crude Oil	Oil Products	Natural Gas	Nuclear	Hydro	Solar, Wind, Others	Electricity	Total
Production	3,59,590	10,258	29,821	0	31,866	11,952	13,975	18,271	0	4,75,732
Imports	1,26,343	5	2,37,852	44,645	24,331	0	0	0	674	4,33,851
Exports	-783	0	0	-63,684	0	0	0	0	-882	-65,349
Stock changes	6,533	-418	0	0	0	0	0	0	0	6,115
Total primary energy supply	4,91,683	9,845	2,67,673	-19,039	56,197	11,952	13,975	18,271	-207	8,50,349
Statistical differences	-7,851	836	19,691	-24,933	3,299	0	0	0	-4,776	-13,735
Main activity producer electricity plants	-3,17,124	-8,882	0	-893	-7,541	-11,952	-13,941	-17,505	1,39,132	-2,38,707
Autoproducer electricity plants	0	0	0	0	0	0	-34	-765	19,436	18,636
Oil refineries	0	0	-2,60,847	2,71,968	0	0	0	0	0	11,121
Energy industry own use	0	0	0	0	-16,607	0	0	0	-8,851	-25,458
Losses	0	0	-26,516	0	-99	0	0	0	-24,041	-50,657
Final consumption	1,66,708	1,798	0	2,27,103	35,248	0	0	0	1,20,692	5,51,550
Industry	1,66,708	1,798	0	49,524	800	0	0	0	51,170	2,70,000
Iron and steel	39,846	28	0	1,021	0	0	0	0	0	40,896
Chemical and petrochemical	479	0	0	11,820	0	0	0	0	0	12,299
Non-ferrous metals	0	0	0	398	0	0	0	0	0	398
Machinery	0	0	0	85	0	0	0	0	0	85
Mining and quarrying	0	0	0	1,196	0	0	0	0	0	1,196
Paper, pulp and print	608	210	0	0	0	0	0	0	0	817
Construction	4,155	329	0	376	0	0	0	0	0	4,861
Textile and leather	46	598	0	155	0	0	0	0	0	800
Non-specified (industry)	1,21,573	633	0	34,474	800	0	0	0	51,170	2,08,650
Transport	0	0	0	49,638	12,758	0	0	0	2,150	64,545
Road	0	0	0	37,877	11,126	0	0	0	0	49,002
Domestic aviation	0	0	0	7,848	0	0	0	0	0	7,848
Rail	0	0	0	1,776	0	0	0	0	2,150	3,926
Pipeline transport	0	0	0	0	1,632	0	0	0	0	1,632
Domestic navigation	0	0	0	2,138	0	0	0	0	0	2,138
Non-specified (transport)	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	1,27,941	1,046	0	0	0	67,372	1,96,360
Residential	0	0	0	28,997	0	0	0	0	31,132	60,129
Commercial and public services	0	0	0	57	0	0	0	0	9,039	9,095
Agriculture/forestry	0	0	0	401	143	0	0	0	20,709	21,253
Non-specified (other)	0	0	0	98,487	903	0	0	0	6,493	1,05,883
Non-energy use	0	0	0	0	20,645	0	0	0	0	20,645
Non-energy use industry/transformation/energy	0	0	0	0	20,645	0	0	0	0	20,645
Non-energy use in transport	0	0	0	0	0	0	0	0	0	0
Non-energy use in other	0	0	0	0	0	0	0	0	0	0
Elect. output in GWh	0	0	0	0	0	45,861	1,62,499	2,12,452	0	4,20,812
Elec output-main activity producer ele plants	0	0	0	0	0	45,861	1,62,099	2,03,552	0	4,11,512
Elec output-autoproducer electricity plants	0	0	0	0	0	0	400	8,900	0	9,300
Final consumption refers to End Use Consumption										
P: Provisional										

Chapter 7: Energy Balance and Sankey Diagram

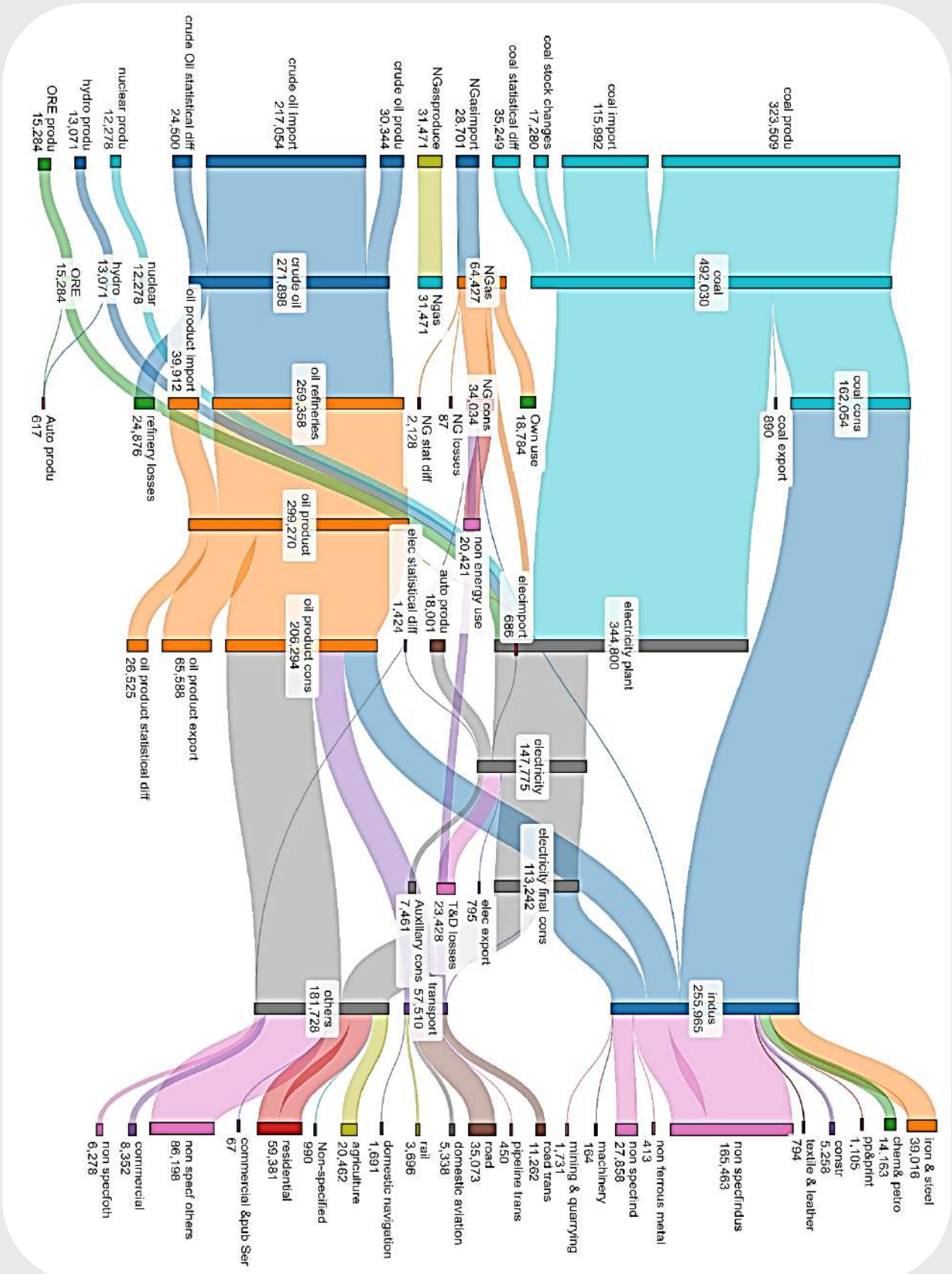
Table 7.6 : Energy Balance of Petroleum Products for 2022-23(P)

All figures in KToE

	LPG	Naphtha	Kerosene	Diesel (HSD+ LDO)	Fuel Oil	Lubricants	Bitumin	Petrol/Motor Spirit	ATF	Petroleum Coke	Other Petroleum Products*	Petroleum Products Total
Production	14,496	18,311	991	1,18,428	9,104	1,305	4,792	45,815	15,979	12,263	30,485	2,71,968
Imports	20,685	964	0	340	8,434	2,159	2,596	1,144	0	6,622	1,703	44,645
Exports	-603	-6,142	-11	-29,535	-1,813	-12	-8	-14,036	-7,738	-217	-3,568	-63,684
Stock changes	0	0	0	0	0	0	0	0	0	0	0	0
Total primary energy supply	34,578	13,133	979	89,232	15,725	3,452	7,380	32,922	8,242	18,667	28,620	2,52,929
Statistical differences	-2,382	-65	-468	424	-8,875	299	110	4,503	-395	-4,646	-13,438	-24,933
Main activity producer electricity plants	-1	-21	0	-441	-430	0	0	0	0	0	0	-893
Autoproducer electricity plants	0	0	0	0	0	0	0	0	0	0	0	0
Oil refineries	14,496	18,311	991	1,18,428	9,104	1,305	4,792	45,815	15,979	12,263	30,485	2,71,968
Energy industry own use	0	0	0	0	0	0	0	0	0	0	0	0
Losses	0	0	0	0	0	0	0	0	0	0	0	0
Final consumption	32,195	13,047	512	89,214	6,419	3,751	7,490	37,425	7,847	14,021	15,182	2,27,103
Industry	3,202	13,047	0	1,799	2,274	0	0	0	0	14,021	15,182	49,524
Iron and steel	0	0	0	163	858	0	0	0	0	0	0	1,021
Chemical and petrochemical	0	11,215	0	89	517	0	0	0	0	0	0	11,820
Non-ferrous metals	0	0	0	21	376	0	0	0	0	0	0	398
Machinery	0	0	0	66	18	0	0	0	0	0	0	85
Mining and quarrying	0	0	0	1,103	93	0	0	0	0	0	0	1,196
Paper, pulp and print	0	0	0	0	0	0	0	0	0	0	0	0
Construction	0	0	0	185	191	0	0	0	0	0	0	376
Textile and leather	0	0	0	131	24	0	0	0	0	0	0	155
Non-specified (industry)	3,202	1,832	0	40	197	0	0	0	0	14,021	15,182	34,474
Transport	123	0	0	2,706	1,537	0	0	37,425	7,847	0	0	49,638
Road	123	0	0	153	176	0	0	37,425	0	0	0	37,877
Domestic aviation	0	0	0	1	0	0	0	0	7,847	0	0	7,848
Rail	0	0	0	1,776	0	0	0	0	0	0	0	1,776
Pipeline transport	0	0	0	0	0	0	0	0	0	0	0	0
Domestic navigation	0	0	0	776	1,361	0	0	0	0	0	0	2,138
Non-specified (transport)	0	0	0	0	0	0	0	0	0	0	0	0
Other	28,870	0	512	84,710	2,608	3,751	7,490	0	0	0	0	1,27,941
Residential	28,675	0	322	0	0	0	0	0	0	0	0	28,997
Commercial and public services	0	0	57	0	0	0	0	0	0	0	0	57
Agriculture/forestry	25	0	0	323	53	0	0	0	0	0	0	401
Non-specified (other)	171	0	133	84,386	2,555	3,751	7,490	0	0	0	0	98,487
Non-energy use	0	0	0	0	0	0	0	0	0	0	0	0
Non-energy use industry/transformation/energy	0	0	0	0	0	0	0	0	0	0	0	0
Non-energy use in transport	0	0	0	0	0	0	0	0	0	0	0	0
Non-energy use in other	0	0	0	0	0	0	0	0	0	0	0	0
Elect. output in GWh	0	0	0	0	0	0	0	0	0	0	0	0
Elec output-main activity producer ele plants	0	0	0	0	0	0	0	0	0	0	0	0
Elec output-autoproducer electricity plants	0	0	0	0	0	0	0	0	0	0	0	0
Final consumption refers to End Use Consumption												
P: Provisional												
* Include Paraffin waxes, petroleum jelly, LSWR, MTBE and reformate, BGO, Benzene, MTO, CBFS and Sulfur etc.												

Chapter 7: Energy Balance and Sankey Diagram

Fig. 7.1: Sankey Diagram on Overall Energy Flow of Energy in India during FY: 2021-22 (Final) (in KToe)



Chapter 7: Energy Balance and Sankey Diagram

Fig. 7.2: Sankey Diagram on Final Consumption by sectors in India during FY: 2021-22(Final) (in KToe)

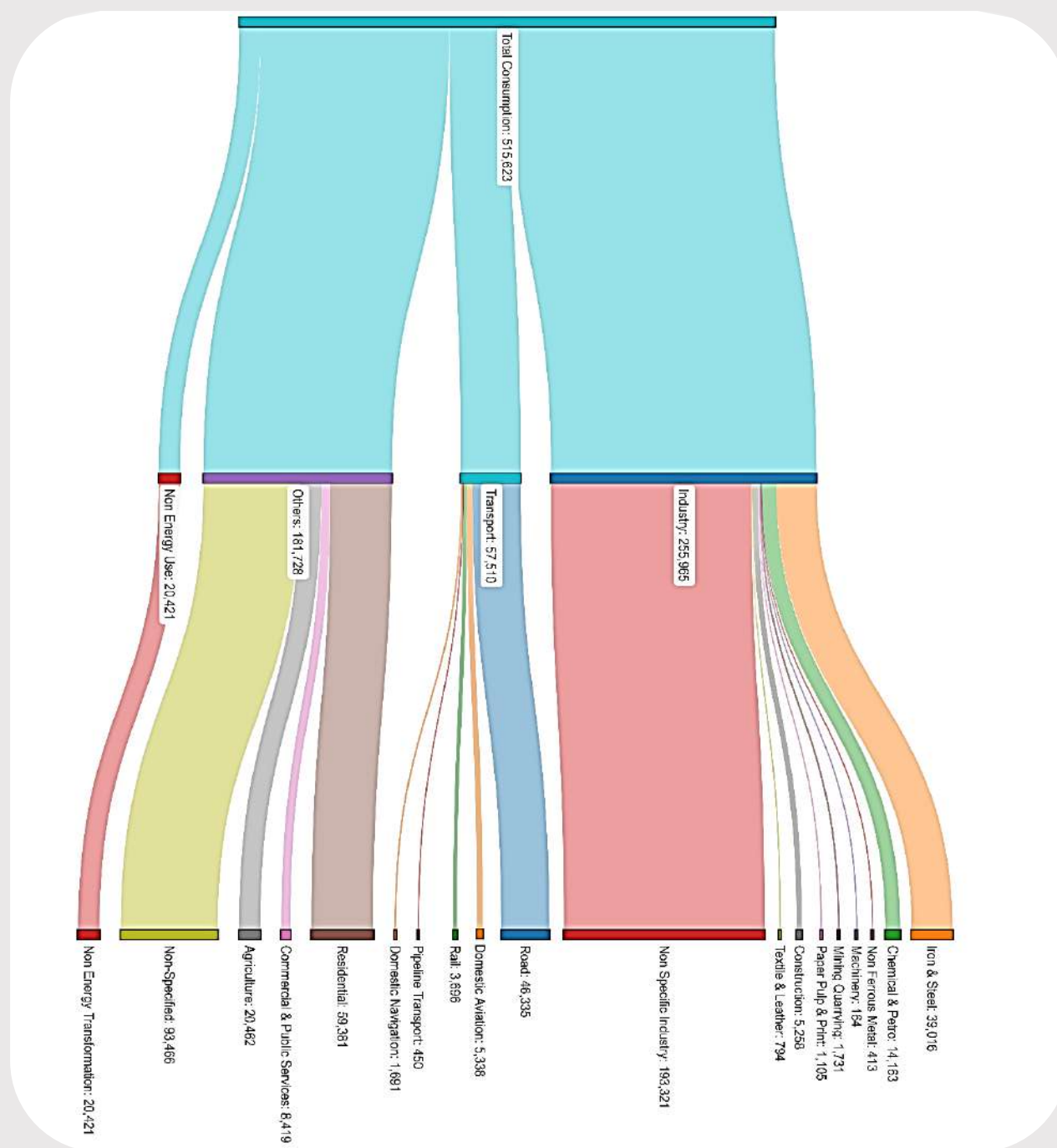
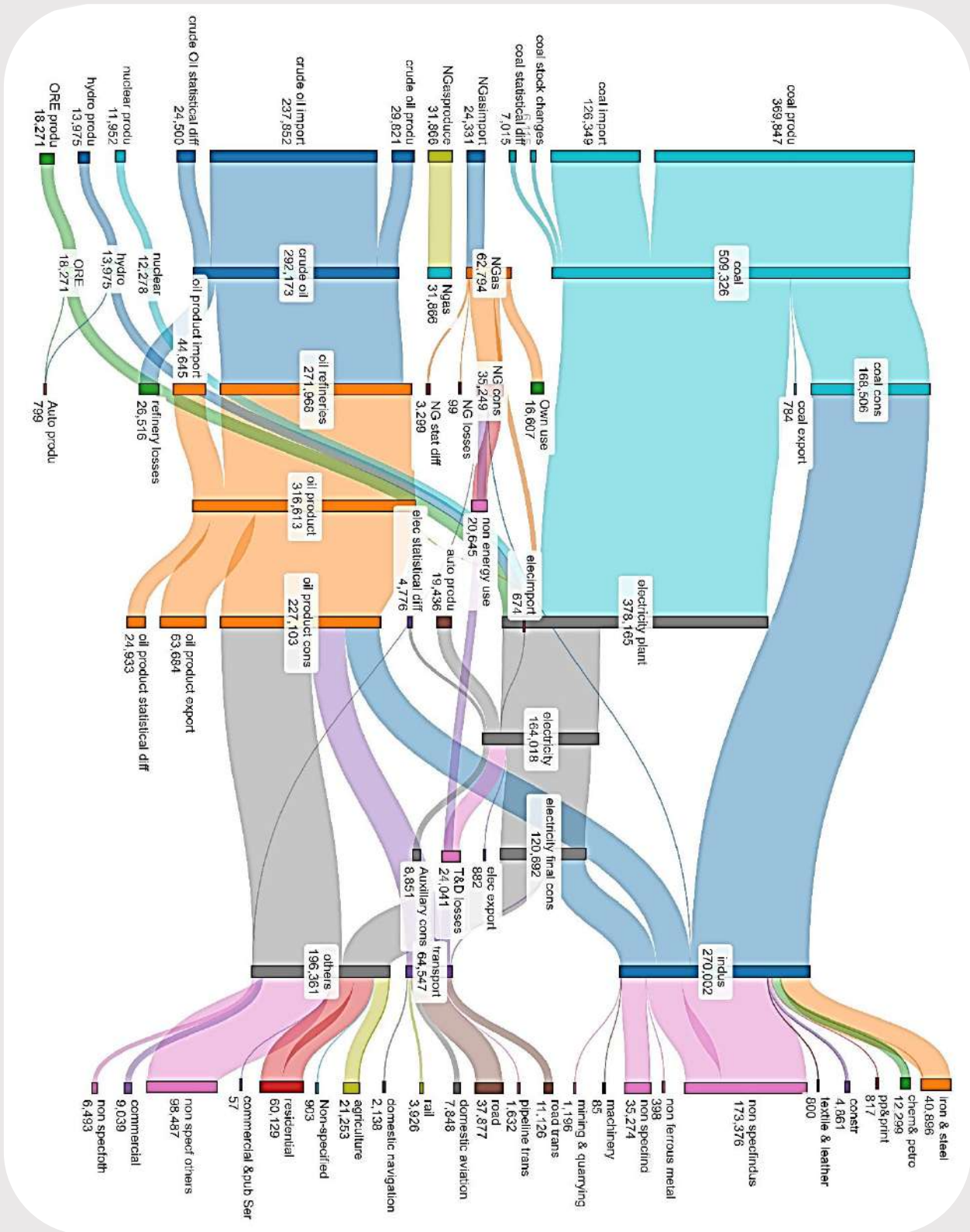


Fig. 7.3: Sankey Diagram on Overall Flow of Energy in India during FY: 2022-23(P) (in KToe)



Chapter 7: Energy Balance and Sankey Diagram

Fig. 7.4: Sankey Diagram on Final Consumption by sectors in India during FY: 2022-23 (P) (in KToe)

