HIGHLIGHTS

7. Energy Commodity Balance

7.1 Definition

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.

The Energy Commodity Balance Statistics provide a crystal clear picture of usage of each form of energy commodity at each stage of consumption and therefore are the most authentic estimate of energy usage.

7.2 Components

Two major components of the energy balance statistics are Total Primary Energy Supply and Total Final Consumption of energy commodity.

Total Primary Energy Supply consists of total supply of coal, crude oil, natural gas, nuclear energy and renewable energies including imports, net of exports and stock changes. Some part of these resources is used directly and the rest converted into electricity or other forms of energy resources. Final consumption refers to quantities of coal, petroleum products, natural gas and electricity used for consumption as the final product by the non-energy producing sectors. The Energy Commodity Balances further provide information on final consumption by various sectors.

Energy balances can be calculated on the basis of external energy used per kilogram of product, or raw material processed, or on dry solids or some key component. The energy consumed in food production includes direct energy which is fuel and electricity used on the farm, and in transport and in factories, and in storage, selling, etc.; and indirect energy which is used to actually build the machines, to make the packaging, to produce the electricity and the oil and so on. Food itself is a major energy source, and energy balances can be determined for animal or human

feeding; food energy input can be balanced against outputs in heat and mechanical energy and chemical synthesis.

This energy commodity balance need is to be converted to energy balance in which the production and consumption is given in *thousand tonnes of oil equivalent (ktoe) on a net calorific value basis.* Non-availability of data for all types of fuel that are being used in India- both purchased and free- is the main bottle neck in arriving at a balanced energy balance.

Table 7.1 : Energy Commodity Balance for the years 2008-09 and 2009-10(p)

Supply	Coal (000 tonnes)		Lignite (000 tonnes)		LPG (000 tonnes)		Naphtha (000 tonnes)	
	2008-09	2009-10	2008-09	2009-10	2008-09	2009-10	2008-09	2009-10
Production	492757	532062	32421	34071	6996	6515	14826	14812
From Other Sources					2162	2244	-	-
Imports	59003	73260			2360	2718	5023	1734
Exports	1655	2450			109	131	7601	9911
Intl. marine bunkers							-	-
Stock changes	-538	16804	-575	748	1487	1484		
Domestic Supply	**549567**	**586068**	**32996**	**34819**	**10734**	**10586**	**12248**	**6635**
Transfer								
Statistical difference	2197	-1162	576	389	-1459	-2535	2374	-3604
Transformation	**381060**	**411061**	**27542**	**27920**				
Electricity plants	381060	411061	27542	27920				
CHP plants								
Heat plants								
Blast furnaces/ gas works								
Coke/pat.fuel/BKB plants								
Petroleum refineries								
Petrochemical industry								
Liquefaction plants								
Other Transform. sector								
Energy Sector							**1417**	**1045**
Fuel mining and extraction								
Petroleum refineries								
Elec., CHP and heat plants								
Pumped storage (elec.)								
Other energy sector								
Distribution losses								
Final Consumption	**547370**	**587230**	**32420**	**34430**	**12193**	**13121**	**9874**	**10239**
Industry Sector	**165465**	**175409**	**4878**	**6510**	**1323**	**988**	**3202**	**4255**
Iron and steel	38850	41117		270	79	83	71	109
Chemical and petroleum	3085	2630	700	110	6	8	1328	1495
Non-ferrous metals								
Non-metallic minerals	21351	22600	956	1053				
Transport equipment								
Machinery					21	22		
Mining & Quarrying								
Food and tobacco								
Paper, pulp and print	2158	3500	365	469				
Wood and wood products								
Cement	19851	21341	342	480				
Textile and leather	2534	2700	2068	2559	7	3		
Non-specified	77636	81521	447	1569	1210	872	1803	2651
Transport Sector						**225**		
International aviation								
Domestic aviation								
Road								
Rail								
Pipeline transport								
Domestic navigation								
Non-specified						225		
Other Sectors	**845**	**760**			**10870**	**11908**	**5255**	**4939**
Residential	377	652			10637	11364		
Comm. And public services								
Agriculture/forestry								
Fishing								
Non-specified	468	108			233	544	5255	4939
Non-Energy Use								
in industry/transf./energy of								
which : feedstock								
in transport								
in other sectors								

Table 7.1(contd) : Energy Commodity Balance for the years 2008-09 and 2009-10(P)

Supply	Kerosene (000 tonnes)		Gas/ diesel (000 tonnes)		Heavy fuel oil (000 tonnes)		Electricity (GWH)	
	2008-09	2009-10	2008-09	2009-10	2008-09	2009-10	2008-09	2009-10
Production	8223	8545	63495	77605	17684	17535	746626	796281
From Other Sources	-	-	-	-	-	-	95905	109693
Imports	1423	985	2788	2531	1637	762	5899	5359
Exports	3701	46	77	18460	6118	5173	37577	41339
Intl. marine bunkers	-	-					-	-
Stock changes			-9600	-9600		-9568		
Domestic Supply	**9569**	**9484**	**61193**	**71276**	**13203**	**22692**	**810853**	**869994**
Transfer								
Statistical difference	266	180	-3852	1681	1529	-504	257581	260537
Transformation			**3513**	**3857**	**4535**	**4572**	**47573**	**49706**
Electricity plants			3513	3857	4535	4572	47573	49706
CHP plants								
Heat plants								
Blast furnaces/ gas works								
Coke/pat.fuel/BKB plants								
Petroleum refineries								
Petrochemical industry								
Liquefaction plants								
Other Transform. sector								
Energy Sector			**953**	**1375**			**17180**	**31568**
Fuel mining and extraction			953	1375				
Petroleum refineries								
Elec., CHP and heat plants								
Pumped storage (elec.)								
Other energy sector								
Distribution losses							180322	219866
Final Consumption	**9303**	**9304**	**63477**	**69595**	**24349**	**23196**	**553272**	**609457**
Industry Sector	**43**	**43**	**14421**	**16979**	**9377**	**9497**	**209474**	**230445**
Iron and steel			217	491	2316	2354		
Chemical and petroleum			133	393	3175	3291		
Non-ferrous metals			-	-				
Non-metallic minerals			-	-				
Transport equipment			11947	13328				
Machinery			-	-				
Mining & Quarrying			1030	1187	998	1009		
Food and tobacco								
Paper, pulp and print								
Wood and wood products								
Construction								
Textile and leather			94	149	176	98		
Non-specified	43	43	1000	1431	2712	2745	209474	230445
Transport Sector			**30681**	**32124**	**2360**	**1576**	**60356**	**89725**
International aviation			-	-				
Domestic aviation			2	10				
Road			27553	28753	500	521		
Rail			2168	2713	27	36	11425	12569
Pipeline transport			-	-				
Domestic navigation			758	648	847	658		
Non-specified					986	361	48931	77156
Other Sectors	**9260**	**9261**	**13909**	**15260**	**8077**	**7551**	**399011**	**427880**
Residential	9131	9131	-	-			131720	144907
Comm. And public services			-	-			54189	59614
Agriculture/forestry			10144	11245	529	674	109610	120583
Fishing			-	-				
Non-specified	129	130	3765	4015	7548	6877	103492	102776
Non-Energy Use								
in industry/transf./energy of								
which : feedstock								
in transport								
in other sectors								

BKB- Brown Coal/ Peat Briquettes CHP- Combined Heat and Power Plants

Statistical Difference= Estimated Production - Estimated Consumption

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