ལོ་བསྡུར་རང་བཞིན་གནས་སྡུད་ཀྱི་རྩིས་ཁྲ།
༢༠༢༠

ANNUAL ENVIRONMENTAL ACCOUNTS 2020

National Statistics Bureau
Royal Government of Bhutan
Thimphu: Bhutan

Foreword

The National Statistics Bureau (NSB) is pleased to publish the Annual Environmental Accounts Statistics (EAS), 2020. The EAS presents green economy indicators, other environmental accounts such as electricity, fossil fuel (diesel, petrol, liquid petroleum gas or LPG and kerosene), fuelwood and briquette. It also includes timber and mineral accounts covering from 2010 to 2019. Further, the publication presents additional chapters on experimental energy and waste accounts for policy and planning purposes. This is the fourth publication by the Economic and Environment Statistics Division of National Statistics Bureau.

The EAS is compiled using the framework of the System of Environmental – Economic Accounts (SEEA). We hope that the information in the report will be helpful in policy formulation, evaluation and monitoring of economic development plans and programs.

The National Statistics Bureau would like to sincerely thank and acknowledge all agencies, both government and private sector, for the continued support and cooperation in the publication of this report. We would appreciate any feedback or comments in improving this report for the larger benefit of data users.

Chhime Tshering
(DIRECTOR)
National Statistics Bureau

Abbreviations & Acronyms

DGM:	Department of Geology & Mines
GDP:	Gross Domestic Product
GNH:	Gross National Happiness
LPG:	Liquid Petroleum Gas
MoEA:	Ministry of Economic Affairs
NSB:	National Statistics Bureau
SEEA:	System of Environmental- Economic Accounting
UNSD:	United Nations Statistics Division

Table of Contents

Figures

1 Introduction

1.1 Objective

The Annual Environmental Accounts Statistics (EAS) is intended to provide environmental related information in key economic sectors in Bhutan so that planners, policy makers, researchers and other data users can use the information for better decision and policy-making purposes.

The report aims to provide a good basis towards improved decision makings related to sustainable development and green economy. Improvements in the management of our environmental assets are critical in making sustainable use of our scarce resources and the environment has the capacity to continue providing inputs to the economy and society. It is for this reason that the state of environment and resource use needs to be monitored and reported on an annual basis to inform decision makers for long-term policy formulation relating to environmental assets.

Further, there are national requirements that provide the rationale for the development of such accounts. Bhutan places high priority for preservation and management of its nature and environment. The Article 5 of The Constitution of the Kingdom of Bhutan requires conserving the country's natural resources and to prevent degradation of the ecosystem, and maintain at least 60% of forest cover in the country for all times.

Environmental conservation is one of the pillars of GNH and it is integrated in every policy and developmental plans of the country. Some of our legal and policy documents such as, The Forest and Nature Conservation Act (1995), National Forest Policy (2010), The National Environment Protection Act (2007) and The Five-Year Development Plans emphasize sustainable utilization and management of natural resources.

Hence, the development of environmental related accounts is crucial, as it provides primary information for improved decision making. The development and compilation of environmental economic accounts has become a core mandate of the Environmental Accounts Section of the National Statistics Bureau. The NSB compiles various environmental accounts in a phased manner and a full set of environmental economic accounts shall be published in the future as data and capacity issues are addressed.

1.2 Method and Scope

The EAS adopts the System of Environmental-Economic Accounting (SEEA) Central Framework in preparing and developing environmental economic accounts. The focus of the analyses is more on the physical quantities and values of environmental assets and explains the changes in these assets over a period of time. The physical and monetary (value) changes record additions to the stock of environmental assets due to new discoveries and reductions in the stock through extraction and natural loss.

The main focus of this report is on accounting electricity and fossil fuel (diesel, petrol, LPG gas, briquette & kerosene). Further, other accounts include asset accounts for major mineral production by type such as coal, dolomite, limestone, gypsum, marble, quartzite, stone and iron ore. In addition, fuelwood consumption account is also developed in our efforts to develop a full set of energy account. Experimental waste and energy accounts are presented as these are growing concerns for the government. As a part of additional asset accounts, timber resource account, briquette and sand by the Natural Resource Development Co-operation and Department of Forest & Park Services are also compiled. The measurement scope of environmental assets is not limited to these accounts, but as and when the data are available, the NSB shall extend its effort to other natural resources accounts which will help in policy planning.

1.3 Data revision

As in any other statistical organizations, the published figures are soley based on the revision of the recent available information. As the publication draws information from annual reports of companies and co-operations, it undergoes revision as reported in the subsequent annual financial reports.

1.4 Reporting

The Environmental Accounts Statistics is reported on a calendar year basis.

2 Green Economy Indicators

2.1. Overview

Green Economy or green growth is in the limelight of the global development agenda. There is a growing demand for green economy indicators both from policy and decision makers. Green growth economy indicators are pathway to sustainable development (WorldBank, 2012). Thus, the NSB compiles relevant core indicators that will inform and enhance our ability to sustainably manage our natural resources with minimal environmental impacts, increase resource efficiency and reduce waste.

Table 1: Green Economic Indicators

Indicators	Web or table reference	Ministry or Statistical Office	Methodological sheet	Unit	2015	2016	2017	2018.00	2019
Economic, demographic and social context for sustainable development									
Demographic patterns and trends									
Total population, both sexes combined	Population Housing Census Report (PHCB)/ SYB	NSB	Available	Nos	717,748	726,596	727,145	734374.00	741672.00
Population growth rate		NSB	Available	%	1.3	1.3	1.3	1.30	1.30
Percentage of urban population		NSB	Available	%	41.02	n.a	37.80	37.80	37.80
Growth rate of urban population		NSB	Available	%	1.3	1.3	n.a	n.a	n.a
Population (age 65 and above), total, both sexes		NSB	Available	Nos	38656	36983	43064	44338.00	45822.00
Population density, inhabitant per km2		NSB	Available	per km2	18.69	18.92	18.94	19.13	19.32
Life expectancy at birth, both sexes combined		NSB	Available	Years	68.93	68.93	69.1	69.10	69.10
Economic growth, structure of economy and productivity									
Real GDP, index	National Accounts Statistics Report	NSB	Available	%	6.64	8.02	4.63	3.03	5.46
[base year as determined by the reporting country]				in Mil USD	2,060.23	2,219.83	2,528.95	2446.30	2530.54
GDP per capita(in USD)		NSB	Available	USD	2,870.41	3,055.11	3,438.16	3031.35	3411.94
Net Disposable Income [or Net National Income]		NSB	Available	Mil Nu	108,851.66	121,074.74	132977,52	140422.55	148834.56
Share of agriculture in GDP		NSB	Available	%	16.71	16.64	17.37	15.89	15.82
Share of industry/ manufacturing in GDP		NSB	Available	%	7.98	7.43	7.25	7.53	7.12
Share of services in GDP		NSB	Available	%	41.96	41.97	42.06	45.81	48.05
Proportion of cellular subscribers to total population	Annual Report of MoIC	MoIC	Available	%	94.1	96.1	100.5	95.80	98.3
Proportion of internet users of total population		MoIC	Available	%	63.5	77.8	99.9	106.21	110.40

Cont...

Table 1 Cont...

Indicators	Web or table reference	Ministry or Statistical Office	Methodological sheet	Unit	2015	2016	2017	2018.00	2019
Labour									
Labour force participation	2019 Labour Force Survey report, NSB		Available	%	63.1	62.2	63.3	62.60	66.40
Proportion of employment by relevant economic activities		NSB	Available	Pry	199640	198429	166646	167862.24	159032.00
				Second	33263	30137	63852	35748.44	43550.00
				Trit	111390	118564	101601	107245.32	108478.00
				∑ (in Nos)	344293	347130	332099	310856.00	311059.00
Unemployment rate		NSB	Available	%	2.5	2.1	2.4	3.40	2.70
Labour productivity [GDP per person employed]		NSB	Available	in Mil USD	5978.54	n.a	n.a	n.a	n.a
Poverty, income distribution and other social issues									
Income inequality: GINI coefficient	Poverty Analysis Report	NSB	Available		0.36	0.36	0.38	0.38	0.38
Percentage of population living in poverty and extreme poverty [measured by National/ Regional poverty lines]		NSB	Available	%	12	12	8.2	8.20	8.20
Subsistence Poverty rate		NSB	Available	%	2.8	2.8	1.5	1.50	1.50
Educational attainment: at least completed lower secondary (ISCED 2 or higher), population 25+ years (%)	Annual Education Statistics	MoE	Available	%	74.2	74.2	74.2	71.40	71.40
Total net enrolment ratio in primary education [both sexes]		MoE	Available	%	95.2	95	94.8	92.90	91.20
Total public expenditure on education as a percentage of GDP	Annual National Accounts Statistics	NSB	Available	%	3.86	2.19	1.88	6.49	5.33
Total expenditure on health per capita (PPP)	Annual National Accounts Statistics	NSB	Available	Nu	n.a	2,028.50	2,238.29	2216.25	2194.45

Cont...

Table 1 Cont...

Indicators	Web or table reference	Ministry or Statistical Office	Methodological sheet	Unit	2015	2016	2017	2018.00	2019
Inflation and commodity prices									
Consumer price index		NSB	Available	%	4.58	3.22	4.96	2.72	2.73
Export price of the major commodity groups [as determined by the reporting country]		DGPC	Available	Nu/unit as of Dec. 2017	2.12	THP/ KHP=2.12, CHP=2.55	THP/ KHP=2.12, CHP=2.55	THP/ KHP=2.12, CHP=2.55	THP/KH P=2.12 CHP=2.55
International trade and tourism									
Relative importance of trade: (exports + imports)/ GDP	Annual National Accounts Statistics	NSB	Available	Mil Nu	0.93	0.83	0.54	0.87	0.84
Terms of trade index [base year as determined by the reporting country]		DRC, MoF	Not available		n.a	n.a	n.a	n.a	n.a
International tourist arrivals in % to population	Annual Report	TCB	Available	%	6.80	7.51	9.82	9.78	9.73
International tourism, receipts	Annual Report	RMA	Available	in Mil USD	71.04	73.74	79.81	85.41	88.63
The environmental and Resource Productivity									
Carbon emissions									
Carbon dioxide emissions (CO2), thousand metric tons of CO2	UNFCC Report	NEC	Available	Metric tons	1559560	1559560	1559560	1559560.00	1559560.00
Carbon dioxide emissions (CO2), metric tons of CO2 per capita		NEC	Available	Tons/Capita	2.173	2.146	2.145	2.12	2.10
Carbon dioxide emissions (CO2), kg CO2 per $1 GDP (PPP)		NEC	Available	Kg/GDP	0.76	n.a	n.a	n.a	n.a
Energy									
Energy productivity [Nu. per ktoe]	EAS Report	NSB	Available	Nu./Ktoe	0.0003	0.0004	0.0003	0.00032	0.0004
Energy consumption per capita [total or final]	energy per capita consumption	NSB	Available	Ktoe/person	0.0005	0.0006	0.0007	0.00069	0.0007
Energy intensity [ktoe per Nu.]	NAS Report	NSB	Available	ktoe/Nu	2,981.01	2,835.70	3,104.62	3177.51	2805.478

Cont...

Table 1 Cont...

Indicators	Web or table reference	Ministry or Statistical Office	Methodological sheet	Unit	2015	2016	2017	2018.00	2019
Renewable energy supply [total energy supply ,TES]		NSB	Available	GWh	7,745.89	5,959.29	7,721.43	6594.31	8875.75
Renewable electricity [% total electricity generation]	EAS Report	NSB	Available	%	100	99.99	99.99	99.98	99.89
Fuelwood, production [thousand cubic metres]	Annual Report	NRDCL/ DoFPS	Available	1000 m3	125.49	140.29	132.20	80.31	95.6
The natural asset base									
Renewable resources									
Forest area	Forestry Facts & Figure of FRMD, MoAF	MoAF	Available	Sq Km	27,053	27,053	27,053	27308.89	27308.89
Proportion of land area covered by forest [percentage]		MoAF	Available	%	70.5	70.5	71.00	71.00	70.77
Natural forest as % of total forest area		MoAF	May be available		n.a	n.a	99.25	99.22	99.22
Planted forest as % of total forest area		MoAF	May be available	ha	n.a	n.a	0.75	0.78	0.78
Deforestation [Ha and % of forest area per year]		MoAF	May be available				0.01	0.07	0.07
Fish Produced, total [marine and freshwater]	DoL	MoAF, DoL	Available	Kgs	149109	187631	199,918	223623.00	223623.00
Non-renewable resources									
Mineral resources: stocks or reserves of selected minerals, including fossil fuels and critical raw materials, as determined by the reporting country	Types	DGM, MoEA	May be available						

Cont...

Table 1 Cont...

Indicators	Web or table reference	Ministry or Statistical Office	Methodological sheet	Unit	2015	2016	2017	2018.00	2019
Extraction rates of selected minerals, including fossil fuels and critical raw materials, as determined by the reporting country	Dolomite	Available	Dolomite	MT	2662309.68	2367659	2546256	2821166.00	3027517.70
	Limestone		Lime stone	MT	850431.17	1257101	1235162	1344038.00	1546302.14
	Gypsum		Gypsum	MT	389364.8	317597	328128	461128.00	490595.50
	Coal		Coal	MT	85164.45	117783	161527	186824.00	184784.48
	Marble		Marble	MT	97647.84	75031	96567	188901.00	94318.33
	Quartzite		Quartzite	MT	79818.5	92770	175501	145714.00	141065.90
	Talc		Talc	MT	5807.27	2261	1293	2042.00	1374.75
	Stone		Stone	MT	2203065.41	3414215	3828254	3730975.00	n.a
	Granite		Granite	MT	3889.05	n.a	26423	6080.00	3391.30
	Phyllite		Phyllite	MT	40417.25	41800	61910	53189.00	78246.35
	Calc Tufa		Cal Tufa	MT	n.a	n.a	n.a	12324.00	22079.14
	Iron Ore		Iron Ore	MT	43201.96	28065	32974	37843.00	36864.20
	Clay		Clay	MT	n.a	n.a	n.a	n.a	n.a
Proportion of agricultural area to total land area					2.93	2.93	2.93	2.93	2.46
Area equipped for irrigation as % of agricultural area	RNR statistics	MoAF	Available	%	94.2	94.2	94.2	94.20	83.36
Arable land, % total land area	RNR statistics	MoAF	Available	%	2.93	2.93	2.93	2.93	2.93
Pasture and temporary meadows, % total land area		MoAF	Available		n.a	n.a	n.a	n.a	0.06
Land area affected by degradation, by type of degradation, as % of total land area		MoAF	Available	%	0.54	0.54	0.54	0.54	0.54
Proportion of organic agricultural area in total agricultural area		MoAF	May be available		n.a	n.a	n.a	n.a	n.a
Pesticides used on crop areas [kg / ha]		MoAF	Available	kg/hec	n.a	n.a	n.a	n.a	n.a
Chemical fertilizers used, kilogram per hectare of crop land		MoAF	Available	kg/hec	n.a	n.a	n.a	n.a	n.a
Natural fertilizer use, kilogram per hectare of crop land		MoAF	Available		n.a	n.a	n.a	n.a	n.a

Cont...

Table 1 Cont...

Indicators	Web or table reference	Ministry or Statistical Office	Methodological sheet	Unit	2015	2016	2017	2018.00	2019
Biodiversity and ecosystems									
Number of known flora and fauna species by status category		NBC, MoAF	Available	Nos	5603 Vascular plants	5603 Vascular plants	5603 Vascular plants	< 5,600 Vascular plants	<5,600
					400 Lichens	400 Lichens	400 Lichens	287 Lichens	280 lichens
					200 Mammals	200 Mammals	200 Mammals	200 Mammals	200 Mammals
					700 Birds appx	700 Birds appx	721 Birds appx	740 Birds appx	749 birds
Number of endemic flora and fauna species by class (mammals, reptiles, etc)		MoAF/NBC	Available	Nos	105 endimic plants	105 endimic plants	144 endimic plants	145 endimic plants	147 endimic plants
					27 Globally Threatened mammal	27 Globally Threatened mammal	27 Globally Threatened mammal	27 Globally Threatened mammal	27 globally threatened mammal
					18-Critically endangered & vulnerable birds	18-Critically endangered & vulnerable birds	18-Critically endangered & vulnerable birds	47-Globally threatened birds	47-Globally threatened birds
% of threatened flora and fauna species by class (mammals, reptiles, etc.)		MoAF	Available	%	n.a	n.a	n.a	n.a	n.a
Proportion of terrestrial protected areas to total surface area, %	MoAF		Available	%	51.32	51.32	51.44	51.44	51.44
Footprints									
Ecological footprint	GNHC	GNHC	Available	Hec/capita	1.8	1.8	1.8	1.80	1.80
The environmental dimension of quality of life									
Environmental health and risks									
Concentration of particulate matter (PM10) in urban air [main cities]	UNFCC Report	NEC	Available	Microgram/ m3	45.51	43.88	40.28	40.28	40.28

Cont...

Table 1 Cont...

Indicators	Web or table reference	Ministry or Statistical Office	Methodological sheet	Unit	2015	2016	2017	2018.00	2019
Environmental services and amenities									
Proportion of total population using an improved drinking water source	BLSS Report	NSB	Available	%	92.60	92.60	98.60	99.60	99.60
Proportion of urban population using an improved drinking water source		MoH	Available	%	99.50	99.50	99.60	99.60	99.60
Proportion of rural population using an improved drinking water source		MoH	Available	%	97.20	97.20	98.00	98.00	98.00
Proportion of total population using an improved sanitation facility		MoH	Available	%	66.30	66.30	74.80	74.80	74.80
Proportion of urban population using an improved sanitation facility		MoH	Available	%	92.60	92.60	84.72	84.72	84.72
Proportion of rural population using an improved sanitation facility		MoH	Available	%	57.90	57.90	69.00	69.00	69.00
Municipal waste collected [total]		MoWHS	Available	Tons per day	20429.05	25367.50	30966.60	38076.80	38696.26
Municipal waste collected [per capita]		MoWHS	Available	Tons per capita per day	0.07	0.09	0.11	0.14	0.23
Policy responses and economic opportunities									
Regulations and management									
Annual government environment protection expenditure [as % of government expenditure and/ or as % of GDP]	Public Expenditure Review Report	DPA, MoF	Available	%	2.6	2.6	2.6	2.60	2.6

Cont...

Table 1 Cont...

Indicators	Web or table reference	Ministry or Statistical Office	Methodological sheet	Unit	2015	2016	2017	2018.00	2019
Participation in multilateral environmental agreements [list and number of MEAs]		NEC	May be available	Nos	15	15	15	15.00	15
Number of regulated pollutants by media [water, air, soil, etc]	Environmental Standards - 2010 (NEC)	NEC	Available	Water = 5	Water = 5	Water = 5	Water = 5	Water = 5	Water = 5
				Industrial effluent = 32	Industrial effluent = 32	Industrial effluent = 32	Industrial effluent = 32	Industrial effluent = 32	Industrial effluent = 32
				Sewerage effluent = 3	Sewerage effluent = 3	Sewerage effluent = 3	Sewerage effluent = 3	Sewerage effluent = 3	Sewerage effluent = 3
				Ambient air = 5	Ambient air = 5	Ambient air = 5	Ambient air = 5	Ambient air = 5	Ambient air = 5
				Industrial emission = 4	Industrial emission = 4	Industrial emission = 4	Industrial emission = 4	Industrial emission = 4	Industrial emission = 4
				Workplace emission = 5	Workplace emission = 5	Workplace emission = 5	Workplace emission = 5	Workplace emission = 5	Workplace emission = 5
				Vehical emission = 2	Vehical emission = 2	Vehical emission = 2	Vehical emission = 2	Vehical emission = 2	Vehical emission = 2
				Noise level = 3	Noise level = 3	Noise level = 3	Noise level = 3	Noise level = 3	Noise level = 3
Green taxes (number and/ or anuual revenue)		DPA, MoF	Available	Mil Nu	545.87	1007.12	909.65	938.56	1025.52
International financial flows									
Official Development Assistance, total	AFS	DPA, MoF	Available	Mil Nu	9955.02	14,889.60	12,986.75	14847.07	10516.48

3 Electricity Account

3.1. Overview

In Bhutan, the leading contributor to growth of the economy is an electricity sector which accounts majority of total GDP of Bhutan. Hydropower is the major source of energy resources in Bhutan. Besides hydropower and solar, most energy resources are non-renewable. However, it is important to understand the stock, the rate at which these types of energy resources are being exploited. Although hydropower is the main source of energy in Bhutan, for the transport sector until such time that electric transport technologies are economically viable, Bhutan will continue to depend on fossil fuel, which is not clean energy.

3.2. Hydro-electricity: Supply & Consumption

The supply of electricity increased to 8,972.24 Gwh in 2019 from 7,093.79 Gwh in 2018, which is an increase of about 27%. Import accounted for just more than 1.0% of total supply whereas almost 99% are internal generation. Comparatively, the import has decreased in 2019 by about 28.0%. While in monetary terms, the supply of electricity has increased drastically from Nu. 15,526.02 million in 2018 to Nu. 20,890.09 million in the year 2019, which is an increase of about 34.5%.

The industrial consumption of electricity increased by almost 95.0% in 2019 as compared to 2018, whereas the consumption of electricity by household continues to decline with percentage declined of about 77.0% in 2019 as compared to 2018, which is given in figure1. On average, the industrial consumption accounted for almost 86.0% while consumption by household accounted around 14% of the total consumption.

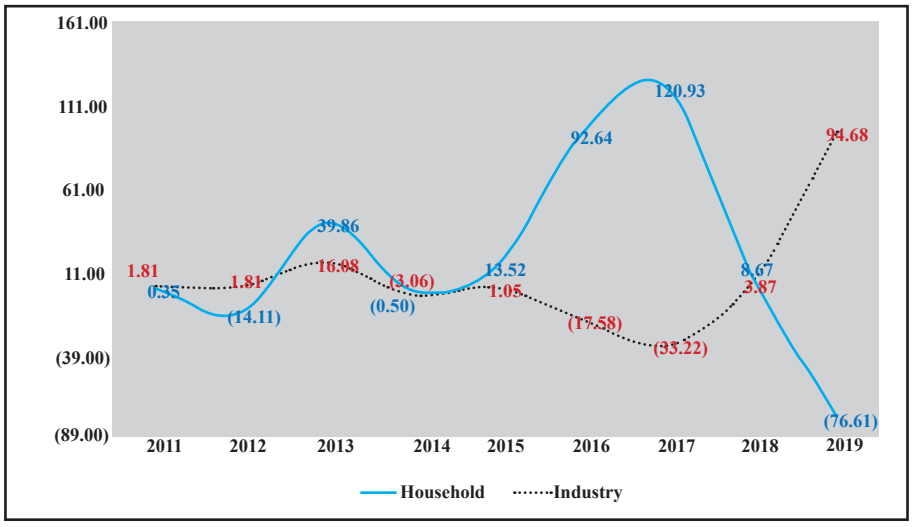


Figure:1 Consumption growth of electricity

In terms of share, manufacturing sector leads the consumption of electricity with almost 79% followed by mining and quarrying with 6.1%, Community Social & Personal Services with 5.39% and the Whole sale retail trade at 4.75% of total industry consumption. Overall, almost 69% of the total electricity supply was exported, while around 25% were consumed domestically and a negligible amount was lost as transmission loss. The overall domestic consumption of electricity decreased by 2% in 2019 compared to 2018 whereas, the share of export has increased by 35%..

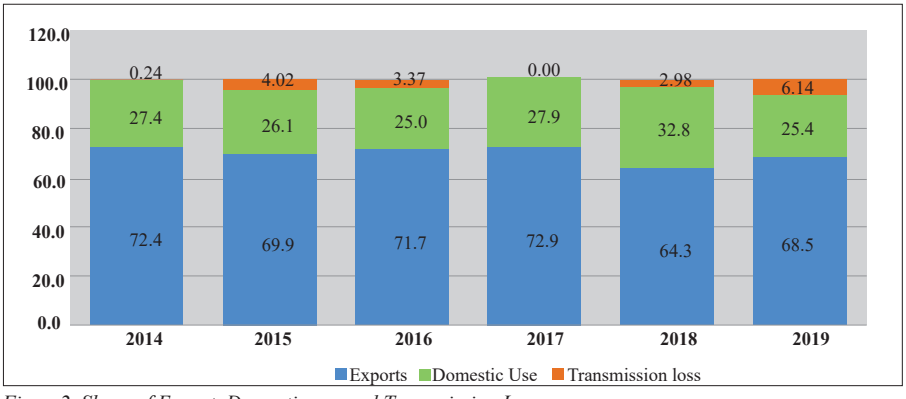


Figure2 Share of Export, Domestic use and Transmission Loss

3.3. Electricity Trade and Transmission Loss

The overall electricity production in the country has increased by almost 29% in 2019 compared to 2018. Although Bhutan is a net exporter of electricity, the country does import electricity during the lean season. In 2019, export of electricity drastically increased by almost 35% while import dropped by slightly more than 28%.

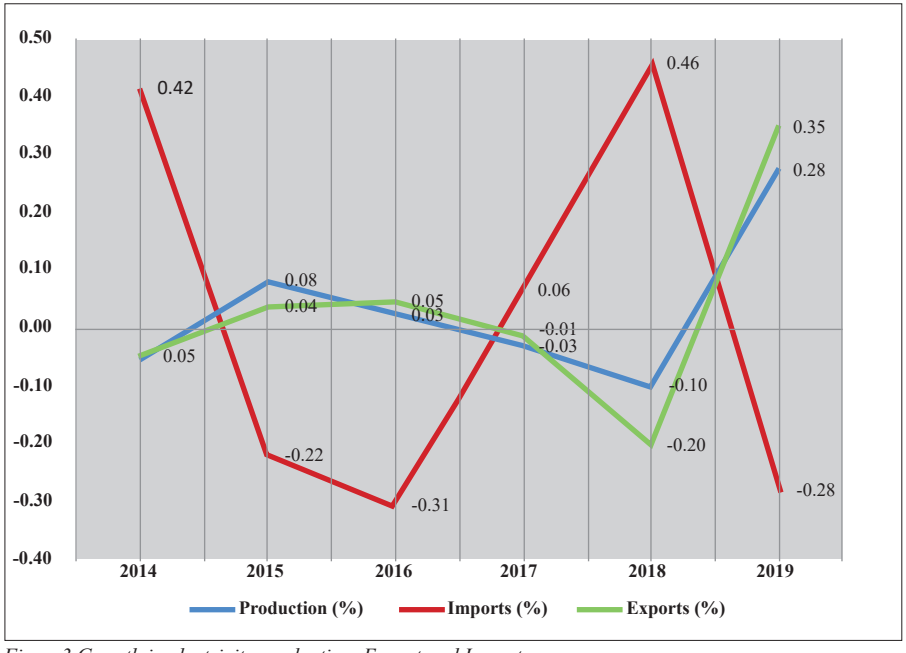


Figure3 Growth in electricity production, Export and Import

The transmission loss[1] , has increased significantly in 2019 compared to past years record. Particularly, as compared to 2018, the loss increased by almost 162.0% which means that the amount lost in 2019 is 162.0% more than the recorded value of 2018. However, the transmission loss, when calculated as the percentage to total generation, it's not so significant.

[1]*The transmission losses are the energy losses through cables.*

4 Fuel Account

4.1. Fossil Fuel: Supply &Consumption of Diesel & Petrol

Bhutan has no natural petroleum or natural gas reserves. For domestic consumption, fossil fuels such as diesel, petrol & LPG are entirely imported from India. Bhutan imports oil at some 3460 barrels per day. Most oil imports supplied fuel for automobiles. The diesel & petrol quantity imported and growth trends for accounting period (2010-2019) are shown in *figure4.*

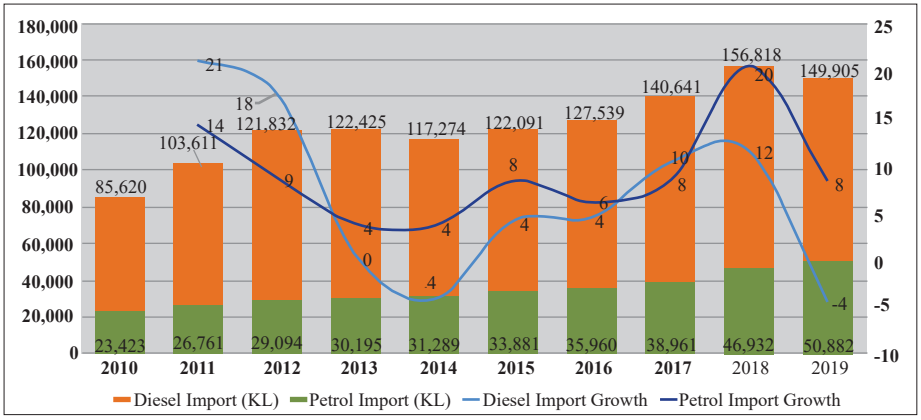


Figure 4 Fuel Imports and growth trends

In absolute terms, the total supply of diesel decreased from 156,818 KL in 2018 to 149,905KL in 2019 and the supply of petrol has increased from 46,932 KL in 2018 to 50,882 KL in 2019. The uses of petrol and diesel are directly proportional to imports, pertaining to import growths of 8% and -4% respectively.

In terms of consumption, service sector remains highest at 35.17 % followed by industrial sector at 20.61%, household at 19.42%, and agriculture sector accounts 12.99%. Moreover, in terms of % share, diesel import accounts for 74.6% while petrol accounts for 25.3%. Detail tables are given in

statistical table as Table 8 (Supply and Use table for fuel).

The consumption of fuel in monetary value adjusted for trade and transport margin recorded at Nu. 12,050.97 million in 2018 and Nu.11,929.02 million in year 2019, which shows a slight decreased of about 1.0 %.

4.2. Import and re-export of Fossil Fuel

From the total import of petrol and diesel, some portion as re-export is consumed by Indian vehicles plying on Bhutanese roads transporting goods in and out of Bhutan. It also includes fuel consumed by Indian tourist vehicles and refueling by Indian vehicles in the border towns of Samdrup Jongkhar, Gelephu, Phuentsholing, Gomtu, Samtse, etc.

The re-export of fuel decreased to 22,625.31 KL in 2019 from 35,143.83 KL in 2018, a decreased by almost 36 %. In particular, the re-export of diesel has decreased from 23,732.90 KL in 2018 to 8,596.13 KL in 2019, whereas, the re-export of petrol has increased from 11,410.93 KL in 2018 to 14,029.19 KL in 2019.

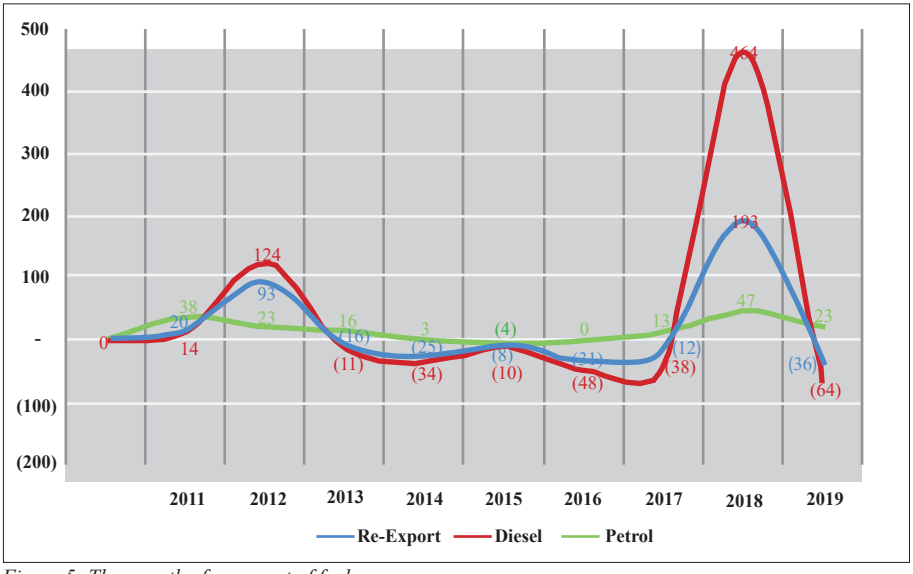


Figure 5: The growth of re-export of fuel

4.3. Kerosene: Supply & Consumption

The import of kerosene decreased from 3,597.0KL in 2018 to 2,886.0 KL in 2019, which was a decrease of about 20% in 2019 compared to 2018. Further, in monetary terms, Nu.79.93 million worth kerosene was imported in the year 2019. Which in compared to 2018(Nu. 79.34 million), there was increase of slightly little less than 1.0% in monetary terms.

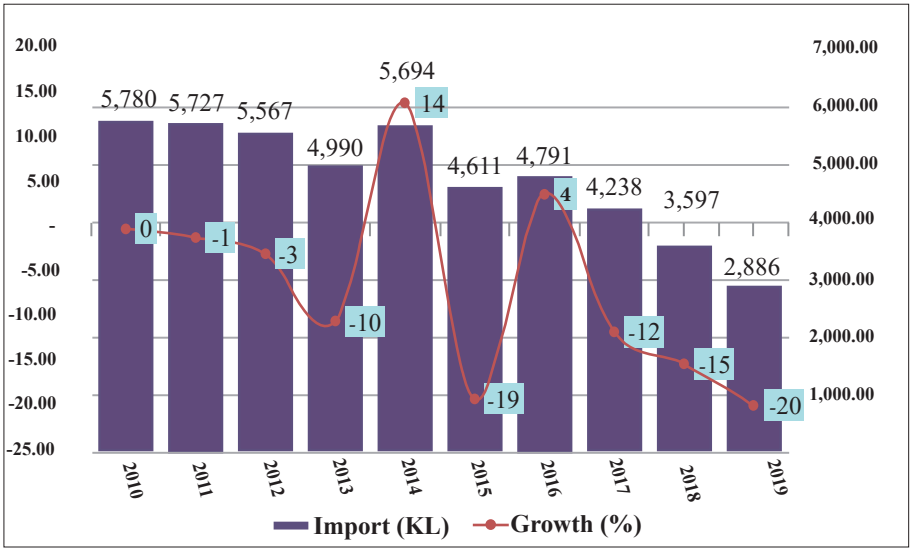


Figure 6: Import of kerosene and growth trend

In the past years, kerosene was also being used to some extent for industrial purpose besides household use.However from 2018 onwards, kerosene imported are solely consumed by household sectors. In 2019 also a total import of 2,886.0 KL, being used for household purposes and there was no record (0percent) of industrial use, which is clearly shown in *figure 7.*

Figure 7: Consumption share of kerosene

4.4. LGP: Supply& Consumption

Bhutanese household commonly uses LPG for cooking purpose, thus the import of LPG from India is seen increasing considerably. In 2019, total of 10,341 MT was imported compare to 10,002 MT in 2018, which was an increase of about 3.0 percentage points.

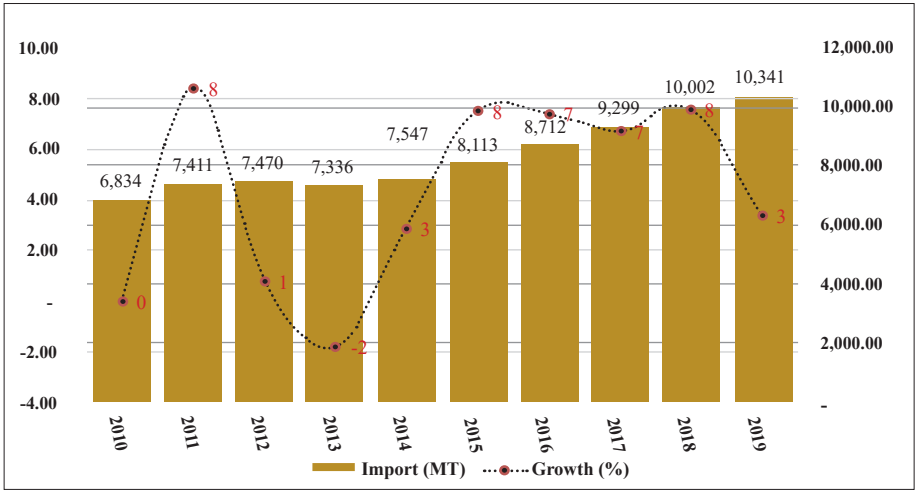


Figure 8: LPG import and growth trend

4.5 Fuelwood: Supply & Consumption

One of the critical sources of energy for rural households in Bhutan is fuelwood. Natural Resource Development Corporation Ltd. and Department of Forest and Park Services, Ministry of Agriculture & Forests supply fuelwood to both rural and urban households. The report includes only those fuelwoods supplied by NRDCL and DoFPS, MoAFs. It is estimated based on the permits issued by these two agencies and it omits the fuelwoods collected without the permit.

In 2019, a total of about 95,592 cubic meter fuelwoods were supplied. Out of which, 37,537 cubic meter of fuelwood were supplied by NRDCL to other industries which constistute of about 39.0 percentage. While the remaining 58,055 cubic meter(about60.73%) of fuelwood were being supplied by DoFPS and MoAFs to the rural household.

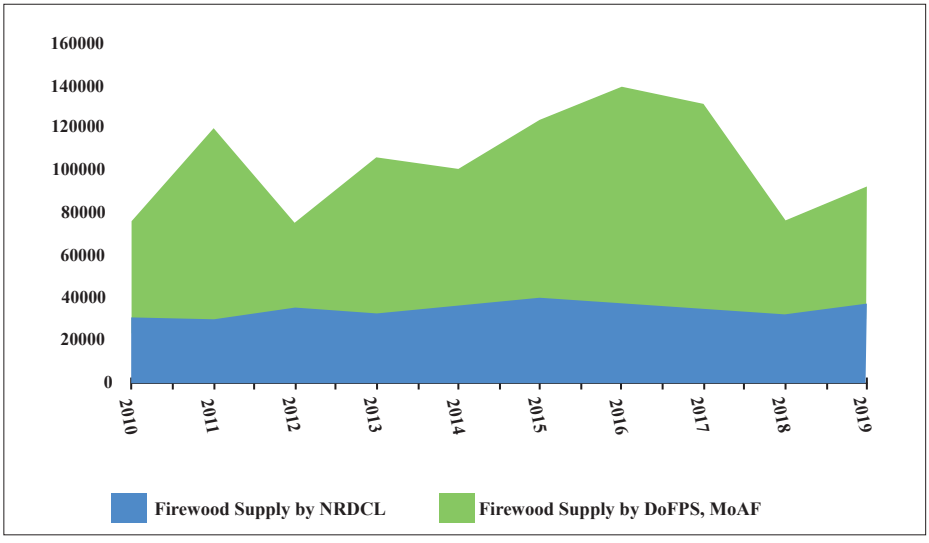


Figure 9: Fuelwood supply (cubic meter)

The consumption of fuelwood were mainly divided into household and industrial use based on the data of fuelwood distribution records with NRDCL and MoAF. Household consumption accounts for almost 48%, whereas industries consumed remaining 53% of total consumption.

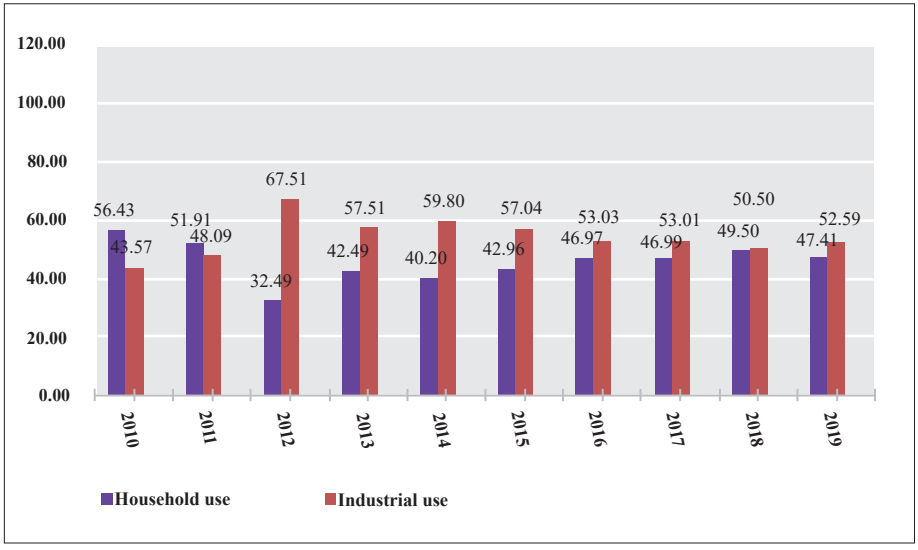


Figure 10: Consumption of firewood by HH & Industries (in percent)

4.6. Briquette: Supply& Consumption

The demand for briquette is provisioned through NRDCL. Although there may be some private sawmills that produce briquette, the figure is insignificant and there is no reliable data. Thus, this account is purely based on NRDCL's Briquette record. As per the record, stock of briquette increased to 373.44 MT in 2019 constitutes an increase of about 14% when compared to 2018. While disposal declined by almost 9.0 percent, making a total disposal to 196.29MT.

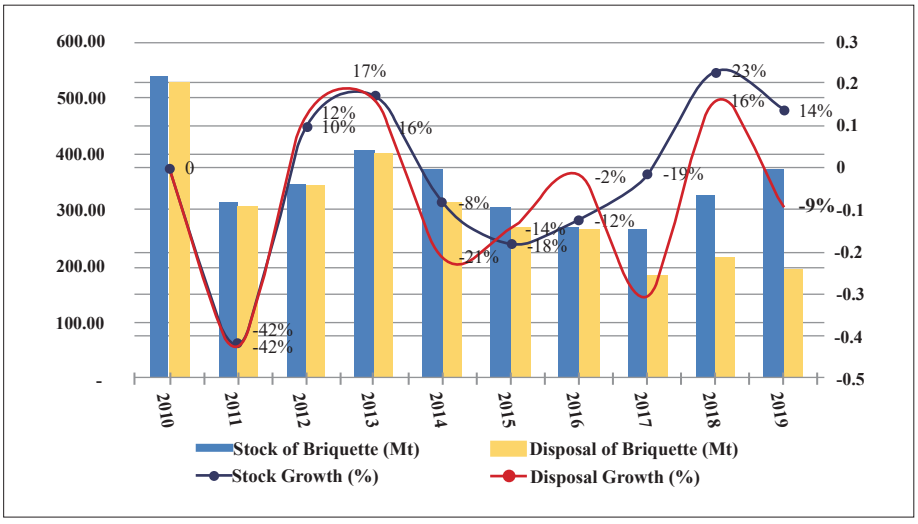


Figure 11: Stock, Disposal and Growth Trends for Briquette

5 Asset Account

5.1 Introduction

In general, asserts are defined as items that are considered to be of value to society. In economics, assets are seen as stores of value that, in many situations, also provide inputs to production processes. Asset account for minerals and natural resources such as timber, sand, stone aggregates and stone chips supplied and disposed by NRDCL and the Department of Forest and Park Services, MoAF, organize relevant information, including the levels and values of stocks of natural inputs and changes in these stocks over time. The mineral resources comprised known deposits of natural resources, coal, non-metallic minerals and metallic minerals.

The System of Environmental-Economic Accounting (SEEA) Central Framework provides that the flows of extraction, depletion and discoveries are central to asset account, which provides valuable information regarding the sustainability of individual resources.

5.2. Timber: Supply & Consumption

Timber is used particularly for construction purposes, renovation of Dzongs & Lhakhangs, rural constructions, etc. NRDCL supplies timber for commercial use, while DoFPS, MoAF supplies for commercial, concessional and some distributed for free.

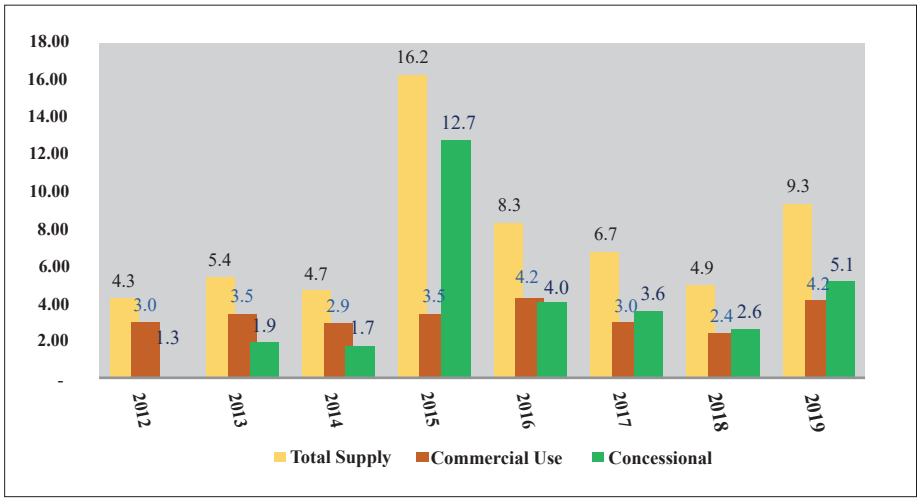


Figure 12: Supply of Timber (Cft.)

The total timber production in the economy increased drastically in 2019 compared to 2018 production. A total of 9.30Cft.timbers were supplied in 2019 alone, which is almost double the amount supplied in accounting year 2018. Thus, there was growth of 87.92 percentage point in 2019 compared to 2018. Of total production almost 77.0 percent were supplied by DoFPS, MoAF and about 23.0 percent were supplied by NRDCL.

The sector wise consumption information of timber isn't available and could not be estimated as we couldn't get any relevant information from any reliable source.

5.3. Sand: Supply and Consumption

The sand is made available by NRDCL at affordable price for public consumption. The demand for sand increases annually as proportional to an increase in urban building constructions.

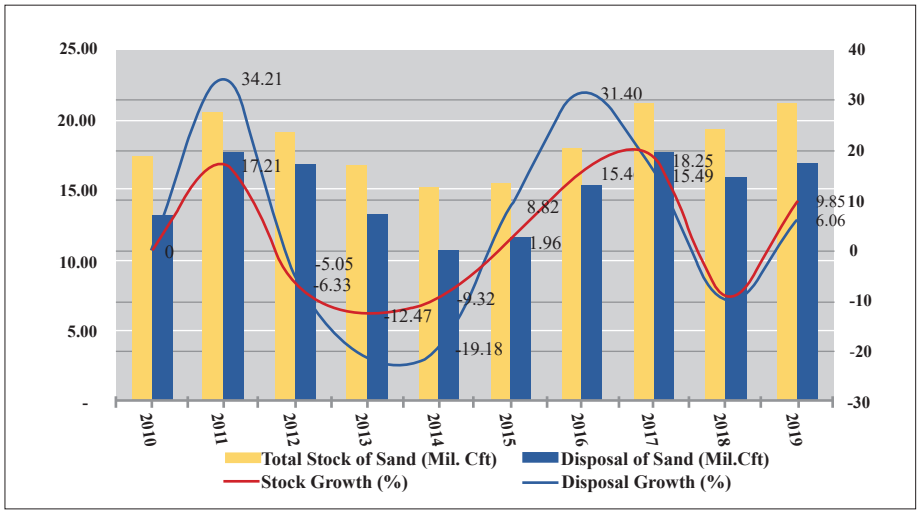


Figure 13: Stock, Disposal and Growth Trends of Sand

The total stock as well as disposal of sand has increased in 2019 compared to 2018, with growth of almost 10.0% and 7.0% respectively as reflected in *figure13.*

5.4. Mineral Asset Account

We compiled mostly non-metallic mineral resources as information on metallic mineral resources in Bhutan is not much available. A mineral asset accounting for non-metallic minerals are purely based on the available primary data of DGM, MoEA. Mineral resources can be extracted and use through economic activities but are normally considered to be non-renewable on any human time scale. Therefore, it's significant to understand levels of the minerals that are being held, and the type and extend of the changes in those levels over time. The key factors in the measurement of mineral asset accounting includes understanding the mineral resources in the form of deposits or reserves and its extractions by different mining and quarrying companies. The deposits influence the likelihood and the cost of current and future extraction.

Mineral resources in Bhutan are resources which are geologically known and extracted by mining and quarrying companies. The non-metallic resources include quarry recourses that are found in the country such as coal, dolomite, limestone, gypsum, quartzite, talc and iron ore.

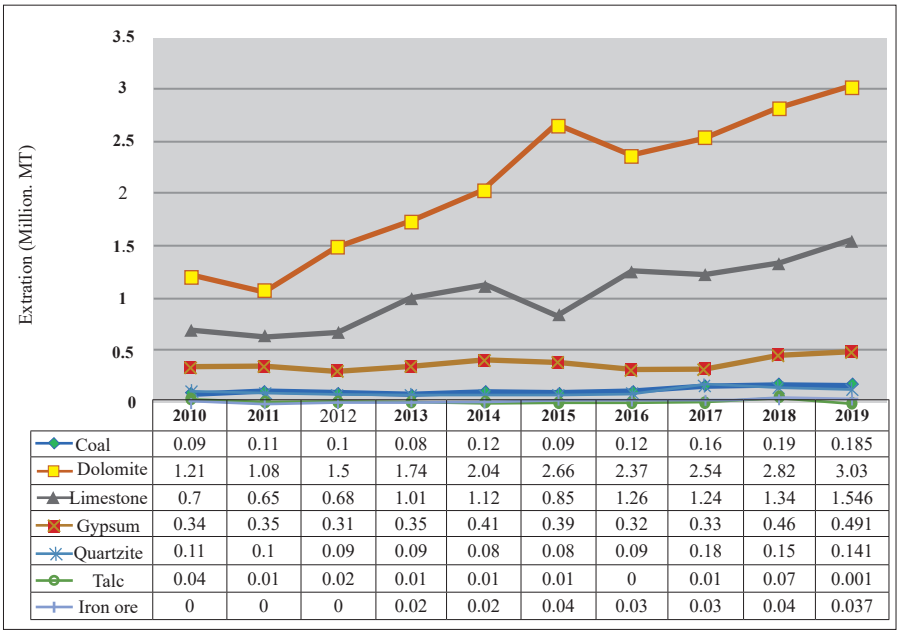
Physical asset accounts for mineral resources is compiled by type of mineral resources and it includes estimates of the opening and closing stocks of each mineral resources and changes in the stock over the accounting period. NSB considered reserves of minerals which are geologically known reserves and its level as the opening stock, while the extractions were recorded as depletion.

5.4.1. Mineral Reserve

Data on reserves are gathered to use in developing physical accounts, so that we can understand the opening stock of individual mineral resources. Accordingly there are three categories of mineral resources: proved, probable and possible. Proved are economically mineable with high degree of certainty (high confidence level). Probable are economically mineable with lower level of confidence than proved reserves. Possible minerals are part of a mineral resource for which grade and mineral content are estimated with a low level of confidence.

5.4.2. Extraction of Minerals

Minerals are extracted by mining and quarrying companies from different locations in the country. Information on extraction of minerals was compiled to ascertain whether mineral extractions or harvest are carried out sustainably. *Figure16* shows minerals extractions by mining and quarrying companies in Bhutan.



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Coal	0.09	0.11	0.1	0.08	0.12	0.09	0.12	0.16	0.19	0.185
Dolomite	1.21	1.08	1.5	1.74	2.04	2.66	2.37	2.54	2.82	3.03
Limestone	0.7	0.65	0.68	1.01	1.12	0.85	1.26	1.24	1.34	1.546
Gypsum	0.34	0.35	0.31	0.35	0.41	0.39	0.32	0.33	0.46	0.491
Quartzite	0.11	0.1	0.09	0.09	0.08	0.08	0.09	0.18	0.15	0.141
Talc	0.04	0.01	0.02	0.01	0.01	0.01	0	0.01	0.07	0.001
Iron ore	0	0	0	0.02	0.02	0.04	0.03	0.03	0.04	0.037

Figure 14: Trend in mineral extraction

Coal extraction averages 0.12 million Mt annually from 2010 to 2019. The extraction ranges from 0.09 million Mt to 0.19 million Mt. The coal extraction in 2018 was highest at 0.19 million Mt. followed by 0.185 million Mt in 2019. Extraction of dolomite on the other hand has occurred on an average of 2.10 million Mt. with highest extraction of 3.028 million Mt in 2019.

Limestone and gypsum extractions remains almost steady with an annual average extraction of 0.98 million Mt and 0.36 million Mt respectively. However, the talc extraction dramatically decreased in 2019 with 0.001 million Mt from 0.07 million Mt in 2018, which was almost a decline of 99 percentage points. The only metal accounted in this report is iron ore with average extraction of 0.03 million Mt yearly from 2013 to 2019. The detail trends are shown in *figure 16.*

5.4.3. Physical Asset Account for Minerals

Physical asset account for minerals are compiled by type of minerals and include estimates of the opening and closing stock of each mineral and the changes over a period of time. The changes in stock encompass types of changes such as discoveries, reappraisals (includes both downward and upward), extractions, catastrophic losses and reclassifications. The total reserve of a particular mineral resource was considered as the opening stock, additions to stock such as discoveries, upward reappraisals and reclassification are added to total reserve. Extractions by different mining and quarrying companies are accounted and thus, subtracted from the total known reserves to ascertain the outstanding reserves of individual mineral resources. Here, the outstanding reserves does not necessarily mean reserves remaining from the known reserve, it may also include unknown reserve in the ground.

The physical asset account for different minerals records the opening stock: the level of mineral resources at the beginning of the year; increases in stocks through discoveries and other increases; the decrease in stock through extractions and other decreases; and the closing stock at the end of the accounting year. Thus, by the end of accounting year 2019, closing stocks are estimated at 14,521.49 million Mt Dolomite; 154.26 Million Mt limestone; 130.47Million Mt gypsum; 4.07million Mt Quartzite; and 2.47 Million Mt Iron-ore. Whereas, for coal and talc its' estimated as nill which means extraction of coal and talc has exceeded the known reserves from 2018 onwards. Since these two minerals falls under possible mineral category, it is difficult to estimate the exact quantity of remaining reserve.

5.4.4. Monetary Asset Account for Minerals

The monetary asset account for mineral resources shows the market-based valuation of an individual mineral resources and changes in the value of these stocks over time. The Net Present Value (NPV) for

constant extraction profile approach is adopted to compute a monetary value of the mineral resources. The formula for the calculation of NPV using an appropriate discount rate is:

$$V_t = \sum_{r=1}^{n} \frac{RR_{(r+t)}}{(1+r_t)^t}$$

Where, V_t is the value of the asset at time t; n is the asset life (number of periods in which extraction takes place); RRt is the resource rent at period i as expected at the beginning of period t; and r is a nominal discount rate.

In this calculation, NSB derived the harvest or actual quantity of extraction of individual mineral on the total volume of mineral resource left for future extraction dividing by the number of years (i.e., lease period provided to mining and quarrying companies). The resource rent for each mineral resource was calculated using company's books of accounts. The NPV of future extraction are discounted back to current value term using appropriate discount rate.
In most countries around the world, lending or interest rate is used as the basis to estimate the discount factor in the absence of any appropriate discount rate. We used Bank of Bhutan's fixed lending rate of 12 percent to Mining & Quarrying Companies as the discount rate for this particular computation.

For accounting year 2019, Dolomite's net present value (NPV) was estimated at Nu.2,54,167.0 million provided constant average extraction of 968.30 million Mt, assumed to maintain same for future years with constant per unit future resource rent of Nu. 293.98 million and the constant social discount rate of 12%. Under similar conditions we estimated NPV for other mineral resources such as coal, limestone, gypsum, quartzite, talc and iron ore. The estimated net present value (NPV) for limestone was estimated at Nu. 47053.2 million, provided constant average extraction of 10.5 million MT and per unit future

resource rent of Nu.5,019.86 million; Gypsum was estimated at Nu. 3,399.3 Million, given constant average extraction of 8.85 million Mt and per unit resource rent of Nu. 813.46 million; Quartzite was estimated at Nu. 824.40 Million, with constant average extraction of 0.29 million Mt and per unit resource rent of Nu.3220.0 million; Iron-ore at Nu. 63.33million, provided constant estimated average extraction of 0.17 million Mt and per unit future resource rent of Nu. 468.50 million; Talc was at Nu. 4.56million, conditioning constant estimated average extraction of 0.01 million Mt and per unit resource rent of Nu. 468.50million. For determining constant extraction quantity, moving average approach was applied. The detail calculation tables are attached at end in list of statistical tables (table 28-34).

6 Experimental Energy Account

6.1 Overview

Some 13% of the global population still lacks access to modern electricity. Energy is the dominant contributor to climate change and it accounts for almost 60% of the total global Ghg emission. SDG goal 7 targets that by 2030, to ensure universal access to affordable, reliable and modern energy services. Bhutan has promised to remain carbon neutral for eternity (UN Climate Change Conference, Paris).

The experimental energy accounts presented in this publication is in accordance with the principles of the System of Environmental-Economic Accounting (SEEA). It records flows of energy in physical units from the initial extraction or capture of energy resources from the environment into the economy; the flows of energy within the economy in the form of the supply and use of energy by industries and households; and flows back to the environment.

The SEEA 2012 recommends energy flow accounts as it helps clarify the relationship between the energy sector and some components of the environment, focusing on the role of energy-related air emissions (which are important because of their direct impact on the environment). The data present are necessary for the derivation of important indicators such as energy intensity, efficiency productivity, etc., and which ultimately relates to sustainable development indicators such as air quality and climate changes indicators.

The physical supply and use (PSUT) approach to account for energy flows, records flows of energy from natural inputs, energy products, energy residuals and other residual flows in physical units of measure. It is based on the principle that the total supply of each flow is equal to the total use of the same flow (i.e the total supply of energy products equal total use of energy products)

Besides hydro-electricity being main source of energy, Bhutan also import energy products like coal and fossil fuels from India to cater energy needs of economic sectors, particularly industry and transport sector. The experimental energy accounts is compiled purely based on latest available information from Bhutan Trade Statistics (BTS) of Ministry of Finance and data from other administrative sources. It adopts the Standard International Energy Product Classification (SIEC) and uses Intergovernmental Panel on Climate Change (IPCC) Conversion Factor (CF). The CF used is as follow:

Table2: Conversion Factor (CF).

Fuel	Basic Unit	Terajoules	Tonnes of Oil Equivalent (ToE)	Petajoules
ATF (Jet Kerosene)	kl	0.03561	0.8505	0.000036
Coal (Anthracite)	MT	0.02670	0.6377	0.000027
Coal (Sub-bituninous)	MT	0.01890	0.4514	0.000019
Other Coal (Lignite)	MT	0.01190	0.2842	0.000012
Coke of Coal	MT	0.02820	0.6735	0.000028
Diesel (Gas Diesel Oil)	kl	0.03741	0.8935	0.000037
Electricity	GWh	3.60000	85.9845	0.003600
Wood (fuelwood and Briquette)	MT	0.01560	0.3726	0.000016
Kerosene	kl	0.03590	0.8578	0.000036
LPG	MT	0.04730	1.1297	0.000047
Petrol (Motor Gasoline)	kl	0.03411	0.8147	0.000034
Biogas	MT	0.05040	1.2038	0.000050
Light Diesel Oil (LDO)	kl	0.03655	0.8730	0.000037

Units	Abbreviation	Terajoules	Petajoules
Tonnes of Oil Equivalent	TOE	0.041868	0.000041868
Terajoules	TJ	1	0.001
Megawatt Hour	MWh	0.0036	0.0000036
Kilowatt Hour	kWh	0.0000036	3.6E-09
Kilocalorie	Kkcal	4.19E-09	4.19E-12
Joule	J	1E-12	1E-15
Gigawatt Hour	GWh	3.6	0.0036

The NSB intends to develop emission account in future once the full set of energy accounts has been compiled. The energy sector is the primary source of CO_2 emission and therefore energy accounts and statistics are very important.

6.2 Energy Consumption

Energy consumption measures the amount of energy used in the Bhutanese economy. It is equal to indigenous production plus imports minus exports (and changes in stocks). It includes energy consumed in energy conversion activities (such as electricity generation). It can be referred to as total net energy consumption and is also equal to total primary energy supply. There was a slight drop in the consumption of energy as has decreased from 520.54 KToE in 2018 to 499.94 in 2019 which accounts to reduction of 3.8 percent. In the same period, the Bhutanese economy grew by 5.46 percent and the Bhutanese population grew by around 1 percent.

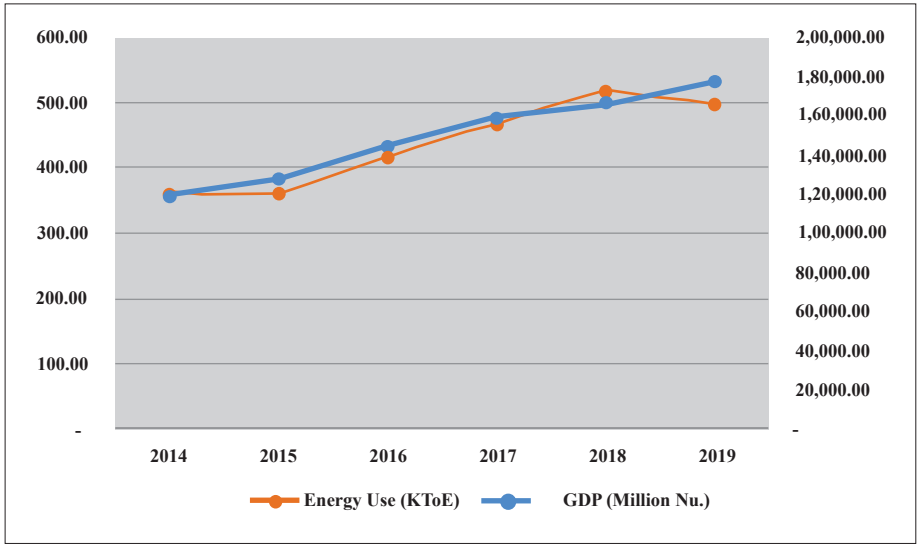


Figure 15: Yearly Domestic Energy Consumption and the GDP

Renewable (Electricity, wind, wood) accounts for the largest share of the Bhutanese energy consumption, at 42 percent in 2019. It comprises mainly hydro energy. Oil (Diesel, Petrol, kerosene, ATF) remain the second largest fuel consumed in 2019, accounting for 32 percent of energy consumption.

Table3. Energy Consumption by fuel type, 2019

Fuel Type	KToE	Share (%)
Renewable	210.99	42.20
Oil	162.80	32.56
Gas	10.09	2.02
Coal	116.05	23.21
Total	499.94	100.00

The consumption of Liquefied Petroleum Gas (LPG) has increased by almost double in last six years. Despite the rise in the oil and coal consumption in the past 5 years (2014-2018), the consumption oil and coal dropped in 2019 by 6 and 7 percent respectively compared to 2018.

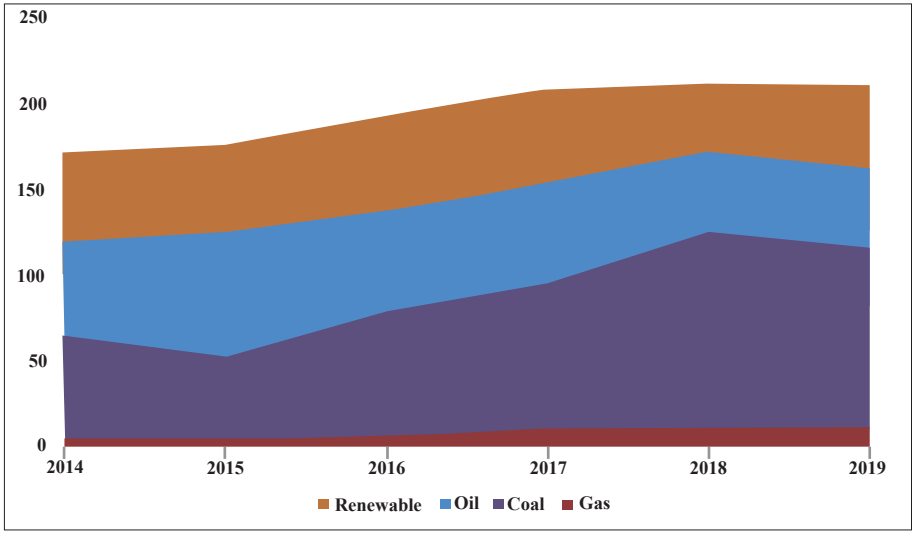


Figure 16: Yearly Energy Consumption by fuel type (in KToE)

6.3 Energy Production

Energy production is defined as the total amount of primary energy produced in the Bhutanese economy measured before consumption and transformation. Domestic production of primary energy increased by almost 30 percent in 2019 compared to 2018, to reach 903 KToE. The increase in energy production was mainly due to the commissioning of 720 MW Mangdechhu hydro power plant towards the second half of 2019. Production continued to become increasingly export-oriented. Bhutan is net exporter of energy, including hydroelectricity and coal, with net exports equal to around one-third of production.

Domestic energy production in Bhutan includes renewable energies, hydroelectricity and coal. The renewable energy production increased by almost 25 percent in 2019 and the coal production has almost remained same compared to 2018 *(Figure: 19)*.

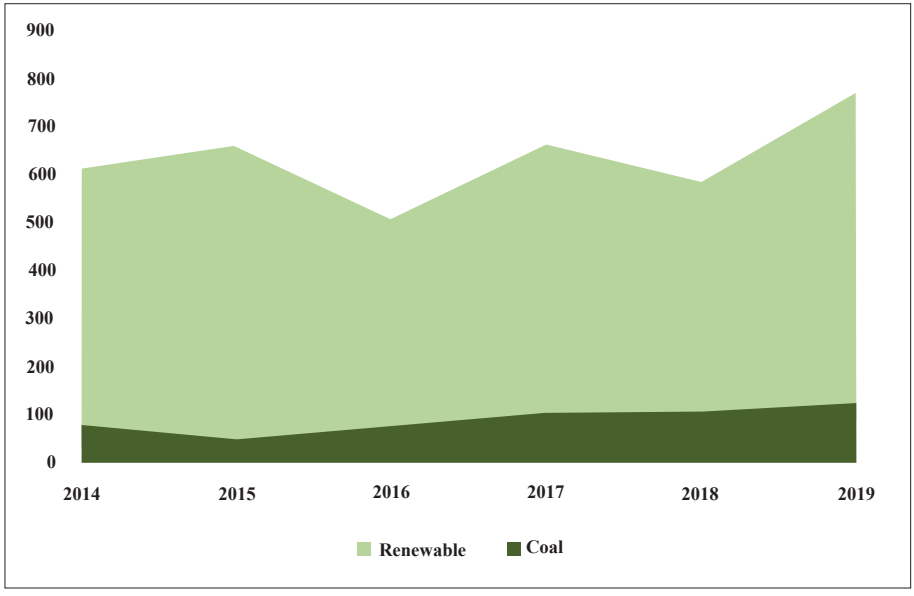


Figure 17: Yearly Energy Production by fuel type

6.4 Energy Import and Export

6.4.1. Energy import from rest of the world

Bhutan imports various energy products, such as fossil fuel (diesel & petrol), aviation turbine fuel, kerosene, furnace oil, LPG, coal and hydroelectricity. Fossil fuel (diesel & petrol) import accounts for more than 60 percent of the total energy import, used for transport sector followed by coal, used for industry sector with 18-30 percent of total energy import. The overall energy import in the country decreased by more than seven percent in 2019 compared to 2018. Except for gas, with slight increase, there was drop in the import of all forms of energy such as coal, oil and hydroelectricity. Bhutan imports hydroelectricity during the lean season. The import of hydroelectricity decreased by more than 10 percent in 2019 compared to 2018.

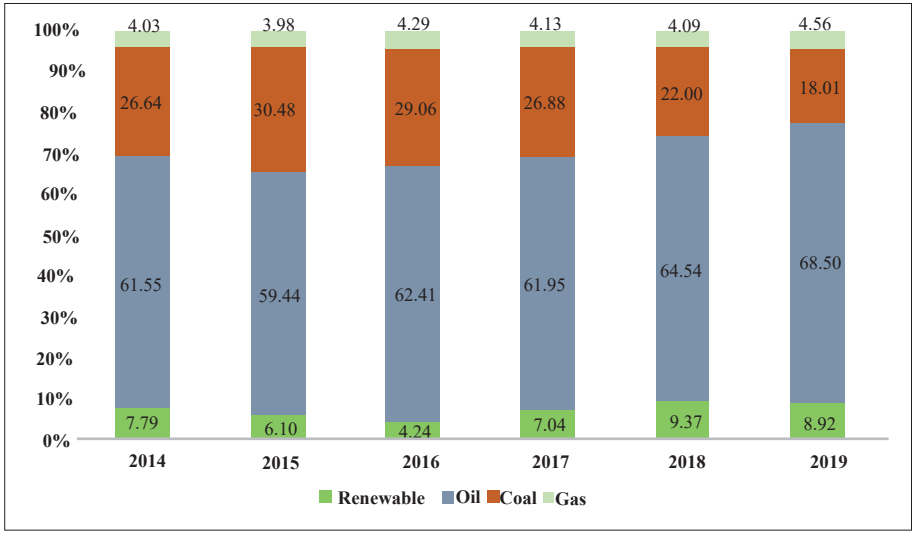


Figure 18: Share of energy import from RoW

6.4.2. Energy export to rest of the world

In terms of energy, Bhutan mainly exports hydro-electricity and coal to rest of the world (RoW). Where Hydro-electricity remains major export with almost 85-97% of the total energy export, coal with the remaining share of export. However, as shown in the Figure 21: Share of energy export to RoW, we also observe a very negligible share of petrol and diesel export which is defined as a re-export fuel, that generally includes some portion of the imported fuel consumed by Indian vehicles plying on Bhutanese roads transporting goods in and out of Bhutan, fuel consumed by Indian tourist vehicles and refueling by Indian vehicles in the border towns.

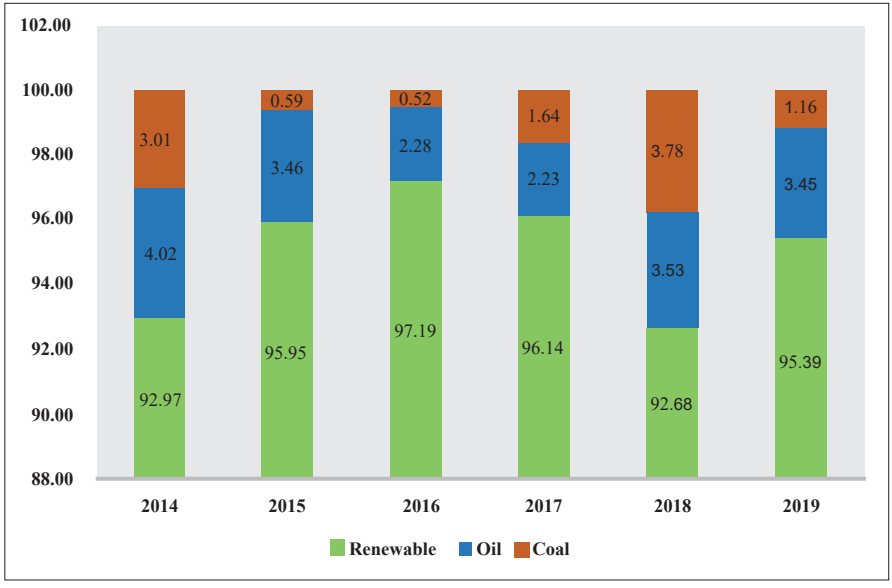


Figure 19: Share of energy export to RoW

7 Experimental Waste Account

7.1 Back ground and Policy

The importance of our environment is articulated in the profound wisdom of His Majesty the King at the inaugural of the Royal Bhutan Flower Exhibition in April 2015, said that "Where we live must be clean, safe, organized and beautiful, for national integrity, national pride, and for our bright future. This too is nation building". In addition, there are number of national policies and requirements which provide the rationale for the development of waste accounts.

Bhutan's 12th Five-Year Development Plan (2019-2023) emphasizes effective waste management at national level as one of the key performance indicators (KPI). It sets out clear performance indicators to be measured by the absolute amount of solid waste (in tonnes) recycled at national level. It envisages to measure the efficiency of Municipality services through the percentage of urban population that are satisfied with the effectiveness and efficiency of waste collection services.

The Constitution of the Kingdom of Bhutan provides constitutional right to every Bhutanese as a trustee of the Kingdom's natural resources and environment for the benefit of the present and future generations. The Article 5.1 of the Constitution empowers every citizen with fundamental duty to contribute to the protection of the natural environment, conservation of the rich biodiversity of Bhutan and prevention of all forms of ecological degradation including noise, visual and physical pollution through the adoption and support of environment friendly practices and policies.

The National Environment Protection Act of 2007 requires anyone taking natural resources or deriving economic benefits from them to ensure that they are sustainably used and managed.

The Waste Prevention and Management Act 2009 provides:

- Reducing the generation of waste at source;
- Promoting the segregation, reuse and recycling of wastes; and
- Disposal of waste in an environmentally sound manner.

The Waste Prevention and Management Regulation 2012 stipulates:

- Promotion of the principles of 3Rs (Reduce, Re-use & Recycle);
- Consumption habits of the people should help promoting the principles; and
- Waste segregation at source is essential.

In Bhutan, proper waste management system across the country is yet to be put in place. To address the issue of waste, an integrated waste system needs to be implemented and this would require meetings and consultations amongst key stakeholders such as legislators, policy-makers, private partners, local communities, CSOs, and government authorities. Efforts are being made by different entities to this end. For example, Thimphu and some urban towns are already implementing Public Private Partnership (PPP) for integrating waste management. The habit of waste segregation by households into dry and wet in urban towns is picking up.

Beside the legal and policy documents listed above, Bhutan has also produced a range of policy documents, strategies and assessments that could be informed by and guide priority setting for waste management. These include:

- National Integrated Solid Waste Management 2014: provides strategic goals and objectives to promote towards "Zero Waste Bhutan" in partnership with public, industry, CSO, government authorities both at local and central levels, municipalities, and other funding agencies. It also emphasizes to honour the principles of Gross National Happiness and Zero Waste Principles

through increased citizen participation in segregation, resource conservation, processing and landfill diversion. The concept of 3Rs has been extended to 4R as prevent and reduce, reuse, recycle and responsibility. Every individual is expected to be responsible for waste management and take measures to prevent waste-related pollution through Extended Producer Responsibility (EPR), Polluter Pays Principle (PPP) and Public-private partnership models.

- Bhutan State of Environment: The National Environment Commission is mandated to report the State of the Environment (SoE) annually to PM's office with detail information on the current state and trends in Bhutan's environment with underlying causes of environmental change and the responses to changes. The report identifies waste management as the major emerging environmental issue for Bhutan. The poor management practices of waste threaten public health and natural environment in terms of water pollution, air and emission of Greenhouse gases.

Policies on waste provide a lot of demand for integrated information on waste. However, there is a lot of data gaps and therefore efforts are required to strengthen waste statistics. Currently, a number of key institutions or agency stakeholders maintain or at least report a small section of waste information as hereunder. However, there is no integrated or a comprehensive waste information system.

7.2 Methods for compilation

Waste accounting (WA) as per the UN System of Environmental-Economic Accounts (SEEA) guides National Statistics Offices around the world to collect information on the generation and disposal of waste to landfills or to recycling facilities, the supply of recycled materials in the economy. It suggests using the Supply-Use framework with detail information on production, reuse, disposal and various other types of residuals generated by the different economic units in the country.

Waste accounts can be useful in many ways. It helps government to understand the extent of waste generation in the country. Waste management is a serious issue which poses a number of challenges. Every household, businesses and government are involved in waste generation in some way or the other, and if left unmanaged will eventually pose challenges. Thus, waste management is largely the responsibility of everyone. The policy makers and government therefore require waste statistics for effective modelling of waste management policy and strategies.

Even from global prospective, solid wastes cause environmental & health impacts such as pollution, aesthetic, land use, etc. The 2030 Agenda for Sustainable Development, particularly Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable provides evidence to account for waste. By 2030, global target is to reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management. Further, by 2030, it also aims to achieve the environmentally sound management of chemicals (treatment of waste, generation of hazardous waste, hazardous waste management, by type of treatment) and all other wastes. By 2030, global agenda is to substantially reduce waste generation through prevention, reduction, recycling and reuse. These will only be possible through sustainable consumption and production.

7.3 Overview

The Solid Waste Account presented in this release highlights the waste generation which flows back as residuals to the environment. The Account is an experimental as energy account given the limited information from the source. However, the coverage shall be expanded once other information of waste flows become available.

As the country develops, the consumption and the imports in particular are placing substantial pressure on the management of waste. The waste account therefore compiled would enable better informed decisions and

policy making pertaining to solid waste management in the country.

The experimental waste account includes the proportion of waste collected and sent to landfills from four major Thromdes and other urban areas. Data for rural areas are not part of the release at the present due to data constraint. Further, the estimate does not include waste through illegal dumping and litter which is still significant and damages the environment.

National Statistics Bureau conducted first ever nationwide National Waste Inventory survey in 2019 covering all the waste generating sectors. The survey collected general perception on waste management in the country and also collected wastes from all the sampled units to measure the quantity of waste generated and its composition. The report can be accessed from www.nsb.gov.bt

However, to study the trend over the different time period, the waste data collected from municipal offices is used for this report. An overall increasing trend in waste generation is observed over the years by the four thromdes and other urban areas. The increase in the waste generated every year could be also because of growth in urban households and increased waste collection services in the urban areas. This demands improved management through technologies and other facilities to collect waste. The waste is becoming an emerging issue and concern for all. The waste generation has increased by more than 100 percent in the past five years *(Figure: 22)*

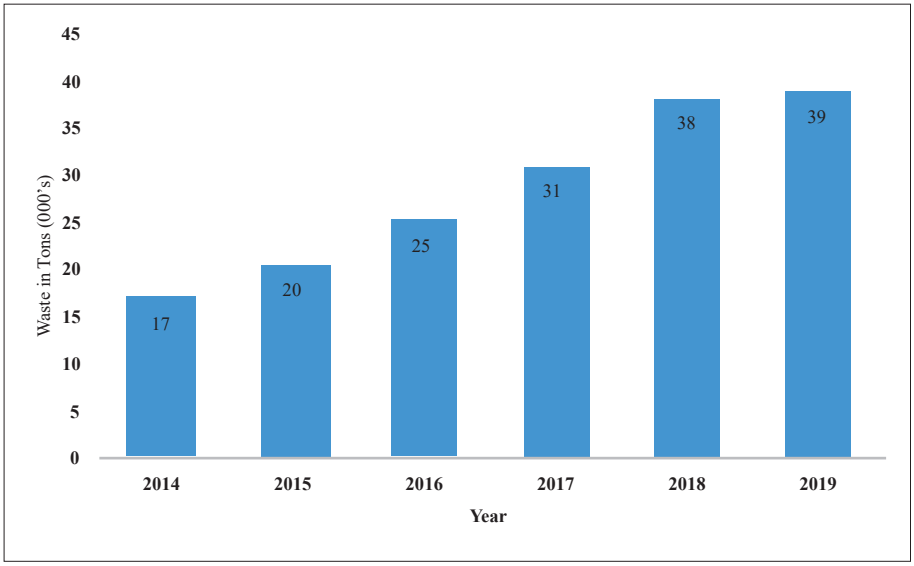


Figure 20: Annual waste collection in urban areas

7.4 Waste Intensity

To understand the intensity of waste relative to Gross Domestic Product (GDP), a plot of these two variables is presented. The quantity of waste generation increased by almost 100 percent, while the nominal GDP grew by almost 50 percent between 2014 to 2019. However, in the recent year from 2018-19, the waste generation has increased by only around 2 percent while the nominal GDP grew by 6 percent. If we consider the trend as representative of the country, then this indicates that the waste management activities and plans in the country is picking up.

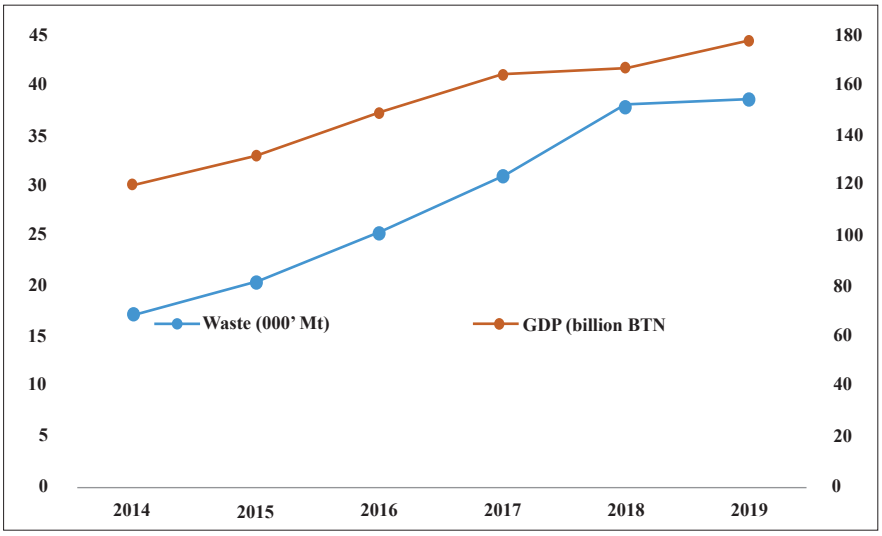


Figure 21: Waste Intensity

7.5 Waste Management Cost

The National Statistics Bureau collected information on the cost of waste management by four thromdes. The information on the waste management cost for other urban towns could not be included. The cost here includes the Operational Cost of managing solid waste and landfills through the salary payments for staff, fuel cost and maintenance of trucks and tractors, landfill management cost and other day-to-day operational costs related to waste management activities. It does not include Up-Front Costs such as acquisition of land, building, public education or advocacy and outreach. Further, the Back-End Costs such as the cost for site closure, post-service benefits of the employee, the cost of decommissioning building and equipment are excluded.

There are 218 staff including drivers and conductors working in waste management related activities in four thromdes. A total of 39 transportation facilities (trucks and tractors) are deployed in collecting and disposing waste to landfills. The annual total operational expenditure was valued at Nu. 53.61 million BTN for collection and

disposition of waste to landfills. With the annual total of 14,490.5 tons of waste collected and dumped at the landfills by the four thromdes and an annual expenditure of Nu. 53.61 million BTN for waste management activities, the cost of managing waste was estimated at Nu.4 per kg of waste. This is based on 2017 data.

8 Looking Ahead

Environmental-Economic Accounting has been recognized globally for its usefulness in terms of strategic and sustainable development planning. NSB has made a small beginning based on the availability of information and support by DANIDA project on environmental accounts and statistics. However, NSB plans to build a comprehensive environmental-economic accounting compendium in future to provide information for national policy planning and also to help monitor and report on SDGs and other Green Economy Indicators. The NSB shall work towards developing priority accounts such as waste, water, land, forest, timber resource account, carbon and selected ecosystem services. A detailed waste account will be carried out in next publication after the completion of pilot waste account which is scheduled to conduct in November, 2020.

To address the need of information requirements, the NSB shall work to strengthen partnerships and coordination with agencies both from the government and non-governmental organization. Training and capacity building in environmental-economic accounting is another key area to be considered. This need shall be addressed with in-house capacity building through HR development, training on environmental accounts compilation, analysis and valuation, and finally conducting knowledge dissemination workshops for data users.

9 Concepts, Definitions & Terminologies of SEEA

9.1 Green Economy

UNEP 2011 defines green economy as one that results in "improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities". The Green Economy Indicators are compiled based on the framework of United Nations Statistics Division (UNSD), which closely follows the OECD green growth structure. It consists of 44 core set of indicators (CS) and 53 indicators that are non-core (NCS).

9.2 SEEA

The System of Environmental-Economic Accounting (SEEA) is an international statistical standard that provides a comprehensive set of accounting tables to guide national statistics offices for compilation of consistent and comparable statistics and indicators for policymaking, analysis and research. It provides conceptual framework for understanding the interactions between the environment and the economy.

9.3 Electricity Account

The total supply as explained above is accounted as: S=DP+M; where, S=Total Supply, DP=Domestic Production and M=Import. Information on the production side (supply) are sourced from the annual reports of DGPC. The total use is computed as: U=DU+X; where U=Total Use, DU=Domestic Use (input in industries & household consumption), X=Export. The consumption data are sourced from BPCL and accordingly mapped into different sectors of economy.

9.4 SNA

The System of National Accounts is the framework of accounts which measures the level of economic development and the rate at which the economy of the country grows over time.

9.5 Depletion

SEEA defines depletion as the decrease in the quantity of the stock of a natural resource over an accounting period due to the extraction of the natural resource by economic units.

9.6 Opening stock of minerals

The opening stock is the level of mineral resources at the beginning of the year and it should be equal to the closing stock of the previous year.

9.7 Closing stock of minerals

The closing stock of mineral is the level of reserve at the end of the year and it should be equal to the opening stock of the subsequent year.

9.8 Upward changes

Upward changes are any new discoveries of new stock of minerals through exploration and evolution.

9.9 Downward changes

Downward changes are changes through extractions or any other decreases like catastrophic losses and reclassifications.

9.10 Resource Rent

The resource rent is the economic value of the mineral and it is estimated to ascertain whether mineral resources are being harvested sustainably. It is calculated based on the residual value method of SEEA which excludes operating costs, specific taxes and subsidies, and consumption of fixed capital from the output.

9.11 Social discount rate

The Net present value (NPV) method uses social discount rates to discount the value of future returns to explain in the current terms. The returns earned in the current period are worth more than returns earned in the future.

9.12 Energy accounts

Energy accounts provide information on energy supply and use. It applies the principle that supply of energy equals use. It presents information on energy production, domestic consumption and net export.

9.13 Energy from natural inputs

Energy from natural inputs encompasses flows of energy from the removal and capture of energy from the environment by resident economic units.

9.14 Energy products

Energy products are products that are used as a source of energy. They comprise fuels that are produced/generated by economic unit as a source of energy; electricity generated by economic units; and heat sold or generated by other economic units.

9.15 Energy residuals

Energy residuals are mainly energy losses through flaring and venting of natural gas and losses during transformation in the production processes, leakages of liquid fuels, loss of heat during transport, losses during distribution, electricity transmission and transport.

Statistical Tables

Table1: Physical Account of Electricity (2000-2019)

(GWh)

Supply				Use			
Year	Production	Imports	Total	Exports	Transmission Loss	Domestic Use	Total
2000	1,921.70	34.39	1,956.08	1,460.48	35.30	460.30	1,956.08
2001	1,967.75	6.90	1,974.65	1,392.62	39.14	542.89	1,974.65
2002	2,173.08	24.30	2,197.38	1,476.37	68.06	652.94	2,197.38
2003	2,377.43	18.72	2,396.15	1,695.80	93.05	607.30	2,396.15
2004	2,423.27	22.80	2,446.07	1,707.19	122.72	616.17	2,446.07
2005	2,519.56	18.43	2,537.99	1,713.61	130.18	694.20	2,537.99
2006	3,354.67	34.69	3,389.36	2,526.15	117.20	746.01	3,389.36
2007	6,421.95	22.22	6,444.17	5,372.57	121.05	950.55	6,444.17
2008	7,158.17	9.38	7,167.55	5,922.38	150.59	1,094.58	7,167.55
2009	6,922.94	64.16	6,987.10	5,404.82	165.47	1,416.81	6,987.10
2010	7,327.73	131.56	7,459.29	5,579.49	166.99	1,712.81	7,459.29
2011	7,067.55	40.32	7,107.87	5,273.10	93.98	1,740.79	7,107.87
2012	6,826.48	59.36	6,885.84	4,895.67	84.17	1,738.98	6,718.82
2013	7,549.84	112.26	7,662.10	5,557.63	43.06	2,061.41	7,662.10
2014	7,163.79	159.16	7,322.95	5,301.28	16.84	2,004.83	7,322.95
2015	7,747.17	124.52	7,871.69	5,503.07	311.48	2,057.14	7,871.69
2016	7,953.58	86.53	8,040.11	5,763.13	268.07	2,008.91	8,040.11
2017	7,729.77	91.93	7,821.70	5,700.99	(65.04)	2,185.79	7,821.74
2018	6,959.81	133.98	7,093.79	4,558.08	207.27	2,328.44	7,093.79
2019	8,875.87	96.37	8,972.24	6,146.60	545.01	2,280.63	8,972.24

Table 2: Monetary Account of Electricity (2000-2019)

(Mill. Nu.)

SUPPLY				USE			
Year	**Production**	**Imports**	**Total**	**Exports**	**Losses through transmission & distribution**	**Industries and house-holds**	**Total**
2000	2,307.26	51.58	2,358.85	2,190.72	38.22	129.90	2,358.85
2001	2,237.78	6.90	2,244.68	2,097.85	48.53	98.31	2,244.68
2002	2,530.55	24.30	2,554.85	2,289.82	85.75	179.28	2,554.85
2003	2,867.94	18.72	2,886.66	2,603.33	121.62	161.71	2,886.66
2004	3,005.05	30.73	3,035.78	2,711.75	149.47	174.56	3,035.78
2005	3,956.64	32.77	3,989.41	3,479.20	209.14	301.07	3,989.41
2006	5,552.83	63.13	5,615.95	4,976.18	247.25	392.52	5,615.95
2007	10,962.37	37.73	11,000.10	10,034.33	91.71	874.06	11,000.10
2008	12,593.17	14.26	12,607.43	11,032.60	103.94	1,470.89	12,607.43
2009	10,889.85	111.03	11,000.88	10,071.00	111.57	818.31	11,000.88
2010	11,811.46	233.87	12,045.33	10,411.46	139.73	1,494.14	12,045.33
2011	10,948.33	67.18	11,015.51	9,839.21	162.12	1,014.18	11,015.51
2012	11,140.80	110.30	11,251.10	9,714.53	148.23	1,388.34	11,251.10
2013	13,051.66	214.93	13,266.59	11,013.99	149.96	2,102.64	13,266.59
2014	13,905.77	371.28	14,277.05	10,698.31	-	3,578.74	14,277.05
2015	14,258.09	341.51	14,599.60	10,991.32	-	3,608.28	14,599.60
2016	12,882.94	222.50	13,105.44	11,421.89	0.80	1,682.75	13,105.44
2017	16,292.87	440.95	16,733.82	12,396.77	1.38	4,335.67	16,733.82
2018	14,391.21	1,134.81	15,526.02	10,432.52	1.35	5,092.15	15,526.02
2019	20,293.41	596.64	20,890.05	15,605.17	0.85	5,284.03	20,890.05

Table 3: Gross Electricity Consumption by Household & Industry (2000-2019)

Year	(GWh)			(Mill. Nu.)		
	Household	Industry	Total	Household	Industry	Total
2000	64.01	396.30	460.30	14.54	115.36	129.90
2001	72.09	470.81	542.89	10.50	87.81	98.31
2002	91.28	561.67	652.94	20.16	159.11	179.28
2003	88.40	518.89	607.30	18.96	142.75	161.71
2004	87.59	528.57	616.17	19.98	154.58	174.56
2005	93.23	600.97	694.20	32.48	268.58	301.07
2006	90.37	655.64	746.01	38.12	354.40	392.52
2007	110.97	839.58	950.55	81.86	792.20	874.06
2008	126.41	968.16	1,094.58	136.27	1,334.62	1,470.89
2009	182.47	1,234.34	1,416.81	84.64	733.67	818.31
2010	208.80	1,504.01	1,712.81	146.20	1,347.94	1,494.14
2011	209.53	1,531.26	1,740.79	97.89	916.29	1,014.18
2012	179.96	1,559.03	1,738.98	136.23	1,252.11	1,388.34
2013	251.69	1,809.72	2,061.41	206.31	1,896.32	2,102.64
2014	250.44	1,754.39	2,004.83	414.54	3,164.20	3,578.74
2015	284.31	1,772.83	2,057.14	433.97	3,174.31	3,608.28
2016	547.71	1,461.20	2,008.91	458.78	1,223.97	1,682.75
2017	1,210.04	975.75	2,185.79	1,901.75	2,433.92	4,335.67
2018	1,314.94	1,013.50	2,328.44	569.19	4,522.96	5,092.15
2019	307.54	1,973.09	2,280.63	731.61	4,552.42	5,284.03

Table 4: Gross Electricity Consumption by Industry by Economic Sectors (2000-2019)

(GWh)

Year	Total Industy	Agriculture, Livestock & Forestry	Mining & Quarrying	Manufacturing	Electricity & Water	Construction	Trade	Hotel & Restaurant	Transport, Storage & Communication	Finance, Insurance & Real Estate	Community, Social & Personal Service	Private, Social & Recreational Services
2000	396.30	0.24	1.06	335.44	12.89	2.84	7.29	0.58	1.71	0.55	33.66	0.03
2001	470.81	0.27	1.26	401.93	13.44	4.05	8.91	0.77	2.04	0.62	37.48	0.03
2002	561.67	0.36	1.82	471.99	17.88	5.70	12.48	0.93	2.74	0.72	47.03	0.04
2003	518.89	0.32	1.96	432.21	19.21	5.16	11.97	0.89	2.50	0.76	43.86	0.04
2004	528.57	0.33	1.39	444.06	16.46	5.51	13.32	1.04	2.92	0.83	42.68	0.04
2005	600.97	0.35	1.75	500.88	19.54	6.01	16.24	1.31	3.47	1.08	50.30	0.05
2006	655.64	0.34	2.54	548.71	26.10	5.29	16.38	1.69	3.32	1.16	50.05	0.05
2007	839.58	0.36	2.54	704.26	48.58	5.87	17.40	2.04	3.58	1.36	53.55	0.06
2008	968.16	0.39	3.62	813.39	56.44	5.49	19.04	3.20	4.35	1.53	60.62	0.07
2009	1,234.34	0.50	4.64	1,025.91	66.65	7.58	23.95	3.49	5.61	1.92	94.00	0.08
2010	1,504.01	0.54	5.29	1,267.70	70.60	10.25	30.02	3.87	6.38	2.10	107.19	0.09
2011	1,531.26	0.56	5.79	1,288.26	60.10	12.62	33.87	5.51	7.14	2.43	114.88	0.09
2012	1,559.03	0.51	3.52	1,345.23	45.32	14.13	34.39	5.61	6.47	2.07	101.71	0.08
2013	1,809.72	0.62	5.75	1,549.77	61.01	15.75	42.44	7.42	7.62	2.52	116.71	0.10
2014	1,754.39	1.40	4.06	1,544.64	64.19	24.33	20.24	16.91	11.98	2.63	63.28	0.73
2015	1,772.83	0.67	7.00	1,550.37	67.57	4.06	8.93	19.57	12.18	0.47	101.81	0.20
2016	1,461.20	2.25	9.47	822.76	232.12	19.07	26.34	50.41	36.64	14.71	246.76	0.66
2017	975.75	0.67	4.11	874.53	38.89	5.94	4.76	7.76	5.01	0.93	32.67	0.49
2018	1,013.50	1.27	2.41	879.93	13.50	14.93	33.07	11.42	1.96	0.10	54.87	0.03
2019	1,973.09	5.38	121.92	1,555.63	25.94	9.16	93.71	33.41	17.29	3.26	106.34	1.06

Table 5: Gross Electricity Consumption by Industry by Economic Sectors (2000-2019)

(Mill. Nu.)

Year	Total Industry	Agriculture, Livestock & Forestry	Mining & Quarrying	Manufacturing	Electricity & Water	Construction	Trade	Hotel & Restaurant	Transport, Storage & Communication	Finance, Insurance & Real Estate	Community, Social & Personal Service	Private, Social & Recreational Services
2000	115.36	0.07	0.39	95.92	3.87	0.95	2.19	0.16	0.55	0.16	11.09	0.01
2001	87.81	0.05	0.29	73.69	2.59	0.87	1.71	0.14	0.42	0.11	7.92	0.01
2002	159.11	0.11	0.64	131.26	5.22	1.86	3.64	0.25	0.86	0.20	15.07	0.01
2003	142.75	0.09	0.67	116.66	5.44	1.64	3.39	0.24	0.76	0.21	13.64	0.01
2004	154.58	0.10	0.51	127.53	4.96	1.86	4.01	0.29	0.94	0.24	14.13	0.01
2005	268.58	0.16	0.97	219.69	8.99	3.10	7.47	0.56	1.71	0.47	25.42	0.02
2006	354.40	0.19	1.71	291.38	14.54	3.30	9.12	0.88	1.98	0.62	30.63	0.03
2007	792.20	0.36	2.99	653.96	47.33	6.41	16.94	1.86	3.73	1.27	57.30	0.06
2008	1,334.62	0.58	6.24	1,103.70	80.36	8.76	27.10	4.27	6.64	2.09	94.80	0.09
2009	733.67	0.32	3.45	599.08	40.84	5.20	14.67	2.00	3.68	1.13	63.26	0.05
2010	1,347.94	0.51	5.92	1,117.37	65.29	10.62	27.75	3.35	6.32	1.86	108.87	0.08
2011	916.29	0.35	4.33	757.65	37.09	8.73	20.89	3.18	4.72	1.43	77.86	0.05
2012	1,252.11	0.45	4.98	1,055.89	43.61	12.62	30.32	4.96	5.83	1.73	91.64	0.07
2013	1,896.32	0.69	7.54	1,599.14	66.05	19.11	45.93	7.52	8.84	2.62	138.78	0.11
2014	3,164.20	3.02	11.26	2,687.10	122.27	58.23	41.79	44.52	29.49	6.31	158.50	1.72
2015	3,174.31	1.42	16.69	2,670.50	125.18	9.23	20.90	44.34	29.60	1.00	255.01	0.43
2016	1,223.97	1.89	7.93	689.18	194.43	15.98	22.07	42.23	30.69	12.32	206.70	0.55
2017	2,433.92	2.88	14.62	2,058.92	102.95	28.84	28.84	22.16	24.20	4.30	143.81	2.39
2018	4,522.96	9.88	17.51	3,431.72	71.36	126.62	272.17	99.87	16.92	0.93	475.71	0.26
2019	4,552.42	22.77	244.22	3,147.73	76.57	40.39	309.49	147.30	76.13	13.93	468.96	4.92

Table 6: Total Supply & Use of Electricity by Sectors (2010-2019)

(GWh)

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
(I) TOTAL SUPPLY	**7,459.29**	**7,107.87**	**6,885.84**	**7,662.10**	**7,322.95**	**7,871.69**	**8,040.11**	**7,821.70**	**7,093.79**	**8,972.24**
Production	7,327.73	7,067.55	6,826.48	7,549.84	7,163.79	7,747.17	7,953.58	7,729.77	6,959.81	8,875.87
Imports	131.56	40.32	59.36	112.26	159.16	124.52	86.53	91.93	133.98	96.37
(II) TOTAL USE	**7,459.29**	**7,107.87**	**6,718.82**	**7,662.10**	**7,322.95**	**7,871.69**	**8,040.11**	**7,821.74**	**7,093.79**	**8,972.24**
1. Agriculture, Livestock & Forestry	0.54	0.56	0.51	0.62	1.40	0.67	2.25	0.67	1.27	5.38
2. Mining & Quarrying	5.29	5.79	3.52	5.75	4.06	7.00	9.47	4.11	2.41	121.92
3. Manufacturing	1,267.70	1,288.26	1,345.23	1,549.77	1,544.64	1,550.37	822.76	874.53	879.93	1,555.63
4. Electricity & Water	70.60	60.10	45.32	61.01	64.19	67.57	232.12	38.89	13.50	25.94
5. Construction	10.25	12.62	14.13	15.75	24.33	4.06	19.07	5.94	14.93	9.16
6. Wholesale & Retail Trade	30.02	33.87	34.39	42.44	20.24	8.93	26.34	4.76	33.07	93.71
7. Hotels & Restaurants	3.87	5.51	5.61	7.42	16.91	19.57	50.41	7.76	11.42	33.41
8. Transport, Storage & Communication	6.38	7.14	6.47	7.62	11.98	12.18	36.64	5.01	1.96	17.29
9. Finance, Insurance, Real Estate & Business Services	2.10	2.43	2.07	2.52	2.63	0.47	14.71	0.93	0.10	3.26
10. Community, Social & Personal Services	107.19	114.88	101.71	116.71	63.28	101.81	246.76	32.67	54.87	106.34
11. Private Social & Recreational Services	0.09	0.09	0.08	0.10	0.73	0.20	0.66	0.49	0.03	1.06
Household	208.80	209.53	179.96	251.69	250.44	284.31	547.71	1,210.04	1,314.94	307.54
Export	5,579.49	5,273.10	4,895.67	5,557.63	5,301.28	5,503.07	5,763.13	5,700.99	4,558.08	6,146.60
Cable Losses	166.99	93.98	84.17	43.06	16.84	311.48	268.07	(65.04)	207.27	545.01

Table 7: Total Supply & Use of Electricity by Sectors (2010-2019)

(Mill. Nu.)

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
(I) TOTAL SUPPLY	**12,045.33**	**11,015.51**	**11,251.10**	**13,266.59**	**14,277.05**	**14,599.60**	**13,105.44**	**16,733.82**	**15,526.02**	**20,890.05**
Production	11,811.46	10,948.33	11,140.80	13,051.66	13,905.77	14,258.09	12,882.94	16,292.87	14,391.21	20,293.41
Imports	233.87	67.18	110.30	214.93	371.28	341.51	222.50	440.95	1,134.81	596.64
(II) TOTAL USE	**12,045.33**	**11,015.51**	**11,251.10**	**13,266.59**	**14,277.05**	**14,599.60**	**13,105.44**	**16,733.82**	**15,526.02**	**20,890.05**
1. Agriculture, Livestock & Forestry	0.51	0.35	0.45	0.69	3.02	1.42	1.89	2.88	9.88	22.77
2. Mining & Quarrying	5.92	4.33	4.98	7.54	11.26	16.69	7.93	14.62	17.51	244.22
3. Manufacturing	1,117.37	757.65	1,055.89	1,599.14	2,687.10	2,670.50	689.18	2,058.92	3,431.72	3,147.73
4. Electricity & Water	65.29	37.09	43.61	66.05	122.27	125.18	194.43	102.95	71.36	76.57
5. Construction	10.62	8.73	12.62	19.11	58.23	9.23	15.98	28.84	126.62	40.39
6. Wholesale & Retail Trade	27.75	20.89	30.32	45.93	41.79	20.90	22.07	28.84	272.17	309.49
7. Hotels & Restaurants	3.35	3.18	4.96	7.52	44.52	44.34	42.23	22.16	99.87	147.30
8. Transport, Storage & Communication	6.32	4.72	5.83	8.84	29.49	29.60	30.69	24.20	16.92	76.13
9. Finance, Insurance, Real Estate & Business Services	1.86	1.43	1.73	2.62	6.31	1.00	12.32	4.30	0.93	13.93
10. Community, Social & Personal Services	108.87	77.86	91.64	138.78	158.50	255.01	206.70	143.81	475.71	468.96
11. Private Social & Recreational Services	0.08	0.05	0.07	0.11	1.72	0.43	0.55	2.39	0.26	4.92
Household	146.20	97.89	136.23	206.31	414.54	433.97	458.78	1,901.75	569.19	731.61
Export	10,411.46	9,839.21	9,714.53	11,013.99	10,698.31	10,991.32	11,421.89	12,396.77	10,432.52	15,605.17
Cable Losses	139.73	162.12	148.23	149.96	-	-	0.80	1.38	1.35	0.85

Table 8. Supply and Use of Fossil Fuel (Diesel and Petrol)

(in KL)

Supply	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Domestic Production	-	-	-	-	-	-	-	-	-	
Import										
1. Diesel	85,620.00	103,610.90	121,832.00	122,424.80	117,273.80	122,091.40	127,539.00	140,640.50	156,817.50	149,905.00
2. Petrol	23,422.50	26,761.10	29,094.00	30,195.20	31,289.20	33,880.60	35,960.00	38,960.50	46,932.00	50,882.00
Total Supply	**109,042.50**	**130,372.00**	**150,926.00**	**152,620.00**	**148,563.00**	**155,972.00**	**163,499.00**	**179,601.00**	**203,749.50**	**200,787.00**
Use										
Major sectors	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
1. Agriculture, Livestock & Forestry	**7,555.83**	**10,016.58**	**11,269.47**	**11,676.31**	**12,810.17**	**16,838.55**	**19,471.82**	**23,289.57**	**24,879.55**	**26,080.15**
Diesel	7,554.64	10,015.39	11,268.28	11,675.12	12,808.97	16,827.71	19,457.05	23,273.36	20,302.48	21,503.43
Petrol	1.19	1.19	1.19	1.20	1.19	10.85	14.77	16.21	4,577.07	4,576.72
2. Industry	**18,479.83**	**23,188.34**	**24,450.98**	**24,934.18**	**25,751.13**	**26,626.96**	**31,787.68**	**38,583.40**	**38,786.32**	**41,384.55**
Diesel	18,365.15	23,040.77	24,305.61	24,771.61	25,588.21	26,409.68	31,551.73	38,352.93	38,557.23	41,127.37
Petrol	114.68	147.57	145.37	162.57	162.92	217.28	235.95	230.47	229.09	257.18
3. Services	**47,855.76**	**56,805.04**	**58,346.78**	**60,852.59**	**61,058.08**	**62,132.52**	**64,184.98**	**68,512.88**	**68,016.75**	**71,701.07**
Diesel	47,070.86	56,048.19	57,652.61	60,079.95	60,285.98	61,149.61	63,077.83	67,397.86	66,881.48	70,455.47
Petrol	784.89	756.85	694.16	772.64	772.10	982.92	1,107.14	1,115.03	1,135.27	1,245.60
3. HH consumption	**21,957.49**	**24,472.51**	**26,218.26**	**26,304.71**	**27,345.30**	**30,527.70**	**34,380.85**	**37,237.01**	**36,923.05**	**38,995.91**
Diesel	3,003.06	3,525.11	4,000.95	4,033.25	4,166.79	4,719.66	6,650.35	7,405.85	7,343.41	8,222.60
Petrol	18,954.43	20,947.41	22,217.31	22,271.46	23,178.51	25,808.04	27,730.50	29,831.16	29,579.64	30,773.32
4. Re-Export	**13,193.60**	**15,889.53**	**30,640.51**	**28,852.20**	**21,598.32**	**19,846.27**	**13,673.67**	**11,978.14**	**35,143.83**	**22,625.31**
1. Diesel	9,626.30	10,981.45	24,604.55	21,864.87	14,423.84	12,984.75	6,802.03	4,210.50	23,732.90	8,596.13
2. Petrol	3,567.30	4,908.08	6,035.96	6,987.33	7,174.48	6,861.52	6,871.64	7,767.64	11,410.93	14,029.19
Total use of Diesel	**85,620.00**	**103,610.90**	**121,832.00**	**122,424.80**	**117,273.80**	**122,091.40**	**127,539.00**	**140,640.50**	**156,817.50**	**149,905.00**
Total use of Petrol	**23,422.50**	**26,761.10**	**29,094.00**	**30,195.20**	**31,289.20**	**33,880.60**	**35,960.00**	**38,960.50**	**46,932.00**	**50,882.00**
Total use	**109,042.50**	**130,372.00**	**150,926.00**	**152,620.00**	**148,563.00**	**155,972.00**	**163,499.00**	**179,601.00**	**203,749.50**	**200,787.00**

Table 9: Supply and Use of Fossil Fuel (Diesel and Petrol)(in percent)

Supply	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Domestic Production	-	-	-	-	-	-	-	-	-	
Import										
1. Diesel	78.52	79.47	80.72	80.22	78.94	78.28	78.01	78.31	76.97	74.66
2. Petrol	21.48	20.53	19.28	19.78	21.06	21.72	21.99	21.69	23.03	25.34
Total Supply	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**
Use										
Major Sectors	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
1. Agriculture, Livestock & Forestry	**6.93**	**7.68**	**7.47**	**7.65**	**8.62**	**10.80**	**11.91**	**12.97**	**12.21**	**12.99**
Diesel	8.82	9.67	9.25	9.54	10.92	13.78	15.26	16.55	12.95	14.34
Petrol	0.01	0.00	0.00	0.00	0.00	0.03	0.04	0.04	9.75	8.99
2. Industry	**16.95**	**17.79**	**16.20**	**16.34**	**17.33**	**17.07**	**19.44**	**21.48**	**19.04**	**20.61**
Diesel	21.45	22.24	19.95	20.23	21.82	21.63	24.74	27.27	24.59	27.44
Petrol	0.49	0.55	0.50	0.54	0.52	0.64	0.66	0.59	0.49	0.51
3. Services	**43.89**	**43.57**	**38.66**	**39.87**	**41.10**	**39.84**	**39.26**	**38.15**	**33.38**	**35.71**
Diesel	54.98	54.09	47.32	49.07	51.41	50.09	49.46	47.92	42.65	47.00
Petrol	3.35	2.83	2.39	2.56	2.47	2.90	3.08	2.86	2.42	2.45
3. HH consumption	**20.14**	**18.77**	**17.37**	**17.24**	**18.41**	**19.57**	**21.03**	**20.73**	**18.12**	**19.42**
Diesel	3.51	3.40	3.28	3.29	3.55	3.87	5.21	5.27	4.68	5.49
Petrol	80.92	78.28	76.36	73.76	74.08	76.17	77.11	76.57	63.03	60.48
Re-Export	**12.10**	**12.19**	**20.30**	**18.90**	**14.54**	**12.72**	**8.36**	**6.67**	**17.25**	**11.27**
1. Diesel	11.24	10.60	20.20	17.86	12.30	10.64	5.33	2.99	15.13	5.73
2. Petrol	15.23	18.34	20.75	23.14	22.93	20.25	19.11	19.94	24.31	27.57
Total use of Diesel	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**
Total use of Petrol	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**
Total use	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**

Table 10. Supply and Use of Fossil Fuel (Diesel and Petrol)

(Nu. in million)

Supply	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Production	-	-	-	-	-	-	-	-	-	
Imports	4,201.76	4,927.00	6,228.71	7,218.10	7,731.32	6,730.68	7,307.19	8,479.01	10,348.01	9,946.51
1. Diesel at basic price	3,250.61	3,562.81	4,601.90	5,471.94	5,911.38	5,024.82	5,549.46	6,505.27	7,965.84	7,602.88
2. Petrol at basic price	951.15	1,364.19	1,626.82	1,746.16	1,819.94	1,705.86	1,757.73	1,973.74	2,382.17	2,343.63
Total Margin	636.70	690.87	749.12	841.32	1,035.00	1,233.21	1,669.84	1,668.68	1,702.96	1,982.51
Trade and Transport margin (Diesel)	480.09	526.19	571.09	637.05	760.59	966.20	1,113.18	1,272.15	1,297.37	1,316.47
Trade and Transport margin (Petrol)	156.62	164.67	178.03	204.26	274.40	267.01	556.66	396.52	405.59	666.04
Supply at market price (Diesel)	3,730.70	4,089.00	5,172.99	6,108.99	6,671.97	5,991.02	6,662.64	7,777.42	9,263.21	8,919.35
Supply at market price (Petrol)	1,107.77	1,528.86	1,804.85	1,950.42	2,094.34	1,972.87	2,314.39	2,370.26	2,787.76	3,009.67
Total Supply at market Price	**4,838.46**	**5,617.87**	**6,977.83**	**8,059.42**	**8,766.32**	**7,963.89**	**8,977.02**	**10,147.69**	**12,050.97**	**11,929.02**
Use										
Major sectors	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
1. Agriculture, Livestock & Forestry	**278.46**	**395.33**	**478.53**	**582.67**	**728.81**	**826.37**	**1,017.39**	**1,288.00**	**1,557.07**	**1,552.69**
Diesel	278.41	395.26	478.45	582.59	728.73	825.74	1,016.44	1,287.02	1,556.11	1,551.76
Petrol	0.06	0.07	0.07	0.08	0.08	0.63	0.95	0.99	0.95	0.93
2. Industry	682.23	917.73	1,041.03	1,246.60	1,466.68	1,308.58	1,663.45	2,134.94	2,291.18	2,462.29
Diesel	676.80	909.30	1,032.02	1,236.10	1,455.77	1,295.92	1,648.26	2,120.92	2,277.58	2,447.08
Petrol	5.42	8.43	9.02	10.50	10.91	12.65	15.19	14.02	13.61	15.21
3. Services	1,776.06	2,260.06	2,495.54	3,064.24	3,532.77	3,099.31	3,424.95	3,859.73	4,087.26	4,338.38
Diesel	1,738.93	2,216.83	2,452.47	3,014.33	3,481.09	3,042.08	3,353.69	3,791.90	4,019.83	4,264.70
Petrol	37.12	43.24	43.06	49.91	51.68	57.24	71.26	67.84	67.43	73.68
3. HH consumption	1,007.12	1,335.84	1,548.13	1,639.86	1,788.51	1,734.40	2,132.15	2,224.40	2,190.81	2,309.49
Diesel	110.67	139.12	169.88	201.26	237.06	231.59	347.41	409.54	433.78	489.24
Petrol	896.45	1,196.73	1,378.25	1,438.60	1,551.45	1,502.80	1,784.73	1,814.86	1,757.03	1,820.24
Re-Export	1,094.60	708.90	1,414.61	1,526.05	1,249.54	995.24	739.09	640.61	1,924.65	1,266.17
1. Diesel	925.88	428.50	1,040.17	1,074.71	769.32	595.70	296.83	168.05	975.92	166.56
2. Petrol	168.72	280.40	374.44	451.34	480.22	399.55	442.26	472.56	948.73	1,099.61
Total use of Diesel	**3,730.70**	**4,089.00**	**5,172.99**	**6,108.99**	**6,671.97**	**5,991.02**	**6,662.64**	**7,777.42**	**9,263.21**	**8,919.35**
Total use of Petrol	**1,107.77**	**1,528.86**	**1,804.85**	**1,950.42**	**2,094.34**	**1,972.87**	**2,314.39**	**2,370.26**	**2,787.76**	**3,009.67**
Total use	**4,838.46**	**5,617.87**	**6,977.83**	**8,059.42**	**8,766.32**	**7,963.89**	**8,977.02**	**10,147.69**	**12,050.97**	**11,929.02**

Table 11. Supply and Use of Kerosene

(in KL)

Supply	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Domestic Production	-	-	-	-	-	-	-	-	-	-
Import	5,780.00	5,727.00	5,567.00	4,990.00	5,694.00	4,611.00	4,791.00	4,238.00	3,597.00	2,886.00
Total Supply	**5,780.00**	**5,727.00**	**5,567.00**	**4,990.00**	**5,694.00**	**4,611.00**	**4,791.00**	**4,238.00**	**3,597.00**	**2,886.00**
Use	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Household	5,540.00	5,607.00	5,547.00	4,978.00	5,673.00	4,599.00	4,755.00	4,226.00	3,597.00	2,886.00
Industries	240.00	120.00	20.00	12.00	21.00	12.00	36.00	12.00	-	-
Total Use	**5,780.00**	**5,727.00**	**5,567.00**	**4,990.00**	**5,694.00**	**4,611.00**	**4,791.00**	**4,238.00**	**3,597.00**	**2,886.00**

Table 12. Growth in Supply and Use of Kerosene

Supply	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Domestic Production	-	-	-	-	-	-	-	-		
Import	-	(0.92)	(2.79)	(10.36)	14.11	(19.02)	3.90	(11.54)	(15.13)	(19.77)
Total Supply	**-**	**(0.92)**	**(2.79)**	**(10.36)**	**14.11**	**(19.02)**	**3.90**	**(11.54)**	**(15.13)**	**(19.77)**
Use	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Household	-	1.21	(1.07)	(10.26)	13.96	(18.93)	3.39	(11.13)	(14.88)	(19.77)
Industries	-	(50.00)	(83.33)	(40.00)	75.00	(42.86)	200.00	(66.67)	(100.00)	-
Total Use	**-**	**(0.92)**	**(2.79)**	**(10.36)**	**14.11**	**(19.02)**	**3.90**	**(11.54)**	**(15.13)**	**(19.77)**

Table 13. Supply and Use of Kerosene

(Mill. Nu.)

Supply	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Domestic Production	-	-	-	-	-	-	-	-	-	-
Import	60.61	72.68	72.71	65.56	75.83	60.69	66.06	98.41	79.34	79.93
Total Supply	**60.61**	**72.68**	**72.71**	**65.56**	**75.83**	**60.69**	**66.06**	**98.41**	**79.34**	**79.93**
Losses	-	-	-	-	-	-	-	-	-	-
Trade and Transport margin (TTM)	37.65	36.13	33.06	30.98	11.18	11.77	11.61	4.65	34.00	29.42
Total Supply (at market price)	**98.26**	**108.81**	**105.77**	**96.54**	**87.01**	**72.46**	**77.67**	**103.06**	**113.34**	**109.35**
Use	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Household	94.18	106.53	105.39	96.30	86.69	72.27	77.09	102.77	113.34	109.35
Industries	4.08	2.28	0.38	0.23	0.32	0.19	0.58	0.29	-	-
Total use (3+4)	**98.26**	**108.81**	**105.77**	**96.54**	**87.01**	**72.46**	**77.67**	**103.06**	**113.34**	**109.35**

Note: Information on imports are sourced from Department of Trade, MoEA

Table 14. Supply and Use of LPG

(in MT

Supply	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Domestic Production	-	-	-	-	-	-	-	-	-	-
Import	6,834.16	7,410.87	7,470.22	7,335.82	7,546.54	8,113.14	8,711.57	9,298.54	10,002.22	10,341.24
Total Supply	**6,834.16**	**7,410.87**	**7,470.22**	**7,335.82**	**7,546.54**	**8,113.14**	**8,711.57**	**9,298.54**	**10,002.22**	**10,341.24**
Use	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Household	6,834.16	7,410.87	7,470.22	6,777.98	7,029.93	7,302.60	7,593.23	8,046.82	8,728.14	8,932.34
Industries*	-	-	-	557.84	516.61	810.54	1,118.34	1,251.72	1,274.08	1,408.96
Total Use	**6,834.16**	**7,410.87**	**7,470.22**	**7,335.82**	**7,546.54**	**8,113.14**	**8,711.57**	**9,298.54**	**10,002.22**	**10,341.30**

Note: Information on imports are sourced from Department of Trade, MoEA
**Industrial LPG usage couldn't be estimated between 2010/12 as there are no proper record of information*

Table 15. Supply and Use of LPG

(in percent)

Supply	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Domestic Production	-	-	-	-	-	-	-	-	-	-
Import	-	8.44	0.80	(1.80)	2.87	7.51	7.38	6.74	7.57	3.39
Total Supply	**-**	**8.44**	**0.80**	**(1.80)**	**2.87**	**7.51**	**7.38**	**6.74**	**7.57**	**3.39**
Use	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Household	-	8.44	0.80	(9.27)	3.72	3.88	3.98	5.97	8.47	2.34
Industries					(7.39)	56.90	37.97	11.93	1.79	10.59
Total Use	**-**	**8.44**	**0.80**	**(1.80)**	**2.87**	**7.51**	**7.38**	**6.74**	**7.57**	**3.39**

Table 16. Supply and Use of LPG

(In Million Nu.)

Supply	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Domestic Production	-	-	-	-	-	-	-	-	-	-
Import	138.15	190.05	193.33	223.35	223.74	236.10	254.94	292.22	322.68	349.73
Total Supply	**138.15**	**190.05**	**193.33**	**223.35**	**223.74**	**236.10**	**254.94**	**292.22**	**322.68**	**349.73**
Losses	-	-	-	-	-	-	-	-	-	-
Trade and Transport margin (TTM)	102.49	70.90	69.71	81.55	45.65	49.19	46.48	47.67	46.78	59.07
Total Supply (at market price)	**240.64**	**260.95**	**263.04**	**304.90**	**269.39**	**285.29**	**301.42**	**339.89**	**369.46**	**408.80**
Use	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Household	138.15	190.05	193.33	177.10	182.95	190.00	198.26	222.50	245.13	272.45
Industries	-	-	-	46.25	40.79	46.10	56.68	69.72	77.55	77.28
Total use (3+4)	**138.15**	**190.05**	**193.33**	**223.35**	**223.74**	**236.10**	**254.94**	**292.22**	**322.68**	**349.73**

Note: Information on imports are sourced from Department of Trade, MoEA

Table 17 Supply and Consumption of fuelwood (2010-2019)

(m3)

SUPPLY	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
1. Supply by NRDCL	31,176.00	30,360.00	35,824.00	32,866.91	35,988.34	40,491.32	38,184.81	34,451.54	32,949.91	37,537.54
2. Supply by DoFPS, MoAF	48,860.00	91,270.00	43,650.00	75,791.55	67,415.00	85,002.99	102,109.87	97,744.08	47,367.00	58,055.00
Total Supply (1+2)	**80,036.00**	**121,630.00**	**79,474.00**	**108,658.46**	**103,403.34**	**125,494.31**	**140,294.68**	**132,195.62**	**80,316.91**	**95,592.54**
USE										
3. NRDCL Disposal (3.1+3.2)	31,176.00	30,360.00	35,824.00	32,866.91	35,988.34	40,491.32	38,184.81	34,451.54	32,949.91	37,537.54
3.1 Household	4,271.45	4,159.65	4,908.27	4,503.12	4,930.79	5,547.75	5,231.73	4,720.23	4,283.49	4,879.88
3.2 Industries	26,904.55	26,200.35	30,915.73	28,363.79	31,057.55	34,943.57	32,953.08	29,731.31	28,666.42	32,657.66
4. DoFPS, MoAF Disposal (4.1+4.2)	48,860.00	91,270.00	43,650.00	75,791.55	68,301.44	85,002.99	102,109.87	97,744.08	47,367.00	58,055.00
4.1 Household (4.1.1+4.1.2)	40,890.00	58,980.00	20,910.00	41,665.62	36,995.10	48,367.55	60,662.19	57,395.31	35,473.00	40,444.00
4.2 Industries	7,970.00	32,290.00	22,740.00	34,125.93	31,306.34	36,635.43	41,447.68	40,348.76	11,894.00	17,611.00
Total Household	**45,161.45**	**63,139.65**	**25,818.27**	**46,168.73**	**41,925.89**	**53,915.30**	**65,893.92**	**62,115.54**	**39,756.49**	**45,323.88**
Total Industries	**34,874.55**	**58,490.35**	**53,655.73**	**62,489.72**	**62,363.89**	**71,579.01**	**74,400.76**	**70,080.07**	**40,560.42**	**50,268.66**
Total Use	**80,036.00**	**121,630.00**	**79,474.00**	**108,658.46**	**104,289.78**	**125,494.31**	**140,294.68**	**132,195.62**	**80,316.91**	**95,592.54**

Table 18 Share of Supply and Consumption of fuelwood (2010-2019)

(Percentage)

	2010.00	2011.00	2012.00	2013.00	2014.00	2015.00	2016.00	2017.00	2018.00	2019.00
1. Supply by NRDCL	38.95	24.96	45.08	30.25	34.80	32.27	27.22	26.06	41.02	39.27
2. Supply by DoFPS, MoAF	61.05	75.04	54.92	69.75	65.20	67.73	72.78	73.94	58.98	60.73
Total Supply (1+2)	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**
USE										
3. NRDCL Disposal (3.1+3.2)	38.95	24.96	45.08	30.25	34.51	32.27	27.22	26.06	41.02	39.27
3.1 Household	5.34	3.42	6.18	4.14	4.73	4.42	3.73	3.57	5.33	5.10
3.2 Industries	33.62	21.54	38.90	26.10	29.78	27.84	23.49	22.49	35.69	34.16
4. DoFPS, MoAF Disposal (4.1+4.2)	61.05	75.04	54.92	69.75	65.49	67.73	72.78	73.94	58.98	60.73
4.1 Household	51.09	48.49	26.31	38.35	35.47	38.54	43.24	43.42	44.17	42.31
4.2 Industries	9.96	26.55	28.61	31.41	30.02	29.19	29.54	30.52	14.81	18.42
Total Household	**56.43**	**51.91**	**32.49**	**42.49**	**40.20**	**42.96**	**46.97**	**46.99**	**49.50**	**47.41**
Total Industries	**43.57**	**48.09**	**67.51**	**57.51**	**59.80**	**57.04**	**53.03**	**53.01**	**50.50**	**52.59**
Total Use (3+4)	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**

Table 19: Physical account for Briquette production

(KG)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total Stock (1+2)	541,190.00	316,155.00	347,610.00	407,610.00	374,390.00	307,240.00	270,210.00	266,340.00	327,420.00	373,440.00
1. Opening Stock	147,860.00	11,275.00	10,140.00	3,270.00	6,930.00	58,240.00	36,330.00	3,180.00	81,000.00	112,380.00
2. Additions to stock (via production)	393,330.00	304,880.00	337,470.00	404,340.00	367,460.00	249,000.00	233,880.00	263,160.00	246,420.00	261,060.00
Total Reductions in stock (3)	529,915.00	306,015.00	344,250.00	400,410.00	316,150.00	270,910.00	266,580.00	185,340.00	215,040.00	196,290.00
3. Disposal	529,915.00	306,015.00	344,250.00	400,410.00	316,150.00	270,910.00	266,580.00	185,340.00	215,040.00	196,290.00
Closing stock (1+2-3)	11,275.00	10,140.00	3,360.00	7,200.00	58,240.00	36,330.00	3,630.00	81,000.00	112,380.00	177,150.00

TABLE 20: Physical account for timber production

(Cft.)

SUPPLY	2011	2012	2013	2014	2015	2016	2017	2018	2019
1. Supply by NRDCL	1,971,564.36	2,173,825.97	2,039,619.97	1,871,928.76	1,954,917.00	1,770,200.20	1,567,282.39	1,849,307.60	2,154,096.96
2. Supply by DoFPS, MoAF		2,100,034.00	3,371,686.73	2,794,325.07	14,233,257.87	6,529,630.09	5,172,512.81	3,099,780.99	7,146,269.25
Total Supply (1+2)	**1,971,564.36**	**4,273,859.97**	**5,411,306.70**	**4,666,253.83**	**16,188,174.87**	**8,299,830.29**	**6,739,795.20**	**4,949,088.59**	**9,300,366.21**
USE	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
3. NRDCL	1,971,564.36	2,173,825.97	2,039,619.97	1,871,928.76	1,954,917.00	1,770,200.20	1,567,282.39	1,849,307.60	2,154,096.96
3.1. Commercial	1,971,564.36	2,173,825.97	2,039,619.97	1,871,928.76	1,954,917.00	1,770,200.20	1,567,282.39	1,849,307.60	2,154,096.96
4. DoFPS, MoAF	-	2,100,034.00	3,371,686.73	2,794,325.07	14,233,257.87	6,529,630.09	5,172,512.81	3,099,781.03	7,146,269.25
4.1. Commercial		784,387.00	1,418,489.34	1,068,819.59	1,506,804.07	2,472,601.66	1,408,914.38	537,066.00	2014128.226
4.2. Concessional		1,285,174.00	1,936,553.95	1,719,928.12	12,706,721.83	4,015,903.40	3,588,205.42	2,553,111.55	5132141.022
4.3. Free		30,473.00	16,643.44	5,577.36	19,731.97	41,125.03	175,393.01	9,603.48	-
Total Use (3+4)	**1,971,564.36**	**4,273,859.97**	**5,411,306.70**	**4,666,253.83**	**16,188,174.87**	**8,299,830.29**	**6,739,795.20**	**4,949,088.63**	**9,300,366.21**

Table 21: Physical Asset Account for Coal

(Million MT)

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Opening Stock	1.04	0.95	0.84	0.74	0.66	0.54	0.45	0.33	0.19	0.19
Additions to Stock (+)										
Discoveries	-	-	-	-	-	-	-	-	-	-
Upward re-appraisals	-	-	-	-	-	-	-	-	-	-
Reclassifications	-	-	-	-	-	-	-	-	-	-
Total additions to stock	-	-	-	-	-	-	-	-	-	-
Reductions in Stock (-)										
Extractions	0.09	0.11	0.10	0.08	0.12	0.09	0.12	0.16	0.19	0.19
Catastrophic losses	-	-	-	-	-	-	-	-	-	-
Downward re-appraisals	-	-	-	-	-	-	-	-	-	-
Reclassifications	-	-	-	-	-	-	-	-	-	-
Total reductions in stock	0.09	0.11	0.10	0.08	0.12	0.09	0.12	0.16	0.19	0.19
Revaluations	-	-	-	-	-	-	-	-	-	-
Closing Stock	**0.95**	**0.84**	**0.74**	**0.66**	**0.54**	**0.45**	**0.33**	**0.17**	**-**	-

Table 22. Physical Asset Account for Dolomite

(Million MT)

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Opening Stock	14,542.47	14,541.26	14,540.18	14,538.68	14,536.94	14,534.90	14,532.24	14,529.87	14,527.33	14,524.51
Additions to Stock										
Discoveries	-	-	-	-	-	-	-	-	-	-
Upward re-appraisals	-	-	-	-	-	-	-	-	-	-
Reclassifications	-	-	-	-	-	-	-	-	-	-
Total additions to stock	-	-	-	-	-	-	-	-	-	-
Reductions in Stock										
Extractions	1.21	1.08	1.50	1.74	2.04	2.66	2.37	2.54	2.82	3.03
Catastrophic losses	-	-	-	-	-	-	-	-	-	-
Downward re-appraisals	-	-	-	-	-	-	-	-	-	-
Reclassifications	-	-	-	-	-	-	-	-	-	-
Total reductions in stock	1.21	1.08	1.50	1.74	2.04	2.66	2.37	2.54	2.82	3.03
Revaluations	-	-	-	-	-	-	-	-	-	-
Closing Stock	**14,541.26**	**14,540.18**	**14,538.68**	**14,536.94**	**14,534.90**	**14,532.24**	**14,529.87**	**14,527.33**	**14,524.51**	**14,521.49**

Table 23. Physical Asset Account for Limestone

(Million MT)

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Opening Stock	164.65	163.95	163.30	162.62	161.61	160.49	159.64	158.38	157.14	155.80
Additions to Stock										
Discoveries	-	-	-	-	-	-	-	-	-	-
Upward re-appraisals	-	-	-	-	-	-	-	-	-	-
Reclassifications	-	-	-	-	-	-	-	-	-	-
Total additions to stock	-	-	-	-	-	-	-	-	-	-
Reductions in Stock										
Extractions	0.70	0.65	0.68	1.01	1.12	0.85	1.26	1.24	1.34	1.55
Catastrophic losses	-	-	-	-	-	-	-	-	-	-
Downward re-appraisals	-	-	-	-	-	-	-	-	-	-
Reclassifications	-	-	-	-	-	-	-	-	-	-
Total reductions in stock	0.70	0.65	0.68	1.01	1.12	0.85	1.26	1.24	1.34	1.55
Revaluations	-	-	-	-	-	-	-	-	-	-
Closing Stock	**163.95**	**163.3**	**162.62**	**161.61**	**160.49**	**159.64**	**158.38**	**157.1448383**	**155.8048383**	**154.2585362**

Table 24. Physical Asset Account for Gypsum

(Million MT)

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Opening Stock	134.22	133.88	133.53	133.22	132.87	132.46	132.07	131.75	131.42	130.96
Additions to Stock										
Discoveries	-	-	-	-	-	-	-	-	-	-
Upward re-appraisals	-	-	-	-	-	-	-	-	-	-
Reclassifications	-	-	-	-	-	-	-	-	-	-
Total additions to stock	-	-	-	-	-	-	-	-	-	-
Reductions in Stock										
Extractions	0.34	0.35	0.31	0.35	0.41	0.39	0.32	0.33	0.46	0.49
Catastrophic losses	-	-	-	-	-	-	-	-	-	-
Downward re-appraisals	-	-	-	-	-	-	-	-	-	-
Reclassifications	-	-	-	-	-	-	-	-	-	-
Total reductions in stock	0.34	0.35	0.31	0.35	0.41	0.39	0.32	0.33	0.46	0.49
Revaluations	-	-	-	-	-	-	-	-	-	-
Closing Stock	**133.88**	**133.53**	**133.22**	**132.87**	**132.46**	**132.07**	**131.75**	**131.42**	**130.961872**	**130.4712765**

Table 25. Physical Asset Account for Quartzite

(Million MT)

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Opening Stock	5.18	5.07	4.97	4.88	4.79	4.71	4.63	4.54	4.36	4.21
Additions to Stock										
Discoveries	-	-	-	-	-	-	-	-	-	-
Upward re-appraisals	-	-	-	-	-	-	-	-	-	-
Reclassifications	-	-	-	-	-	-	-	-	-	-
Total additions to stock	-	-	-	-	-	-	-	-	-	-
Reductions in Stock										
Extractions	0.11	0.10	0.09	0.09	0.08	0.08	0.09	0.18	0.15	0.14
Catastrophic losses	-	-	-	-	-	-	-	-	-	-
Downward re-appraisals	-	-	-	-	-	-	-	-	-	-
Reclassifications	-	-	-	-	-	-	-	-	-	-
Total reductions in stock	0.11	0.10	0.09	0.09	0.08	0.08	0.09	0.18	0.15	0.14
Revaluations	-	-	-	-	-	-	-	-	-	-
Closing Stock	**5.07**	**4.97**	**4.88**	**4.79**	**4.71**	**4.63**	**4.54**	**4.36**	**4.21**	**4.07**

Table 26. Physical Asset Account for Talc

(Million MT)

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Opening Stock	0.13	0.09	0.08	0.06	0.05	0.04	0.03	0.03	0.02	0.001
Additions to Stock										
Discoveries	-	-	-	-	-	-	-	-	-	-
Upward re-appraisals	-	-	-	-	-	-	-	-	-	-
Reclassifications	-	-	-	-	-	-	-	-	-	-
Total additions to stock	-	-	-	-	-	-	-	-	-	-
Reductions in Stock										
Extractions	0.04	0.01	0.02	0.01	0.01	0.01	-	0.01	0.07	0.001
Catastrophic losses	-	-	-	-	-	-	-	-	-	-
Downward re-appraisals	-	-	-	-	-	-	-	-	-	-
Reclassifications	-	-	-	-	-	-	-	-	-	-
Total reductions in stock	0.04	0.01	0.02	0.01	0.01	0.01	-	0.01	0.07	0.001
Revaluations	-	-	-	-	-	-	-	-	-	-
Closing Stock	**0.09**	**0.08**	**0.06**	**0.05**	**0.04**	**0.03**	**0.03**	**0.02**		

Table 27. Physical Asset Account for Iron-ore

(Million MT)

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Opening Stock	2.69	2.69	2.69	2.69	2.67	2.65	2.61	2.58	2.55	2.51
Additions to Stock										
Discoveries	-	-	-	-	-	-	-	-	-	-
Upward re-appraisals	-	-	-	-	-	-	-	-	-	-
Reclassifications	-	-	-	-	-	-	-	-	-	-
Total additions to stock	-	-	-	-	-	-	-	-	-	-
Reductions in Stock										
Extractions	-	-	-	0.02	0.02	0.04	0.03	0.03	0.04	0.04
Catastrophic losses	-	-	-	-	-	-	-	-	-	-
Downward re-appraisals	-	-	-	-	-	-	-	-	-	-
Reclassifications	-	-	-	-	-	-	-	-	-	-
Total reductions in stock	-	-	-	0.02	0.02	0.04	0.03	0.03	0.04	0.04
Revaluations	-	-	-	-	-	-	-	-	-	-
Closing Stock	**2.69**	**2.69**	**2.69**	**2.67**	**2.65**	**2.61**	**2.58**	**2.55**	**2.51**	**2.47**

Table 28. Monetary Asset account for Coal

(Million Nu.)

	Extraction year	Quantity	ressource rent per unit	Total ressource rent from extraction	Discount rate, 12 per cent	Discount factor	Net present value (NPV) of extraction
1	2018	0.10	2,247.83	234.96	0.12	0.89	209.79
2	2019	0.10	2,247.83	234.96	0.12	0.80	187.31

Table 29. Monetary Asset account for Dolomite

(Million Nu.)

	Extraction year	**Quantity**	**ressource rent per unit**	**Total ressource rent from extraction**	**Discount rate, 12 per cent**	**Discount factor**	**Net present value (NPV) of extraction**
1	2020	968.30	293.99	284,667.04	0.12	0.89	254,167.00
2	2021	968.30	293.99	284,667.04	0.12	0.80	226,934.82
4	2022	968.30	293.99	284,667.04	0.12	0.64	180,911.05
5	2023	968.30	293.99	284,667.04	0.12	0.57	161,527.72
6	2024	968.30	293.99	284,667.04	0.12	0.51	144,221.18
7	2025	968.30	293.99	284,667.04	0.12	0.45	128,768.91
8	2026	968.30	293.99	284,667.04	0.12	0.40	114,972.24
9	2027	968.30	293.99	284,667.04	0.12	0.36	102,653.79
10	2028	968.30	293.99	284,667.04	0.12	0.32	91,655.17
11	2029	968.30	293.99	284,667.04	0.12	0.29	81,834.97
12	2030	968.30	293.99	284,667.04	0.12	0.26	73,066.94
13	2031	968.30	293.99	284,667.04	0.12	0.23	65,238.34
14	2032	968.30	283.63	284,667.04	0.12	0.20	58,248.52
15	2033	968.3	293.99	284,667.04	0.12	0.18	52,007.60

Table 30. Monetary Asset account for Limestone

(Million Nu.)

	Extraction year	Quantity	ressource rent per unit	Total ressource rent from extraction	Discount rate, 12 per cent	Discount factor	Net present value (NPV) of extraction
1	2019	10.50	5,019.86	52,699.56	0.12	0.89	47,053.18
2	2020	10.50	5,019.86	52,699.56	0.12	0.80	42,011.77
3	2021	10.50	5,019.86	52,699.56	0.12	0.71	37,510.51
4	2022	10.50	5,019.86	52,699.56	0.12	0.64	33,491.52
5	2023	10.50	5,019.86	52,699.56	0.12	0.57	29,903.15
6	2024	10.50	5,019.86	52,699.56	0.12	0.51	26,699.24
7	2025	10.50	5,019.86	52,699.56	0.12	0.45	23,838.61
8	2026	10.50	5,019.86	52,699.56	0.12	0.40	21,284.47
9	2027	10.50	5,019.86	52,699.56	0.12	0.36	19,003.99
10	2028	10.50	5,019.86	52,699.56	0.12	0.32	16,967.85
11	2029	10.50	5,019.86	52,699.56	0.12	0.29	15,149.86
12	2030	10.50	5,019.86	52,699.56	0.12	0.26	13,526.67
13	2031	10.50	5,019.86	52,699.56	0.12	0.23	12,077.38
14	2032	10.50	5,019.86	52,699.56	0.12	0.20	10,783.37
15	2033	10.49821354	5,019.86	52,699.56	0.12	0.18	9,628.01

Table 31. Monetary Asset account for Gypsum

(Million Nu.)

	Extraction year	Quantity	ressource rent per unit	Total ressource rent from extraction	Discount rate, 12 per cent	Discount factor	Net present value (NPV) of extraction
1	2019	8.85	813.46	4,264.07	0.12	0.89	3,399.29
2	2020	8.85	813.46	4,264.07	0.12	0.80	3,035.08
4	2021	8.85	813.46	4,264.07	0.12	0.64	2,709.89
5	2022	8.85	813.46	4,264.07	0.12	0.57	2,419.55
6	2023	8.85	813.46	4,264.07	0.12	0.51	2,160.31
7	2024	8.85	813.46	4,264.07	0.12	0.45	1,928.85
8	2025	8.85	813.46	4,264.07	0.12	0.40	1,722.18
9	2026	8.85	813.46	4,264.07	0.12	0.36	1,537.67
10	2027	8.85	813.46	4,264.07	0.12	0.32	1,372.92
11	2028	8.85	813.46	4,264.07	0.12	0.29	1,225.82
12	2029	8.85	813.46	4,264.07	0.12	0.26	1,094.48
13	2030	8.85	813.46	4,264.07	0.12	0.23	977.21
14	2031	8.85	813.46	4,264.07	0.12	0.20	872.51
15	2032	8.85	813.46	4,264.07	0.12	0.18	872.51
16	2033	8.85	813.46	4,264.07	0.12	0.16	779.03

Table 32. Monetary Asset account for Quartzite

(Million Nu.)

	Extraction year	Quantity	ressource rent per unit	Total ressource rent from extraction	Discount rate, 12 per cent	Discount factor	Net present value (NPV) of extraction
1	2019	0.29	3,220.00	923.33	0.12	0.89	824.40
2	2020	0.29	3,220.00	923.33	0.12	0.80	736.07
3	2021	0.29	3,220.00	923.33	0.12	0.71	657.21
4	2022	0.29	3,220.00	923.33	0.12	0.64	586.79
5	2023	0.29	3,220.00	923.33	0.12	0.57	523.92
6	2024	0.29	3,220.00	923.33	0.12	0.51	467.79
7	2025	0.29	3,220.00	923.33	0.12	0.45	417.67
8	2026	0.29	3,220.00	923.33	0.12	0.40	372.92
9	2027	0.29	3,220.00	923.33	0.12	0.36	332.96
10	2028	0.29	3,220.00	923.33	0.12	0.32	297.29
11	2029	0.29	3,220.00	923.33	0.12	0.29	265.43
12	2030	0.29	3,220.00	923.33	0.12	0.26	236.99
13	2031	0.29	3,220.00	923.33	0.12	0.23	211.60
14	2032	0.29	3,220.00	923.33	0.12	0.20	188.93
15	2033	0.29	3,220.00	923.33	0.12	0.18	168.69

Table 33. Monetary Asset account for Talc

(Million Nu.)

	Extraction year	Quantity	ressource rent per unit	Total res-source rent from extraction	Discount rate, 12 per cent	Discount factor	Net present value (NPV) of extraction
1	2018	0.01	468.50	5.73	0.12	0.89	5.11
2	2019	0.01	468.50	5.73	0.12	0.80	4.56
3	2020	0.01	468.50	5.73	0.12	0.71	4.08

Table 34. Monetary Asset account for Iron-ore

(Million Nu.)

	Extrac-tion year	Quantity	ressource rent per unit	Total ressource rent from extraction	Discount rate, 12 per cent	Discount factor	Net present value (NPV) of extraction
1	2018	0.17	468.50	79.44	0.12	0.89	70.93
2	2019	0.17	468.50	79.44	0.12	0.80	63.33
3	2020	0.17	468.50	79.44	0.12	0.71	56.55
4	2021	0.17	468.50	79.44	0.12	0.64	50.49
5	2022	0.17	468.50	79.44	0.12	0.57	45.08
6	2023	0.17	468.50	79.44	0.12	0.51	40.25
7	2024	0.17	468.50	79.44	0.12	0.45	35.94
8	2025	0.17	468.50	79.44	0.12	0.40	32.09
9	2026	0.17	468.50	79.44	0.12	0.36	28.65
10	2027	0.17	468.50	79.44	0.12	0.32	25.58
11	2028	0.17	468.50	79.44	0.12	0.29	22.84
12	2029	0.17	468.50	79.44	0.12	0.26	20.39
13	2030	0.17	468.50	79.44	0.12	0.23	18.21
14	2031	0.17	468.50	79.44	0.12	0.20	16.26
15	2032	0.17	468.50	79.44	0.12	0.18	14.51

Table 35. Energy Supply, Consumption & Trade

Energy Supply, Consumption & Trade	2014	2015	2016	2017	2018	2019
Production	698.24	723.52	591.87	772.86	707.30	903.08
Hydro-electricity	615.97	666.03	512.35	663.83	598.19	762.35
Wind	-	-	0.06	0.10	0.17	0.22
Solar	-	-	-	-	-	-
Coal	82.09	57.36	79.33	108.79	108.79	125.83
Firewood	0.04	0.05	0.05	0.05	0.05	14.60
Briquettee	0.14	0.09	0.09	0.10	0.10	0.07
Consumption	361.52	362.69	418.18	469.28	520.54	499.94
Hydro-electricity	172.38	176.88	172.74	187.94	200.21	196.10
Wind	-	-	0.06	0.10	0.17	0.22
Solar	-	-	-	-	-	-
Diesel	91.93	97.52	107.88	121.90	134.47	126.26
Petrol	19.65	22.01	23.70	25.41	30.60	30.02
Kerosene	5.09	4.12	4.28	3.64	3.09	2.48
ATF	3.02	2.83	2.81	3.39	4.15	4.04
LPG	5.08	5.46	5.87	10.50	9.66	10.09
Coal	64.20	53.72	79.33	96.04	125.83	116.05
Firewood	0.04	0.05	21.43	20.27	12.27	14.60
Briquettee	0.14	0.09	0.09	0.10	0.09	0.07
Export	466.52	496.64	511.28	453.33	376.06	554.00
Electricity	433.73	476.51	496.93	435.81	348.55	528.47
Diesel	12.89	11.60	6.08	3.76	5.64	7.68
Petrol	5.85	5.59	5.60	6.33	7.63	11.43
Coal	14.05	2.94	2.67	7.43	14.23	6.41
Import	219.63	236.81	236.44	261.12	283.46	262.56
Electricity	16.49	14.03	9.73	17.89	25.85	22.85
Diesel	104.82	109.12	113.96	125.66	140.12	133.94
Petrol	25.49	27.60	29.30	31.74	38.24	41.45
Kerosene	4.88	3.96	4.11	3.64	3.09	2.48
ATF	3.02	2.83	2.81	3.39	4.15	4.04
LPG	8.53	9.17	9.84	10.50	11.30	11.68
Coal	56.40	70.11	66.70	68.29	60.72	46.11
Total Supply	917.87	960.34	828.31	1,033.97	990.76	1,165.64

Table 36. Physical Supply Table for Energy (2019)

Unit: As specified.	PRODUCTION		Accumulation	Flows from RoW	Flows from the Environment	Total Supply
	Industries	Households		Imports		
I. Energy from natural inputs						
Inputs of energy from renewable sources					8,875.56	8,875.56
(1) Hydro (GWh)					8,866.18	8,866.18
(2) Diesel(GWh)					6.78	6.78
(3) Wind (GWh)					2.60	2.60
Natural resource inputs					226,212.05	226,212.05
(1) Coal (MT)					186,823.75	186,823.75
1.1) Bituminous / Sub-Bituminous					-	-
1.2) Anthracite					-	-
1.3) Coke/Semi-coke of coal					186,823.75	186,823.75
1.4) Other coal					-	-
(2) Fuelwood (MT)					39,192.01	39,192.01
(3) Briquettee (MT)					196.29	196.29
Total energy from natural inputs						
	II. Energy products					
Production of energy products by SIEC* class						
(1) Coal (MT)	184,784.78			79,817.81		264,602.59
1.1) Bituminous / Sub-Bituminous	-			14,351.24		14,351.24
1.2) Anthracite	-			505.90		505.90
1.3) Coke/Semi-coke of coal	184,784.78			53,558.26		238,343.04
1.4) Other coal	-			11,402.42		11,402.42
(2) Diesel (KL)	-			149,905.00		149,905.00
2.1) Diesel	-			149,905.00		149,905.00

Cont...

Table 36 Cont...

Unit: As specified.	PRODUCTION		Accumulation	Flows from RoW	Flows from the Environment	Total Supply
	Industries	Households		Imports		
(3) Petrol (KL)				50,882.00		50,882.00
(4) Aviation Turbine Fuel (ATF) (KL)	-			4,756.00		4,756.00
(5) Kerosene (KL)	-			2,886.00		2,886.00
5.1) Kerosene (SK Oil)	-			2,886.00		2,886.00
5.2) Kerosene (SK Oil-Industrial)	-			-		-
(6) Furnace Oil (FO) (KL)	-			1,448.35		1,448.35
(7) LPG (MT)	-			10,341.30		10,341.30
(8) Electricity (GWh)	8,875.56			265.70		9,141.26
(9) Biogas for cooking (MT)	-			-		-
(10) Fuelwood (MT)	39,192.01			-		39,192.01
(11) Briquette (MT)**	196.29			-		196.29
Total use of energy products						
	III. Energy residuals***					
Losses during extraction (GWh)	-	-				-
Losses during distribution (GWh)		-				-
Losses during transformation (GWh)	-	-				-
Other energy residuals (GWh)	-	-				-
Total energy from residuals						

Table 37. Physical Use Table for Energy (2019)

Unit: As specified.	USE		Accumulation	Flows to RoW	Flows to the Environment	Total Use
	Industries	Households		Exports		
	I. Energy from natural inputs					
Inputs of energy from renewable sources	8,875.56					8,875.56
(1) Hydro (GWh)	8,866.18					8,866.18
(2) Solar (GWh)	6.78					6.78
(3) Wind (GWh)	2.60					2.60
Natural resource inputs	226,015.76					226,015.76
(1) Coal (MT)	186,823.75					186,823.75
1.1) Bituminous / Sub-Bituminous	-					-
1.2) Anthracite	-					-
1.3) Coke/Semi-coke of coal	186,823.75					186,823.75
1.4) Other coal	-					-
(2) Fuelwood (MT)	39,192.01					39,192.01
(3) Briquettee (MT)	196.29					196.29
Total energy from natural inputs						
	II. Energy products					
Production of energy products by SIEC* class						
(1) Coal (MT)	172,306.04	-		14,517.71		264,602.60
1.1) Bituminous / Sub-Bituminous	-		1,049.50	13,301.74		14,351.24
1.2) Anthracite	-	-	505.90	-		505.90
1.3) Coke/Semi-coke of coal	172,306.04	-	65,879.31	157.69		238,343.04
1.4) Other coal	-	-	10,344.14	1,058.28		11,402.42
(2) Diesel (KL)**	133,296.85	8,012.03	-	8,596.13		149,905.00
2.1) Diesel	133,296.85	8,012.03	-	8,596.13		149,905.00

Cont...

Table 37 Cont...

Unit: As specified.	USE		Accumulation	Flows to RoW	Flows to the Environment	Total Use
	Industries	Households		Exports		
(3) Petrol (KL)***	5,241.44	31,611.37	-	14,029.19		50,882.00
(4) Aviation Turbine Fuel (ATF)	4,756.00	-	-	-		4,756.00
(5) Kerosene (KL)	-	2,886.00	-	-		2,886.00
5.1) Kerosene (SK Oil)	-	2,886.00	-	-		2,886.00
5.2) Kerosene (SK Oil-Industrial)	-	-	-	-		-
(6) Furnace Oil (FO) (KL)	1,448.35	-	-	-		1,448.35
(7) LPG (MT)	1,408.96	8,932.34	-	-		10,341.30
(8) Electricity (GWh)	2,119.37	330.35		6,146.60		8,596.32
(9) Biogas for cooking (MT)			-			-
(10) Fuelwood (MT)	18,420.24	20,771.77				39,192.01
(10) Briquette (MT)	196.29	-	-	-		196.29
Total use of energy products						
	III. Energy residuals					
Losses during extraction (GWh)					-	-
Losses during distribution (GWh)					545.01	545.01
Losses during transformation (GWh)					-	-
Other energy residuals (GWh)					-	-
Total energy from residuals					545.01	545.01

Table 38. Physical Supply Table for Energy (2019)

Unit: KToE	PRODUCTION		Accumulation	Flows from RoW	Flows from the environment	Total Supply
	Industries	Households		Imports		
	I. Energy from natural inputs					
Inputs of energy from renewable sources					763.16	763.16
(1) Hydro					762.35	762.35
(2) Solar					0.58	0.58
(3) Wind					0.22	0.22
Natural resource inputs					140.50	140.50
(1) Coal					125.83	125.83
1.1) Bituminous / Sub-Bituminous					-	-
1.2) Anthracite					-	-
1.3) Coke/Semi-coke of coal					125.83	125.83
1.4) Other coal					-	-
(2) Fuelwood					14.60	14.60
(3) Briquettee					0.07	0.07
Total energy from natural inputs					903.66	903.66
	II. Energy products					
Production of energy products by SIEC* class						
(1) Coal	124.45			46.11		170.57
1.1) Bituminous / Sub-Bituminous	-			6.48		6.48
1.2) Anthracite	-			0.32		0.32
1.3) Coke/Semi-coke of coal	124.45			36.07		160.52
1.4) Other coal	-			3.24		3.24
(2) Diesel	-			133.94		133.94
2.1) Diesel	-			133.94		133.94

Cont...

Table 39 Cont...

Unit: KToE	PRODUCTION		Accumulation	Flows from RoW	Flows from the environment	Total Supply
	Industries	Households		Imports		
(3) Petrol	-			41.45		41.45
(4) Aviation Turbine Fuel (ATF)	-			4.04		4.04
(5) Kerosene	-			2.48		2.48
5.1) Kerosene (SK Oil)	-			2.48		2.48
5.2) Kerosene (SK Oil-Industrial)	-			-		-
(6) Furnace Oil (FO)	-			1.23		1.23
(7) LPG	-			11.68		11.68
(8) Electricity	763.16			22.85		786.01
(9) Biogas for cooking	-			-		-
(10) Fuelwood	14.60			-		14.60
(11) Briquette**	0.07			-		0.07
Total energy products	902.29			263.79		1,166.08
	III. Energy residuals* **					
Losses during extraction	-	-				-
Losses during distribution	-	-				-
Losses during transformation	-	-				-
Other energy residuals	-	-				-
Total energy residuals***	-	-				-
TOTAL SUPPLY	902.29	-	-	263.79	-	1,166.08

TABLE 39. Physical Use Table for Energy (2019)

Unit: KToE	USE		Accumulation	Flows to RoW	Flows to the environment	Total Use
	Industries	Households		Exports		
	I. Energy from natural inputs					
Inputs of energy from renewable sources	763.16					763.16
(1) Hydro	762.35					762.35
(2) Solar	0.58					0.58
(3) Wind	0.22					0.22
Natural resource inputs	140.50					140.50
(1) Coal	125.83					125.83
1.1) Bituminous / Sub-Bituminous	-					-
1.2) Anthracite	-					-
1.3) Coke/Semi-coke of coal	125.83					125.83
1.4) Other coal	-					-
(2) Fuelwood	14.60					14.60
(3) Briquettee	0.07					0.07
Total energy from natural inputs	903.66					903.66
	II. Energy products					
Production of energy products by SIEC* class						
(1) Coal	116.05	-	48.11	6.41		170.57
1.1) Bituminous / Sub-Bituminous	-	-	0.47	6.00		6.48
1.2) Anthracite	-	-	0.32	-		0.32
1.3) Coke/Semi-coke of coal	116.05	-	44.37	0.11		160.52
1.4) Other coal	-	-	2.94	0.30		3.24
(2) Diesel	119.10	7.16	-	7.68		133.94
2.1) Diesel	119.10	7.16	-	7.68		133.94

Unit: KToE			Accumulation	Flows to RoW	Flows to the environment	Total Use
	Industries	Households		Exports		
(3) Petrol	4.27	25.75	-	11.43		41.45
(4) Aviation Turbine Fuel (ATF)	4.04	-	-	-		4.04
(5) Kerosene	-	2.48	-	-		2.48
5.1) Kerosene (SK Oil)	-	2.48	-	-		2.48
5.2) Kerosene (SK Oil-Industrial)	-	-	-	-		-
(6) Furnace Oil (FO)	1.23	-	-	-		1.23
(7) LPG	1.59	10.09	-	-		11.68
(8) Electricity	182.23	28.40	-	528.51		739.15
(9) Biogas for cooking	-	-	-	-		-
(10) Fuelwood	6.86	7.74	-	-		14.60
(11) Briquette	0.07	-	-	-		0.07
Total use of energy products	428.59	73.88	48.11	554.03		1,119.22
	III. Energy residuals					
Losses during extraction					-	-
Losses during distribution					46.86	46.86
Losses during transformation					-	-
Other energy residuals					-	-
Total energy residuals					46.86	46.86
TOTAL USE	428.59	73.88	48.11	554.03	46.86	1,166.08

Data Sources

1. Department of Industries, Ministry of Economic Affairs
2. Department of Geology & Mines, Ministry of Economic Affairs
3. Royal Civil Service Commission. Civil Service Statistics.
4. Civil Service Statistics.
5. Ministry of Education. Annual Education Statistics.
6. Ministry of Health. Annual Health Survey.
7. Annual Health Bulletin.
8. National Environment Commission. Second National Communication to the UNFCC.
9. Ministry of Works & Human Settlements. Annual Info Bulletin.
10. Annual Info Bulletin.
11. Ministry of Agriculture & Forests. Livestock Statistics.
12. RNR Statistics.
13. Forestry Facts & Figure.
14. National Statistics Bureau. Bhutan at Glance.
15. Labour Force Survey report 2019
16. National Waste Inventory Survey 2019
17. 1Bhutan Population Projection.
18. Dzongkhag Population Projection
19. National Accounts Statistics.
20. Bhutan Living Standard Survey. 2017.
21. Poverty Analysis Report. 2017.
22. Statistical Yearbook of Bhutan.
23. Tourism Council of Bhutan. Annual Report.
24. Ministry of Finance. Trade Statistics.
25. Annual Financial Statement of Bhutan.
26. Public Expenditure Review.
27. Druk Green Power Corporation. Annual Report.Bhutan Power Corporation. Annual Report.
28. Natural Resource Development Corporation Ltd. Annual Report.
29. Ministry of Information & Communications. Annual Report.