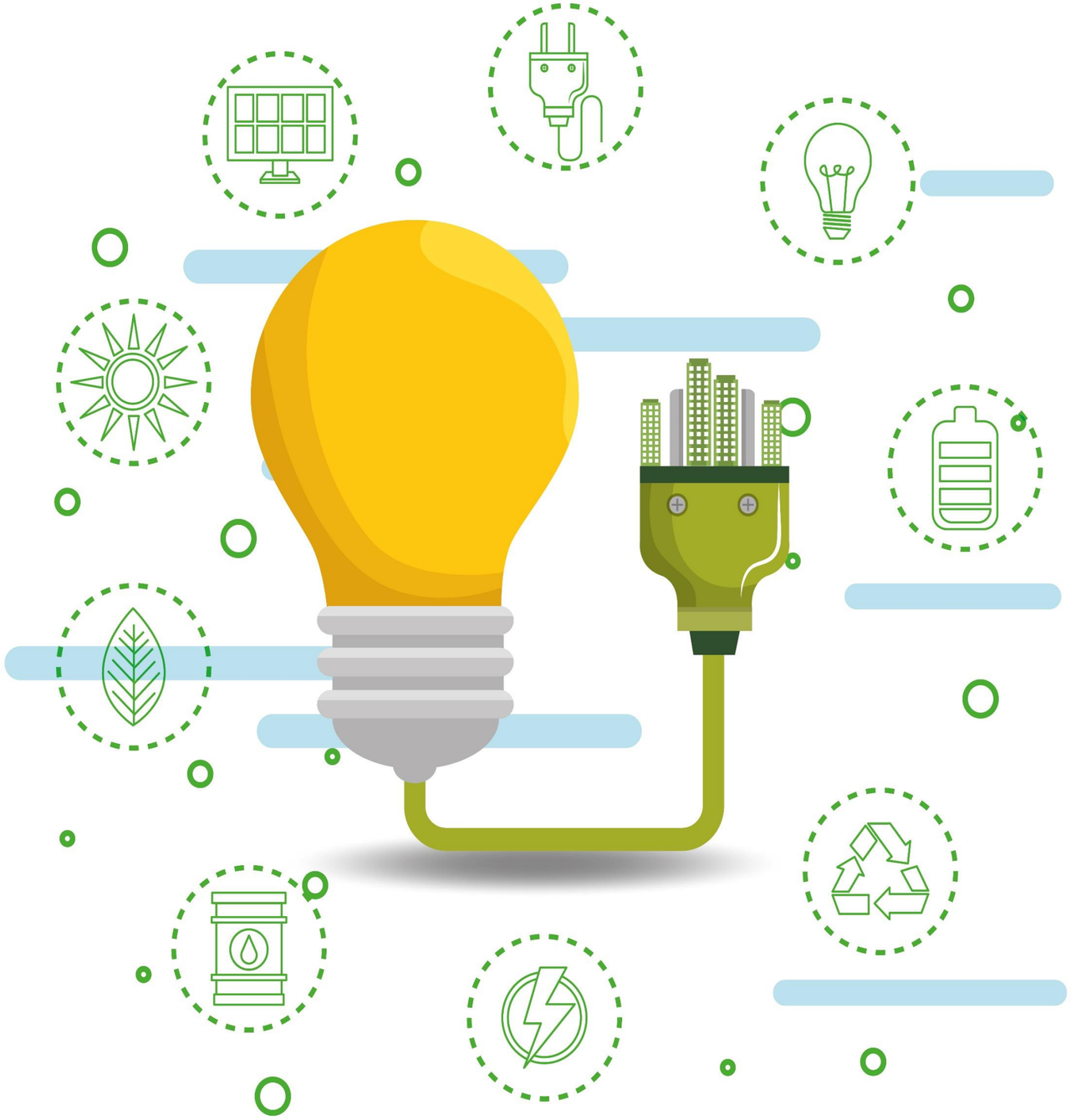


ENERGY BALANCES

Presented by : BPS – Statistics Indonesia

ENERGY BALANCES is….

a table containing data on SUPPLY and USE of all types of energy, such as coal, oil, petroleum products, gas, biomass, by the energy units according to international standards

Why is energy balances needed?

To determine :

The use of any type of energy in every sector of the economy

Energy utilization in various countries

The availability of each type of energy in every sector of the economy

Dependence of a country towards energy (export/import)

Energy transactions (input-output) in the process of energy transformation

ENERGY UNITS

BPS uses the unit of Joules which refers to the International Recommendations for Energy Statistics (IRES) approved by the United Nations Statistical Commission (UNSD) in order to be comparable with other countries.

CONVERSION FACTORS

No.	Komoditi	(Commodity)	Unit	Terajoule
1.	Listrik	(Electricity)	MWH	0,00036
2.	Batubara Tua	(Hard Coal)	000 Ton	29,3076
3.	Batubara Muda	(Lignite/Brown Coal)	000 Ton	11,2834
4.	Kayu Bakar	(Fuel Wood)	000 Ton	13,2607
5.	Arang Kayu	(Charcoal)	000 Ton	28,8888
6.	Briket	(Briquette)	000 Ton	29,3076
7.	Kokas	(Coke)	000 Ton	26,3768
8.	Minyak Mentah	(Crude Petroleum)	000 Ton	42,3000
9.	Gas Alam Cair	(Natural Gas Liquid)	000 Ton	45,1923
10.	Avgas	(Aviation Gasoline)	000 Ton	43,9614
11.	Avtur	(Aviation Turbine)	000 Ton	43,1994
12.	Bensin	(Gasoline)	000 Ton	44,8992
13.	Minyak Tanah	(Kerosene)	000 Ton	43,1994
14.	Naptha	(Naphtha)	000 Ton	44,1289
15.	White/Industrial Spirit	(White/Industrial Spirit)	000 Ton	43,2078
16.	Solar/Gas Oil	(Gas Oil)	000 Ton	42,4960
17.	Minyak Bakar	(Fuel Oil)	000 Ton	41,4996
18.	Minyak Pelumas	(Lubricants)	000 Ton	42,1401
19.	Aspal/Bitumen	(Asphalt/Bitumen)	000 Ton	41,8000
20.	Petroleum Waxes	(Petroleum Waxes)	000 Ton	43,3334
21.	Petroleum Coke	(Petroleum Coke)	000 Ton	36,4000
22.	Other Petroleum Products	(Other Petroleum Products)	000 Ton	42,4960
23.	LPG	(LPG)	000 Ton	45,5440
24.	Gas Alam	(Natural Gas)	000 Ton	46,4453

METHODOLOGY

- Data Collection
- Data Compilation

DATA COLLECTION

FROM ADMINISTRATIVE DATA

Ministry of Energy and Mineral Resources

- Oil & gas production
- Coal Production
- Oil & gas refinery transformation
- Sales & fuel oil
- Export & import of fuel oil
- Final stock of oil and some refinery products

Downstream Oil and Gas Regulatory Agency (BPH Migas)

- Allocation of fuel oil needs by sector
- Final stock of fuel oil

Ministry of Transportation

- Total mileage of domestic and overseas aircraft
- Total domestic and foeign sea transportation

DATA COLLECTION

FROM BPS

The National Socioeconomic Survey (SUSENAS)

- Household electricity consumption
- Fuel consumption for cooking : LPG, firewood, charcoal, city gas, kerosene
- Fuel consumption for transportation : gasoline, diesel
- Fuel consumption for own electricity generation

Industry Sector

- Fuel consumption of industrial sector
- Production of briquettes, coke
- The use of oil refinery products in industrial raw materials

Energy Sector

- Use of fuel in the oil & gas, coal & mineral sectors
- Use of fuel in the mining, water sectors
- Use of fuel for own electricity generation
- Final stock of coal

Agriculture and Fishing Sector

- Fuel consumption of fishing operations
- Fuel consumption of plantation company

ENERGY BALANCES TEMPLATE

IRES TEMPLATE

Table 8.2

Template of an aggregated energy balance

Item code	Flows	Energy products					
							of which:
		E1	E2	E3	…	Total	Renewables
1.1	Primary production						
1.2	Imports						
1.3	Exports						
1.4	International bunkers						
1.5	Stock change (closing-opening)						
1	Total energy supply						
2	Statistical difference						
3	Transfers						
4	Transformation processes						
5	Energy industries own use						
6	Losses						
7	Final consumption						
7.1	Final energy consumption						
7.1.1	Manufacturing, const. and non-fuel mining industries, total						
7.1.1.1	Iron and steel						
7.1.1.2	Chemical and petrochemical						
7.1.1.X	Other industries						
7.1.2	Transport, total						
7.1.2.1	Road						
7.1.2.2	Rail						
7.1.2.3	Domestic aviation						
7.1.2.4	Domestic navigation						
7.1.2.X	Other Transport						
7.1.3	Other, total						
7.1.3.1	*of which*: Agriculture, forestry and fishing						
7.1.3.2	*of which*: Households						
7.2	Non-energy use						

INDONESIA TEMPLATE

Production and utilisation	Energy sources and products												
	Hard coal, lignite and peat	Briquettes and cokes	Crude petroleum and Condensate	Light petroleum products	Heavy petroleum products	Other petroleum products	LPG and refinery gas	Natural gas	Electricity	Biomass energy	Derived biomass energy	Other energy resources	Total energi
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(11)	(12)	(13)	(13)	(14)
1 Production of primary energy													
2 Imports													
3 Exports													
4 Marine / aviation bunkers													
5 Stock change													
6 **Total Primary Energy Supply**													
7 **Energy Transformation**													
8 Briquetting plants													
9 Coke plants													
10 Gas refineries													
11 Blast furnaces													
12 Petroleum refineries													
15 Electric power plants													
20 Net transfers													
21 Consumption by energy sector													
22 Losses in transport and distribution													
23 **Statistical Differences**													
24 **Final Consumption**													
25 Manufacturing, Construction and Non-Fuel Mining													
26 Iron and steel industry													
27 Chemichal industry													
28 Other industry and construction													
29 Transportation													
30 Road													
31 Railway													
32 Air													
33 Inland and coastal waterways													
34 Other modes of transportation													
35 Households and other consu													
36 Households													
37 Agriculture													
38 Other consumers													
39 Consumption for non-energy uses													

DATA COMPILATION

1

Checking the validity of administrative data from other agencies

2

Checking data from different sources

3

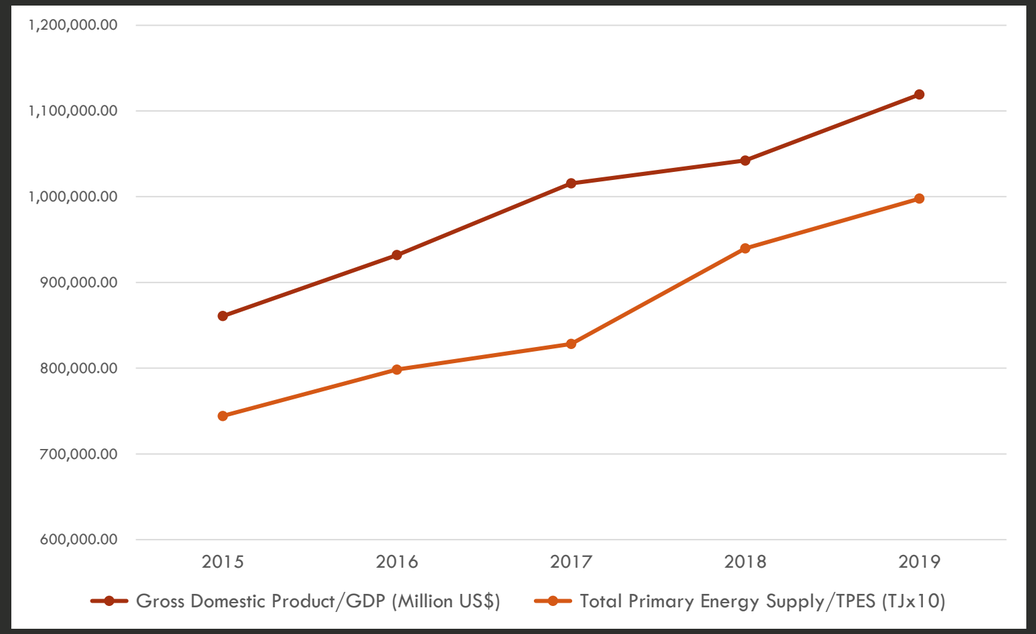
Estimating total energy consumption for each sector (industry, transportation, and household)

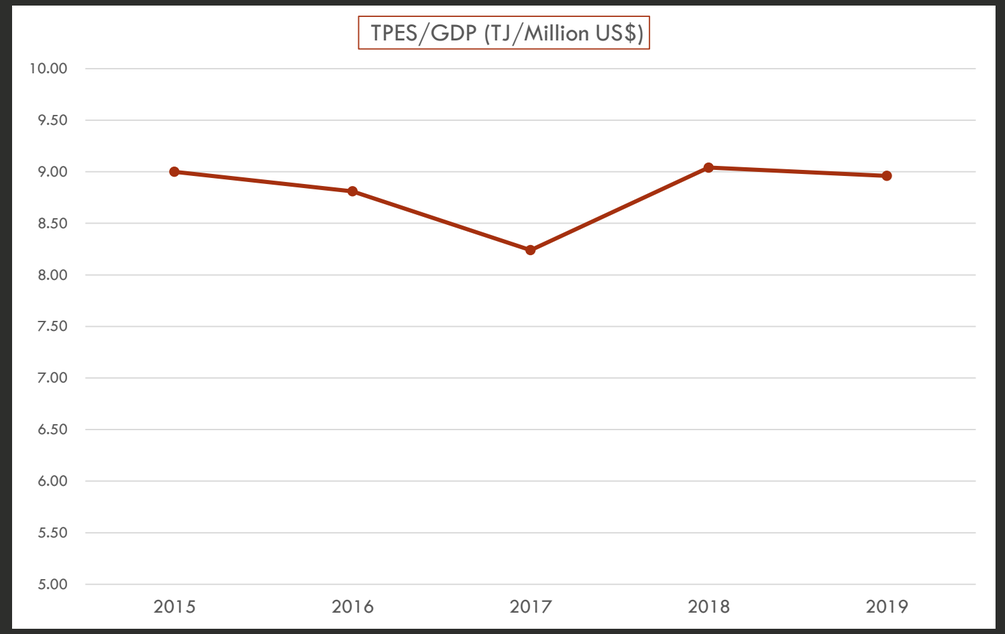
4

Estimating for missing data

ENERGY EFFICIENCY

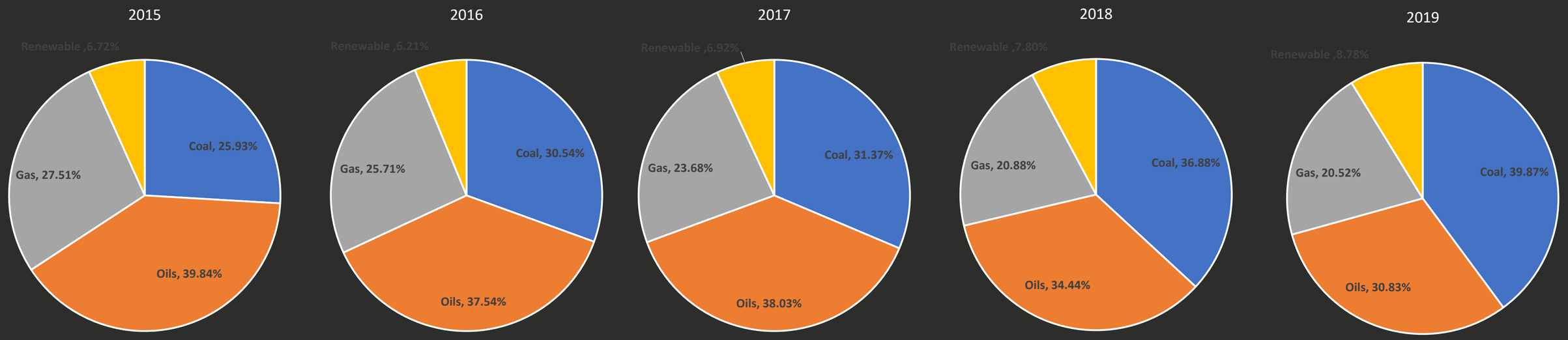
1. An indicator that is often used to see energy efficiency from a country is “Energy Intensity”
2. Energy Intensity is the amount of energy used to generate a unit of GDP





ENERGY MIX

Energy mix is a compilation of energy use in a country based on the source of energy used



Energy Mix Based on Total Primary Energy Supply, 2015-2019

THANK YOU