

DATA QUALITY ISSUES OF INDONESIA ENERGY BALANCES

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Workshop on Energy Statistics for
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OUTLINE

1. Preliminary
2. Structure of Indonesia Energy Balance
3. Data Collection
4. The Issues
5. Solution

1. PRELIMINARY

*The Indonesia Energy Balances publication prepared by the BPS-Statistics Indonesia (BPS) was first released in **1988**. The compilation was guided by the Manual “**Concepts and Methods in Energy Statistics, with Special Reference to Energy Accounts and Balances**” published by United Nations, 1982.*

*Since **1997** BPS used another manual for compilation of Energy Balances: **Energy Statistics - A Manual for Developing Countries**. published by United Nations, 1991*

2. STRUCTURE OF INDONESIA ENERGY BALANCES

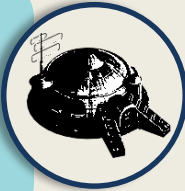
Production of primary energy: which includes primary and secondary energy commodity from extraction



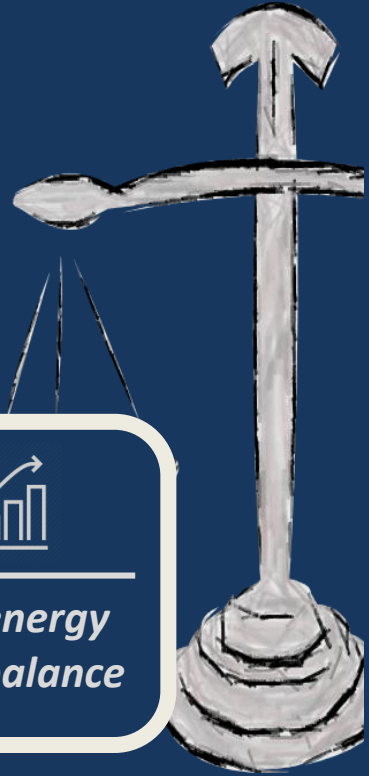
Import (+) and export (-): Foreign trade transactions that processed from Customs documents by BPS Statistics Indonesia.



International Aviation/Marine Bunker: domestic fuel data used by Indonesian airlines abroad and fuel supplied to cargo and passenger ships carrying out international shipping



*The energy
flow balance*



2. STRUCTURE OF INDONESIA ENERGY BALANCES

Stock changes



Total supply: the sum of production, import (+), export (-), stock change, marine / aviation bunker.



Total demand: the sum of transformations, use of the energy industry, loss and final consumption by the industrial sector including non-energy use..



Statistical difference: the difference of energy data between the supply side and the consume side.

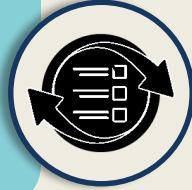


*The energy
flow balance*

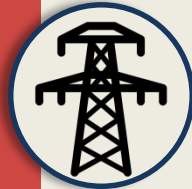


2. STRUCTURE OF INDONESIA ENERGY BALANCES

Transformation: includes activities that convert primary commodities into forms of energy more suited to use



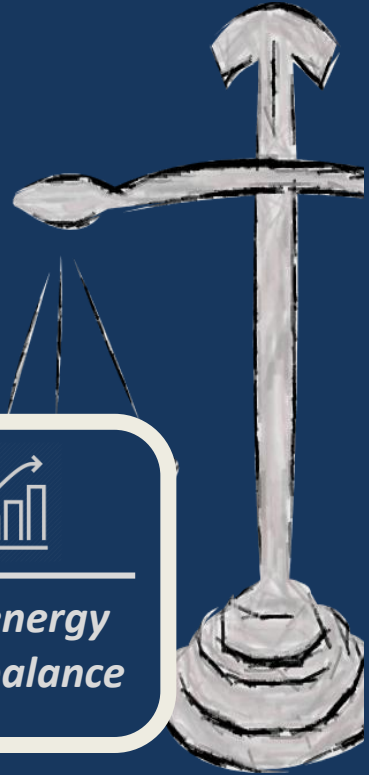
Electricity generation: the amount of fuel burned for electricity generation which divided into two parts, covering major producers of electricity and autogenerators which generate electricity for their own needs



Petroleum refineries: energy needed by refineries for producers of petroleum products.

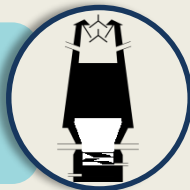


*The energy
flow balance*



2. STRUCTURE OF INDONESIA ENERGY BALANCES

Coke production: the amount of coal for coke oven.



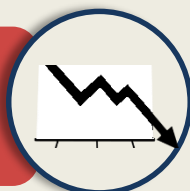
Others: consists of light transformation activities which not specifically specified.



The use of the energy industry: the energy consumed by energy extraction industry and energy transformation industry to support the transformation process.



Loss: including the intrinsic loss of energy that occurs during the transmission and distribution of electricity and gas.



The energy flow balance



2. STRUCTURE OF INDONESIA ENERGY BALANCES

Final consumption: Final energy consumed for energy use and non-energy purposes..



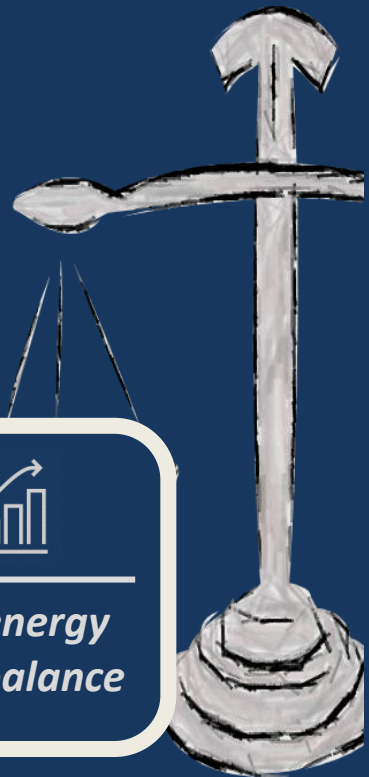
The iron and steel industry: are the energy used by the energy user industry which use enormous energy, both for transformation or final consumption.



Transportation: the energy used by the transportation industry (ISIC H category).



The energy flow balance



2. STRUCTURE OF INDONESIA ENERGY BALANCES

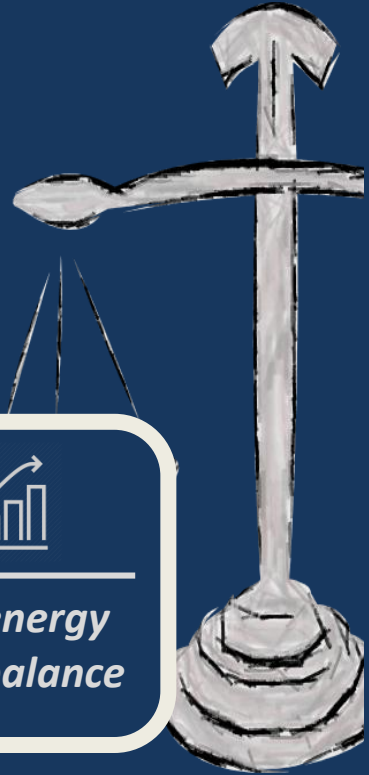
Others sectors: commercials, agriculture



The use of non-energy fuels: can be divided into two types, used directly or used by the chemical industry as raw materials for the manufacture of goods such as plastics.



*The energy
flow balance*

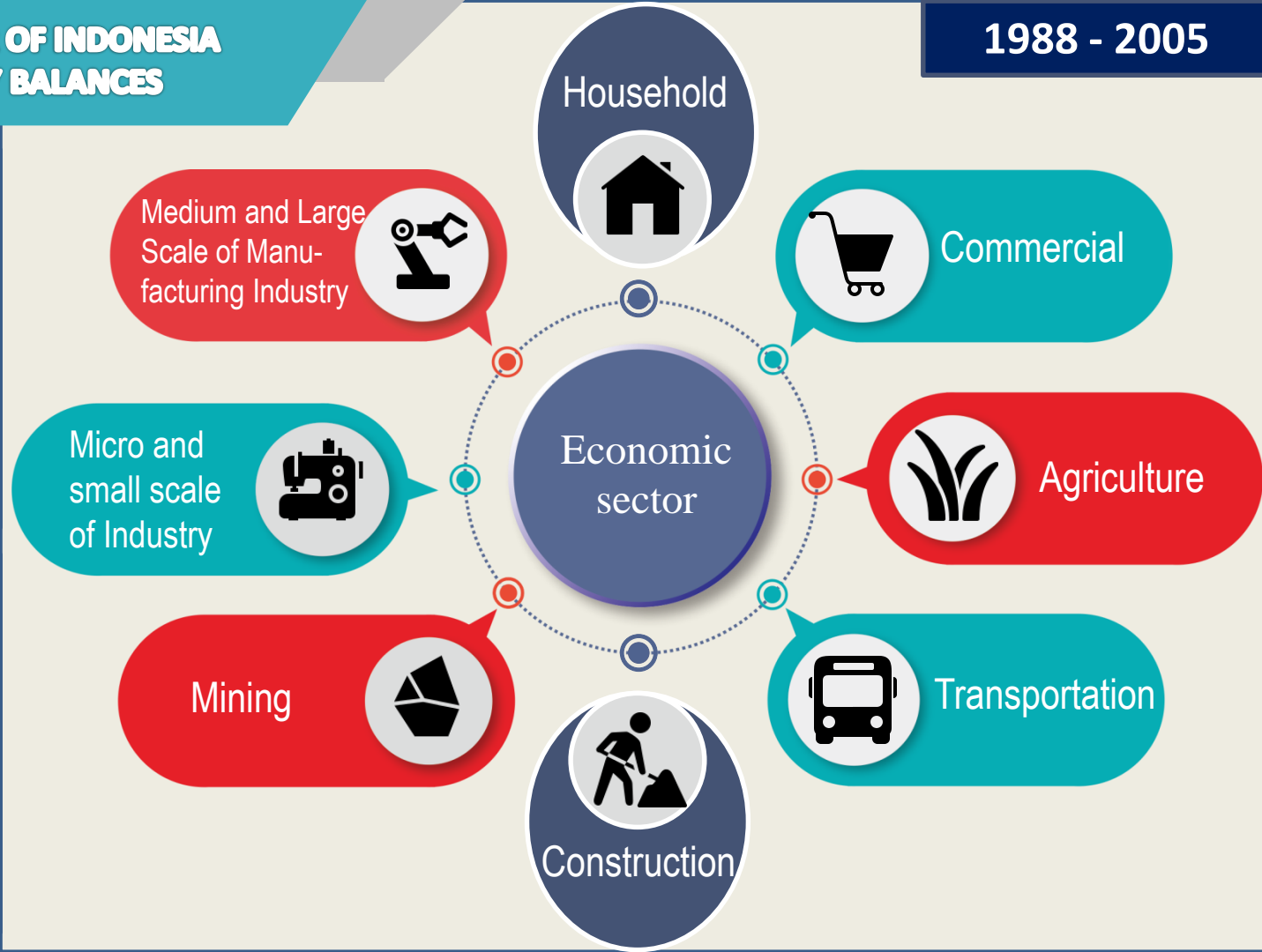


2. STRUKTUR OF INDONESIA ENERRGY BALANCES

1988 - 2005

Medium and Large
Scale of
Manufacturing
industry:
Food, Textile, Wood,
Chemical , Metal ,
Others

Commercial :
Trade, Hotel,
Restaurant, Other



01



Manufacturing Industry

- Chemical Industry,
- Iron and Steel
- Others

02



Transportation

- Land Transportation,
- Railway,
- Air Transportation, Inland Areas and Waters,
- Other Transportation

03



Agriculture

04



Commercial

05



Household

3. DATA COLLECTION

COAL

Annual Survey of Non-Oil and Gas Mining Companies and the Directorate General of Mineral and Coal

Production

1

Stock Changes

2

Annual Survey of Mining Company surveys, BPS

various company surveys conducted by BPS

Coal consumption

4

Export and Import

3

Foreign Trade Statistics

3. DATA COLLECTION

BRIQUETTES

Annual Survey of
Medium and Large
scale of Manufacturing
Industry

Production

1

Stock
Changes

2

Annual Survey of Medium
and Large scale of
Manufacturing Enterprises

Export
and
Import

3

Foreign Trade Statistics

3. DATA COLLECTION

Annual Survey of Oil and Gas Mining Company and The Directorate General of Oil and Gas

Production

1

Stock Changes

2

Annual Survey of Oil and Gas Mining Companies

CRUDE OIL AND CONDENSATE

Export and Import

3

Foreign Trade Statistics

3. DATA COLLECTION

OIL PRODUCTS

Annual Survey of Oil and Gas Refinery Company and The Directorate General of Oil and Gas

Production

1

Stock Changes

2

Oil and Gas Refinery Survey

3

Export and Import

Foreign Trade Statistics

3. DATA COLLECTION

Annual Survey of Oil and Gas Refinery Company and The Directorate General of Oil and Gas

Production

1

Stock Changes

2

Oil and Gas Refinery Survey

LPG AND REFINERY GAS

Export and Import

3

Foreign Trade Statistics

3. DATA COLLECTION

NATURAL GAS

Annual Survey of Oil and Gas Refinery Company and The Directorate General of Oil and Gas

Production

1

Stock Changes

2

Oil and Gas Refinery Survey

3

Export and Import

Foreign Trade Statistics

3. DATA COLLECTION

ELECTRICITY

Production

1

Annual Survey of Electricity Company, PLN Electric Statistics, Statistics of Electricity, Directorate General of Electricity, and Ministry of Energy and Mineral Resources

3. DATA COLLECTION

BIOMASS

Annual Survey of Manufacturing Company and The socio-economic (household) survey

Production

1

Consumption

2

Medium and Large Manufacturing Survey, and the Survey of Micro and Small scale of Industry

3

Export and Import

Foreign Trade Statistics

3. DATA COLLECTION

GEOHERMAL

Annual Survey of
Geothermal Mining
Companies and PLN
Electricity Statistics

Production

1

2
Consumption

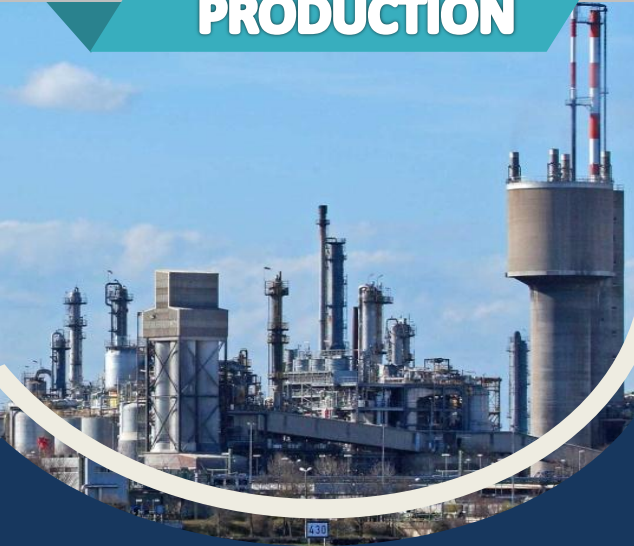
Survey of Electricity
Companies, and PLN
Electricity Statistics

INDONESIA ENERGY BALANCES 2015

Tera Joules

Energy Source		coal	Briquette and coke	Crude oil and condensate	Light Petroleum Products	Heavy Petroleum Products	Other Petroleum Products	LPG and gas refinery	Natural Gas	LNG	Electricity	Biomass	Hydro Power	Geothermal	TOTAL
1	Production of primary energy	11.842.386	0	1.904.819			0		2.644.065		0	624.419	63.342	30.949	17.109.978
2	Import	82.979	4.500	784.806	775.241	335.044	59.079	275.289	0		0	14.36			2.316.952
3	Export	10.059.711	0	656.136	16.042	77.858	24.941	1.207	83.585	680.150	0	18.128			11.617.757
4	Marine / aviation bunkers	0	0	0	34.841	12.463	0	0	0	0	0	0			47.304
5	Stock change	59.585	0	-37.025	0	0	0	0	-22.902	-12.765	0	0			-13.107
6	Total Primary Energy Supply	1.925.239	4.500	1.996.463	724.359	244.723	34.138	274.082	2.537.578	-692.915	0	606.306	63.342	30.949	7.748.762
7	Energy Converted	-2.059.687	2.666	-1.632.834	609.512	676.284	34.845	106.215	-1.535.729	757.913	962.230	-5.015	-63.342	-30.949	-2.177.890
8	Briquette Plant	-556	2.130	0	0	0	0	0	0	0	0	-3.746			-2.172
9	Coke Plant		537	0	0	0	0	0	0	0	0	-1.269			-733
10	Gas Refinery		0	8.367	0	0	0	74.310	-949.198	790.406	0	0			-76.115
11	Petroleum Refinery		0	-1.641.201	617.647	865.499	34.845	31.906	-35.455		0	0			-126.759
12	Power Plant	-2.059.131	0	0	-8.135	-189.215	0	0	-551.077	-32.493	962.230	0	-63.342	-30.949	-1.972.111
13	Energy Sector Consumption	10.514	173	435	1.815	23.477	2.936	10	196.252		46.213	0			281.826
14	Losses	88	55	2.142	5	54	0	0	273.073		79.405	0			354.820
15	Non Energy Use	35.899	973	0	11.190	1.694	43.051	27	241.783		0	2.373			336.990
16	Statistical Differences	-373.610	1.852	361.052	73.550	-23.517	-13.307	-75.697	-1.878	64.998	70.649	-30.516	0	0	53.576
17	Final Consumption	192.660	4.113	0	1.247.311	919.298	36.304	455.957	292.619	0	765.964	629.434			4.543.660
18	Manufacturing and Construction	192.660	4.113	0	41.085	152.726	13.700	297.808	282.170	0	261.148	414.098			1.659.509
19	Iron and Steel Industry	20.959	1.519	0	1.691	17.033	4.372	63.495	10.716		16.936	0			136.722
20	Chemical Industry	3.379	11	0	145	1.147	62	2.722	83.504		5.832	0			96.802
21	Others	168.322	2.584	0	39.248	134.546	9.267	231.591	187.951		238.379	414.098			1.425.985
22	Transportation	0	0	0	567.444	726.751	10.221	0	2.116	0	925	0			1.307.456
23	Road		0	0	456.577	701.416	9.865	0	2.116		0	0			1.169.973
24	Railway		0	0	0	6.630	16	0	0		925	0			7.570
25	Air		0	0	110.867	84	0	0	0		0	0			110.951
26	Inland and coastal waterway		0	0	0	18.621	340	0	0		0	0			18.961
27	Resident and other sector	0	0	0	638.783	39.821	12.383	158.149	8.333		503.891	215.336			1.576.695
28	Resident		0	0	637.471	16.073	12.331	158.129	1.041		321.722	215.336			1.362.103
29	Agriculture		0	0	1.312	5.354	52	20	0		1.840	0			8.578
30	Others		0	0	0	18.393	0	0	7.293		180.329	0			206.015

4. THE ISSUES ; ENERGY PRODUCTION



Energy production data mainly comes from the Ministry of Energy and Mineral Resources and surveys of mining, energy and industrial companies conducted by **BPS**.

1

Some types of data products are not detailed as required in the preparation of energy balances, such as coal products not specified by types of coal. Such as hard coal, anthracite, cooking coal, brown coal, lignite.

2

Biomass production data available only charcoal and fuelwood, other biomass such as palm shells and bagasse is not available.

3

Production of some energy commodities such as coal briquette and coke of coal is very fluctuate every year. This could be caused by respon in the survey of manufacturing industry companies not yet well.

4

Micro hydro power activities can not record electricity generated.

5

Data of Blast furnace and steam energy conversion activities is not available. Need special questionnaire to obtain the data.

1

There are only a few surveys ask about energy consumption in their questionnaire..

2

There are questions for energy consumpt by manufacturing industry, however the consumption data recorded tends to be lower than the real use.

3

There is no question about energy consumed in commercial establishments annual surveys.

4

Data energy consumption by household as a result of socio economic survey, particularly for electricity tend to underestimate.

5

Biomass consump by household small relatively, many biomass uses are not recorded by households because they are free taken from the surronding environment.

4. THE ISSUES; ENERGY CONSUMPTION

Energy consumption data is the biggest problem in the preparation of Indonesia Energy Balances.



5. SOLUTION



To obtain data of electricity production by non power companies, BPS since 2011 conducted a Captive Power survey. Due to the limited number of samples, the company covered annually is limited to three service business activities. They will be surveyed alternately each year.



Taking into account the time series data for each commodity, if there is a big change in the series, then checking the raw data and justify from various related data sources



Some commodities are unavailable in the current year, if it is believed that the commodity is still produced actually, then use the previous year's data



THANK YOU