ENERGY BALANCES AND USE IN POLICY-MAKING

An Energy Factsheet from the EU4Energy Programme

Do you know:
What energy sources are used in your country?
Where the energy supply comes from?
Who are the main energy consumers?

The energy balance: a compact view of a country's energy situation

Columns:
1 for each energy source
Total for the country

Rows:
3 main blocks

Supply

Transformation

Final consumption

COUNTRY

YEAR

Thousand tonnes of oil equivalent

SUPPLY AND CONSUMPTION	Coal	Crude oil	Oil products	Natural gas	Nuclear	Hydro	Geotherm./ Solar/ etc.	Biofuels/ Waste	Electricity	Heat	Total
Production	708	108	-	25	-	955	-	3	-	-	1798
Imports	680	225	1629	205	-	-	-	-	63	-	2802
Exports	-104	-	-107	-	-	-	-	-	-16	-	-227
Intl. marine bunkers	-	-	-	-	-	-	-	-	-	-	-
Intl. aviation bunkers	-	-	-108	-	-	-	-	-	-	-	-108
Stock changes	-156	-8	-120	-	-	-	-	-	-	-	-284
TPES	**1128**	**325**	**1295**	**229**	**-**	**955**	**-**	**3**	**47**	**-**	**3981**
Transfers	-	-	-	-	-	-	-	-	-	-	-
Statistical differences	-4	-	-1	-	-	-	-	-	-	-1	-7
Electricity plants	-8	-	-	-	-	-955	-	-	957	-	-6
CHP plants	-582	-	-15	-52	-	-	-	-	164	314	-171
Heat plants	-51	-	-11	-42	-	-	-	-	-	86	-19
Blast furnaces	-	-	-	-	-	-	-	-	-	-	-
Gas works	-	-	-	-	-	-	-	-	-	-	-
Coke/pat.fuel/BKB/PB plants	-	-	-	-	-	-	-	-	-	-	-
Oil refineries	-	-325	322	-	-	-	-	-	-	-	-3
Petrochemical plants	-	-	-5	-	-	-	-	-	-	-	-5
Liquefaction plants	-	-	-	-	-	-	-	-	-	-	-
Other transformation	-	-	-	-	-	-	-	-	-	-	-
Energy industry own use	-	-	-16	-3	-	-	-	-	-28	-88	-135
Losses	-1	-	-3	-15	-	-	-	-0	-229	-27	-276
TFC	**481**	**-**	**1564**	**118**	**-**	**-**	**-**	**3**	**910**	**283**	**3360**
INDUSTRY	**201**	**-**	**292**	**20**	**-**	**-**	**-**	**-**	**203**	**14**	**730**
Iron and steel	-	-	-	-	-	-	-	-	-	-	-
Chemical and petrochemica	1	-	-	-	-	-	-	-	3	0	4
Non-ferrous metals	-	-	-	-	-	-	-	-	33	-	33
Non-metallic minerals	196	-	1	0	-	-	-	-	36	3	236
Transport equipment	-	-	-	-	-	-	-	-	-	-	-
Machinery	-	-	4	12	-	-	-	-	4	2	23
Mining and quarrying	-	-	3	-	-	-	-	-	4	-	7
Food and tobacco	3	-	7	6	-	-	-	-	26	8	50
Paper pulp and printing	-	-	-	-	-	-	-	-	-	-	-
Wood and wood products	-	-	-	-	-	-	-	-	3	-	3
Construction	-	-	52	-	-	-	-	-	27	0	79
Textile and leather	-	-	1	-	-	-	-	-	2	2	5
Non-specified	1	-	224	1	-	-	-	-	65	-	291
TRANSPORT	**-**	**-**	**910**	**-**	**-**	**-**	**-**	**3**	**15**	**-**	**925**
Domestic aviation	-	-	2	-	-	-	-	-	-	-	2
Road	-	-	907	-	-	-	-	-	3	-	910
Rail	-	-	1	-	-	-	-	-	11	-	12
Pipeline transport	-	-	-	-	-	-	-	-	-	-	-
Domestic navigation	-	-	-	-	-	-	-	-	-	-	-
Non-specified	-	-	-	-	-	-	-	-	1	-	1
OTHER	**273**	**-**	**349**	**98**	**-**	**-**	**-**	**3**	**693**	**269**	**1685**
Residential	212	-	215	85	-	-	-	2	595	146	1255
Comm. and public services	-	-	23	-	-	-	-	-	72	119	215
Agriculture/forestry	2	-	98	2	-	-	-	-	19	0	122
Fishing	-	-	-	-	-	-	-	-	-	-	-
Non-specified	59	-	12	11	-	-	-	0	7	3	93
NON-ENERGY USE	**7**	**-**	**13**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**20**
in industry/transf./energy	7	-	13	-	-	-	-	-	-	-	20
of which: chem./petrochem.	-	-	-	-	-	-	-	-	-	-	-
in transport	-	-	-	-	-	-	-	-	-	-	-
in other	-	-	-	-	-	-	-	-	-	-	-

Why is it strategic for policy-makers to understand energy balances?

- To understand the energy situation and to be able to assess options for policies
- To choose and monitor policy targets
- To establish the base for modelling policy scenarios.

Did you know?
Many of the energy products used by final consumers, such as electricity or diesel, are secondary products. They are produced through transformation processes such as the generation of electricity from coal combustion. These processes are shown in the transformation block of the energy balance.

Key figures of an energy balance

COUNTRY

YEAR

Thousand tonnes of oil equivalent

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in transport	-	-	-	-	-	-	-	-	-	-	-

1

2

3

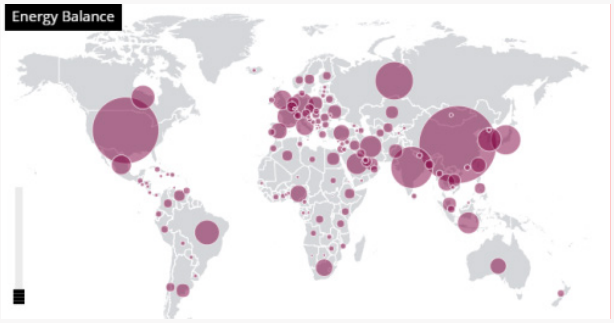
4

More information on international methodology:
IEA, Energy Statistics Manual
UN, International Recommendations for Energy Statistics

1 Total Primary Energy Supply (TPES)

is the **total energy** supplied and available for use in a given year.

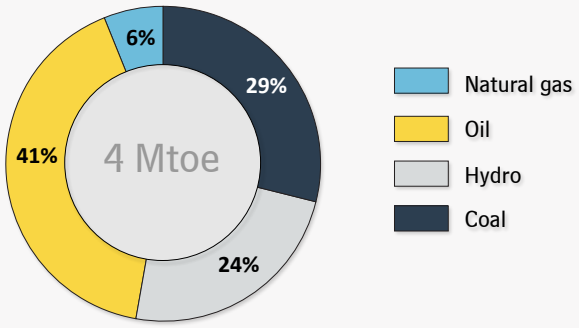
>> How much energy does this country use?



Compare across countries and over time with the IEA energy atlas: (http://www.iea.org/statistics/ieaenergyatlas/)

2 TPES by energy source

reflects the diversity of the **energy mix** of a country.



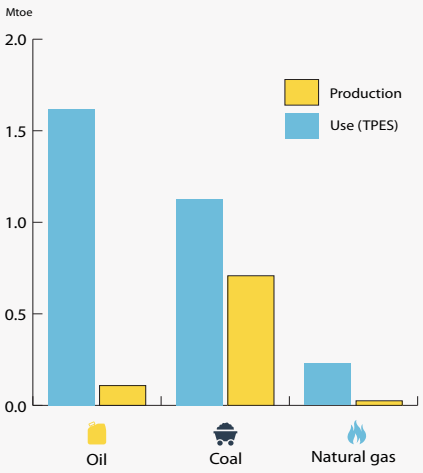
>> What is the most important energy source in the country?

3 The ratio between production and TPES

shows the **energy dependency** or self-sufficiency of a country.

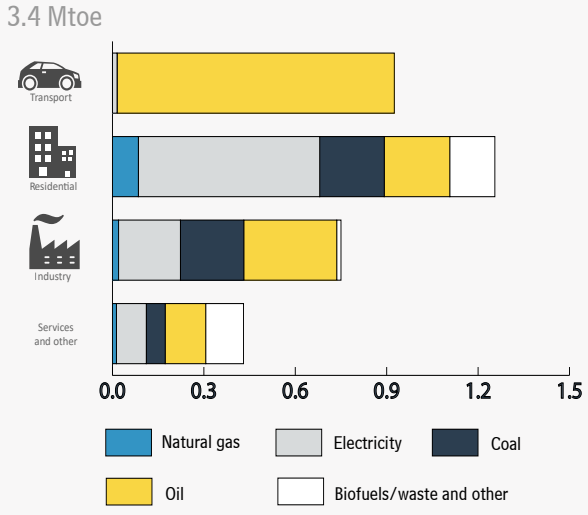
>> Is the country's total energy production sufficient to cover its needs?

> For which fossil fuel is the country the least self-sufficient?



4 The total final consumption (TFC)

shows **who are the final consumers** of energy.



>> Who are the largest final energy consumers?
>> Do they vary across energy sources?

?

1 = 4 million tonnes of oil equivalent (3981 ktoe), less than 1% of TPES of the People's Republic of China.
2 = Oil, with a share of 41% (325 + 1295)/3981.
3 = The total energy production covers 45% of the country's energy use (1796/3981). The self-sufficiency is lower for oil. (108/325+1295).
4 = Residential sector for total energy. Yes, tranport is the largest final consumer of oil.

International Energy Agency for EU4Energy

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An electronic version of this brochure is available at www.eu4energy.iea.org

How to use energy balances in policy-making?

To see the whole energy picture

For example, in 2007, the government of Georgia took action against illegal cutting of fuelwood, causing protests. An energy balance would have shown that fuelwood was a key energy source for the country, providing as much energy as hydropower. For the people, suddenly limiting access to fuelwood was equivalent to a blackout.

Thanks to work carried out by the national statistical office in cooperation with stakeholders, Georgia now has a complete energy data set available for energy planning, including an official energy balance. Policymakers see the whole energy picture and are prepared for more gradual policies.

To build key policy indicators

Self-sufficiency: Production/TPES

- This ratio compares energy production and use. When production is higher than TPES – i.e., the ratio is higher than 100% – the country is self-sufficient.

Energy intensity: TPES/GDP or TPES/population

- This ratio compares energy use to a macro-economic indicator, such as gross domestic product (GDP) or population. These two variables are key to understand energy use.

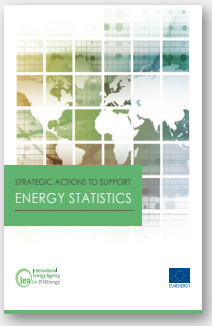
Share of renewables in TPES and TFC

- This is the share of renewables in the energy mix or in total final consumption. It should be noted that the definition of what is included in renewable targets varies among organizations.

To model the energy future

Data from energy balances are one of the key inputs used to model how policy choices will influence the future of energy. For this purpose, it is key to develop long and consistent time series from reliable sources.

Strategic Actions to Support Energy Statistics



Energy intensity is widely used as an energy policy indicator, for example for measuring **SDG 7.3**.

The **IEA World Energy Outlook** analyses energy scenarios 30 years ahead, using world energy balances starting from 1971.