Energy balances as a first tool for informing policies:
Introduction to the energy balances

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Session 3 overview

- The importance of energy balances
- How to read an energy balance?
- Aggregated indicators from the energy balances
- Example of applications of aggregated indicators
- Practical exercise

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The importance of energy balances: bringing all information together

"…An accounting **framework** for compilation of data on **all energy products entering, exiting, and used** within the national territory of a given **country** during a reference period."

Source: International Recommendations on Energy Statistics (IRES), UNSD, 2011

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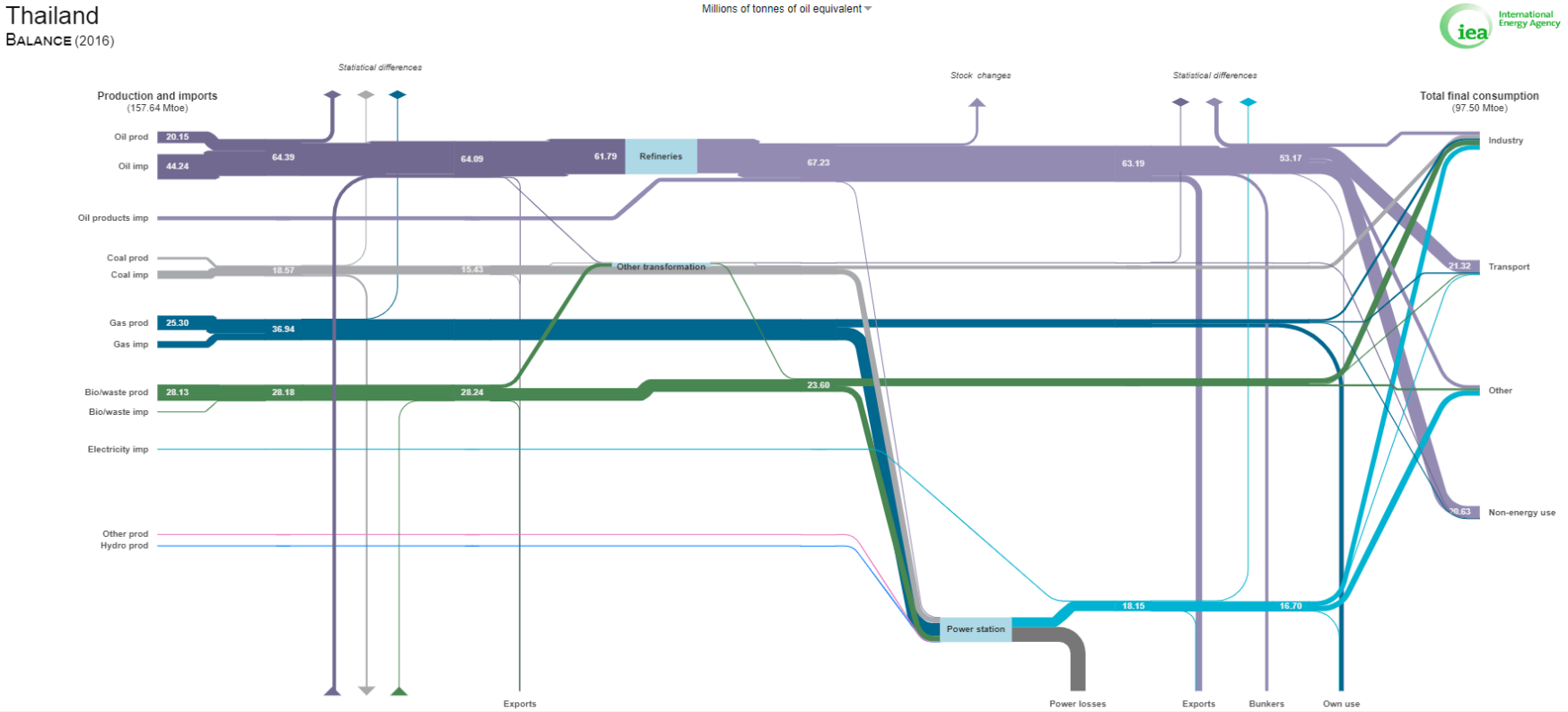
The complete picture – Sankey diagram example of energy balance



"Energy balances" are the starting point to develop energy indicators

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Why do we develop energy balances?

- **To understand overall energy use in country,** from supply, to transformation and final consumption sectors.
- **To estimate high-level indicators** and **CO_2 emissions** from fuel combustion
- **To assess data completeness and check quality** of the various energy commodity balances

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How to read an energy balance?

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The energy balance table

	Coal*	Crude oil*	Oil products	Natural gas	Nuclear	Hydro	Geothermal, solar, etc.	Biofuels and waste	Electricity	Heat	Total**
Production	574102	172933	0	267262	20839	27438	32414	384131	0	0	1479119
Imports	215884	394274	270806	61503	0	0	0	460	3116	0	946043
Exports	-231319	-53719	-205851	-81954	0	0	0	-776	-1171	0	-574790
International marine bunkers***	0	0	-48701	0	0	0	0	0	0	0	-48701
International aviation bunkers***	0	0	-26553	0	0	0	0	0	0	0	-26553
Stock changes	-6734	3830	-2092	-867	0	0	0	-106	0	0	-5968
TPES	**551933**	**517319**	**-12391**	**245944**	**20839**	**27438**	**32414**	**383711**	**1945**	**0**	**1769151**
Transfers	0	-1536	2375	0	0	0	0	0	0	0	839
Statistical differences	-2205	-5161	-3641	272	0	0	0	-3	604	0	-10134
Electricity plants	-355445	0	-31163	-119138	-20839	-27438	-31647	-21908	231911	0	-375667
CHP plants	-9940	0	-360	-178	0	0	0	0	3536	1068	-5875
Heat plants	0	0	0	0	0	0	0	0	0	0	0
Gas works	-30	0	0	0	0	0	0	0	0	0	-30
Oil refineries	0	-508585	501625	0	0	0	0	0	0	0	-6960
Coal transformation	-18358	0	0	0	0	0	0	0	0	0	-18358
Liquefication plants	0	465	0	-862	0	0	0	0	0	0	-397
Other transformation	0	0	0	-49	0	0	0	-16141	0	0	-16190
Energy industry own use	-2575	-628	-20444	-25030	0	0	0	-4	-13904	-65	-62651
Losses	-243	-200	0	-4945	0	0	0	0	-31469	-33	-36890
Total final consumption	**163136**	**1674**	**436001**	**96013**	**0**	**0**	**767**	**345654**	**192623**	**971**	**1236838**
Industry	**145924**	**0**	**53750**	**39845**	**0**	**0**	**40**	**57411**	**84544**	**236**	**381748**
Transport	**17**	**0**	**228485**	**7755**	**0**	**0**	**0**	**3697**	**1820**	**0**	**241774**
Other	**16999**	**0**	**70468**	**13385**	**0**	**0**	**727**	**284546**	**106260**	**735**	**493119**
Residential	4588	0	40544	10416	0	0	631	276141	52296	404	385020
Commercial and public services	5583	0	7637	2628	0	0	63	7610	29916	294	53731

Asia excluding China: Balances for 2015

in thousand tonnes of oil equivalent (ktoe) on a net calorific value basis

- Columns present the "commodity balances" for all products
- All data are comparable thanks to a common energy unit
- Total energy can be defined

Quiz

- How to convert mass (*energy commodities*) to energy units (*energy balances*)?

A. Density

B. Calorific value

C. Carbon content

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Answer

- How to convert mass (*energy commodities*) to energy units (*energy balances*)?

A. Density

B. Calorific value

C. Carbon content

Typically in units of energy per mass **(kJ/kg)**

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Understanding the main energy flows

Supply

Transformation

Final consumption

	Coal*	Crude oil*	Oil products	Natural gas	Nuclear	Hydro	Geothermal, solar, etc.	Biofuels and waste	Electricity	Heat	Total**
Production	574102	172933	0	267262	20839	27438	32414	384131	0	0	1479119
Imports	215884	394274	270806	61503	0	0	0	460	3116	0	946043
Exports	-231319	-53719	-205851	-81954	0	0	0	-776	-1171	0	-574790
International marine bunkers***	0	0	-48701	0	0	0	0	0	0	0	-48701
International aviation bunkers***	0	0	-26553	0	0	0	0	0	0	0	-26553
Stock changes	-6734	3830	-2092	-867	0	0	0	-106	0	0	-5968
TPES	**551933**	**517319**	**-12391**	**245944**	**20839**	**27438**	**32414**	**383711**	**1945**	**0**	**1769151**
Transfers										0	839
Statistical differences										0	-10134
Electricity plants										0	-375667
CHP plants										068	-5875
Heat plants	0	0	0	0	0	0	0	0	0	0	0
Gas works	-30	0	0	0	0	0	0	0	0	0	-30
Oil refineries	0	-508585	501625	0	0	0	0	0	0	0	-6960
Coal transformation	-18358	0	0	0	0	0	0	0	0	0	-18358
Liquefication plants	0	465	0	-862	0	0	0	0	0	0	-397
Other transformation										0	-16190
Energy industry own use										-65	-62651
Losses										-33	-36890
Total final consumption	**163136**	**1674**	**436001**	**96013**	**0**	**0**	**767**	**345654**	**192623**	**971**	**1236838**
Industry	**145924**	**0**	**53750**	**39845**	**0**	**0**	**40**	**57411**	**84544**	**236**	**381748**
Transport	**17**	**0**	**228485**	**7755**	**0**	**0**	**0**	**3697**	**1820**	**0**	**241774**
Other	**16999**	**0**	**70468**	**13385**	**0**	**0**	**727**	**284546**	**106260**	**735**	**493119**
Residential	4588	0	40544	10416	0	0	631	276141	52296	404	385020
Commercial and public services	5583	0	7637	2628	0	0	63	7610	29916	294	53731

Rows present energy flows across energy products

Three main “blocks” of flows

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1: Energy supply

	Coal*	Crude oil*	Oil products	Natural gas	Nuclear	Hydro	Geothermal, solar, etc.	Biofuels and waste	Electricity	Heat	Total**
Production	574102	172933	0	267262	20839	27438	32414	384131	0	0	1479119
Imports	215884	394274	270806	61503	0	0	0	460	3116	0	946043
Exports	-231319	-53719	-205851	-81954	0	0	0	-776	-1171	0	-574790
International marine bunkers***	0	0	-48701	0	0	0	0	0	0	0	-48701
International aviation bunkers***				0	0	0	0	0	0	0	-26553
Stock changes				-867	0	0	0	-106	0	0	-5968
TPES				**245944**	**20839**	**27438**	**32414**	**383711**	**1945**	**0**	**1769151**

Producers	Mt	% of world total
Saudi Arabia	583	13.5
Russian Federation	546	12.6
United States	537	12.4
Canada	220	5.1
Islamic Rep. of Iran	200	4.6
People's Rep. of China	200	4.6
Iraq	191	4.4
United Arab Emirates	182	4.2
Kuwait	159	3.7
Brazil	135	3.1
Rest of the world	1 368	31.8
World	**4 321**	**100.0**

2016 provisional data

Net exporters	Mt
Saudi Arabia	369
Russian Federation	243
Iraq	148
United Arab Emirates	125
Canada	116
Nigeria	104
Kuwait	100
Venezuela	98
Angola	86
Islamic Rep. of Iran	64
Others	539
Total	**1 992**

2015 data

Net importers	Mt
United States	348
People's Rep. of China	333
India	203
Japan	165
Korea	139
Germany	91
Italy	67
Spain	65
Netherlands	59
France	57
Others	514
Total	**2 041**

2015 data

Source: IEA, Key World Energy Statistics, 2017

"High-level" information: **TPES, Totals, etc…**

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1: Energy supply

	Coal*	Crude oil*	Oil products	Natural gas	Nuclear	Hydro	Geothermal, solar, etc.	Biofuels and waste	Electricity	Heat	Total**
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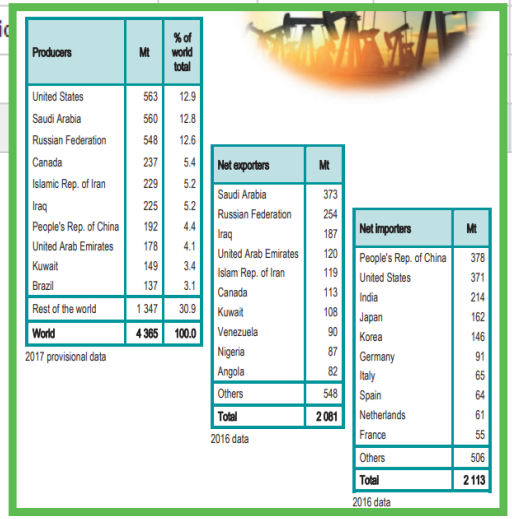
International marine bunkers***	0	0	-48701	0	0	0	0	0	0	0	-48701
International aviati				0	0	0	0	0	0	0	-26553
Stock changes				-8						0	-5968
TPES				2459						0	1769151



Producers	Mt	% of world total
United States	563	12.9
Saudi Arabia	560	12.8
Russian Federation	548	12.6
Canada	237	5.4
Islamic Rep. of Iran	229	5.2
Iraq	225	5.2
People's Rep. of China	192	4.4
United Arab Emirates	178	4.1
Kuwait	149	3.4
Brazil	137	3.1
Rest of the world	1 347	30.9
World	4 365	100.0

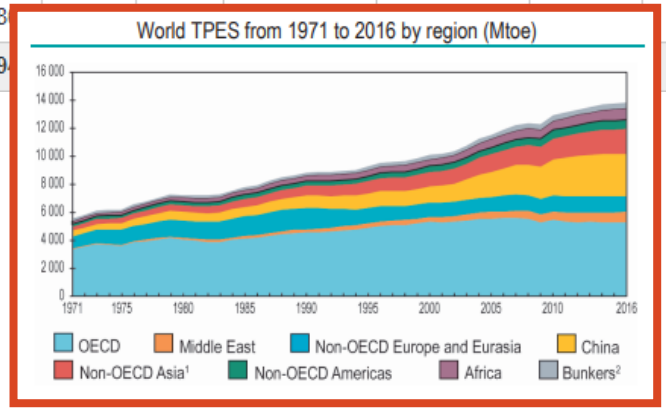
2017 provisional data

Net exporters	Mt
Saudi Arabia	373
Russian Federation	254
Iraq	187
United Arab Emirates	120
Islam Rep. of Iran	119
Canada	113
Kuwait	108
Venezuela	90
Nigeria	87
Angola	82
Others	548
Total	2 061

2016 data

Net importers	Mt
People's Rep. of China	378
United States	371
India	214
Japan	162
Korea	146
Germany	91
Italy	65
Spain	64
Netherlands	61
France	55
Others	506
Total	2 113

2016 data



Source: IEA, Key World Energy Statistics, 2018

"High-level" information: **Total primary energy supply, production, trade, etc…**

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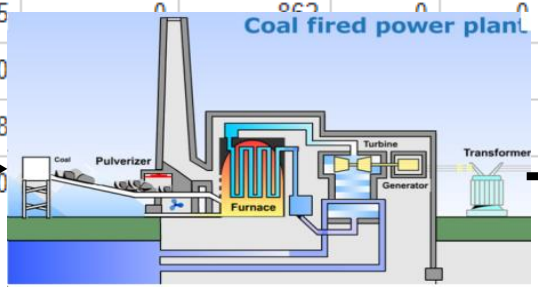
2: Transformation and energy sectors

	Coal and peat	Crude oil	Oil products	Natural gas	Nuclear	Hydro	Geothermal, solar, etc.	Biofuels and waste	Electricity	Heat	Total*
Electricity plants	-355445	0	-31163	-119138	-20839	-27438	-31647	-21908	231911	0	-375667
CHP plants	-9940	0	-360	-178	0	0	0	0	3536	1068	-5875
Heat plants	0							0	0	0	0
Gas works	-30							0	0	0	-30
Oil refineries	0	-508585	501625	0	0	0	0	0	0	0	-6960
Coal transformation	-18358	0	0	0	0	0	0	0	0	0	-18358
Liquefication plants	0	465					0	0	0	0	-397
Other transformation	0	0					0	-16141	0	0	-16190
Energy industry		-628								-65	-62651
Losses		-200								-33	-36890

Transforming energy sources

Input (coal)



Output (electricity)

The concept of transformation efficiency = output / input

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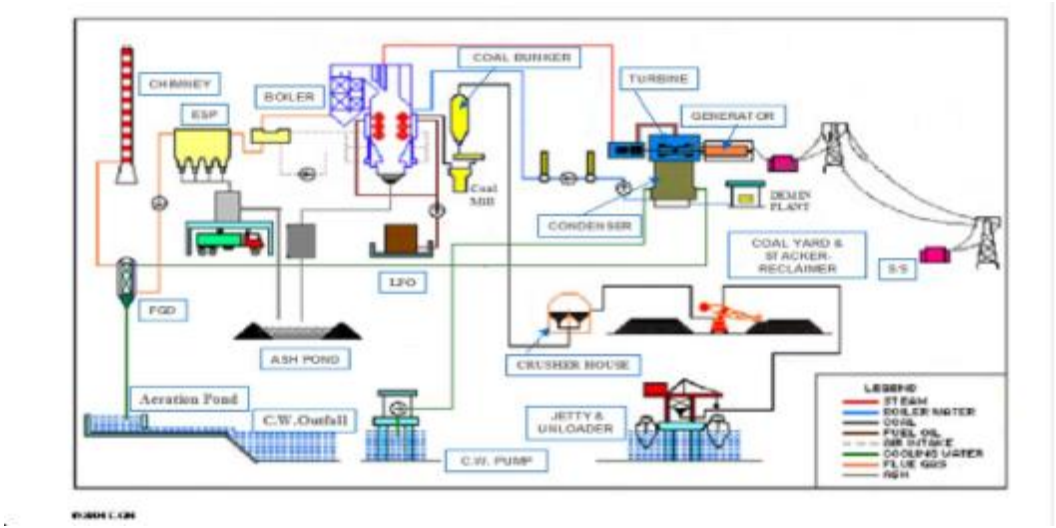
Quiz

- What is the average efficiency for a **coal electricity-only** power plant?

A. 37%

B. 52%

C. 65%



Source: IEA, World Energy Balances, 2018

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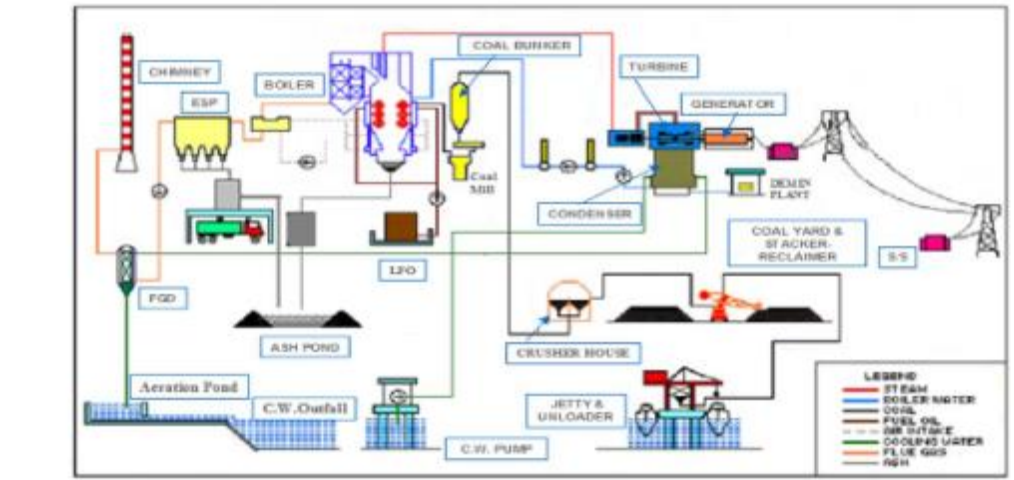
Answer

➢ What is the average efficiency for a **coal electricity-only** power plant?

A. 37%

B. 52%

C. 65%



Source: IEA, World Energy Balances, 2018

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3: Final consumption

	Coal*	Crude oil*	Oil products	Natural gas	Nuclear	Hydro	Geothermal, solar, etc.	Biofuels and waste	Electricity	Heat	Total**
Total final consumption	**163136**	**1674**	**436001**	**96013**	**0**	**0**	**767**	**345654**	**192623**	**971**	**1236838**
Industry	**145924**	**0**	**53750**	**39845**	**0**	**0**	**40**	**57411**	**84544**	**236**	**381748**
Transport	**17**	**0**	**228485**	**7755**	**0**	**0**	**0**	**3697**	**1820**	**0**	**241774**
Other	**16999**	**0**	**70468**	**13385**	**0**	**0**	**727**	**284546**	**106260**	**735**	**493119**
Residential	4588	0	40544	10416	0	0	631	276141	52296	404	385020
Commercial and public services	5583	0	7637	2628	0	0	63	7610	29916	294	53731
Agriculture / forestry	22	0	17281	180	0	0	0	8	17852	5	35348
Fishing	0	0	1309	0	0	0	0	3	108	0	1419
Non-specified	6806	0	3698	160	0	0	33	784	6089	32	17602
Non-energy use	**196**	**1674**	**83297**	**35028**	**0**	**0**	**0**	**0**	**0**	**0**	**120196**

Delivery of energy products to all final consumers (sectors)

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Quiz

- What is the largest energy-consuming sector globally?

  - **Residential**

  - **Transport**

  - **Industry**

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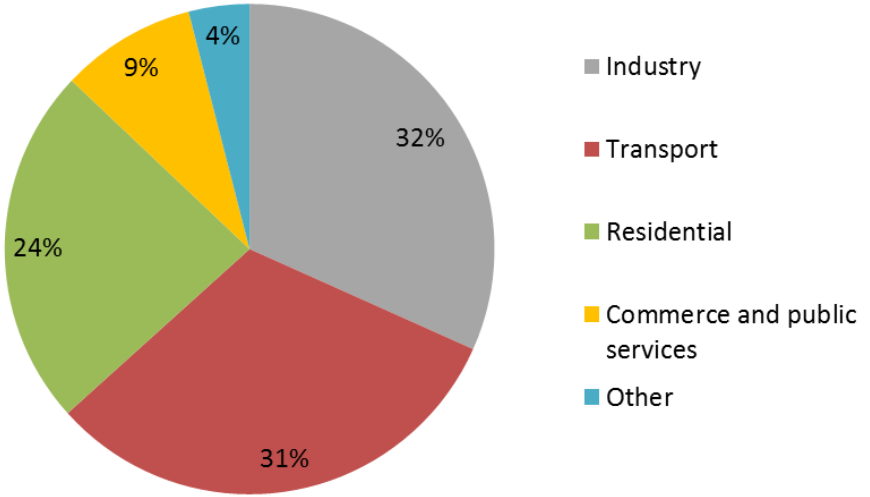
Answer

➢ What is the largest energy-consuming sector globally?

- **Residential**
- **Transport**
- **Industry**



Source: IEA, World Energy Balances, 2018

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Aggregated indicators from the energy balances

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From energy balances we derive high-level information

Supply

Transformation

Final consumption

Million tonnes of oil equivalent

SUPPLY AND CONSUMPTION	Coal[1]	Crude oil[2]	Oil products	Natural gas	Nuclear	Hydro	Geotherm./ Solar/ etc.	Biofuels/ Waste	Electricity	Heat	Total
Production	3976.14	4308.45	-	2928.32	661.35	334.94	181.07	1413.06	-	2.10	13805.44
Imports	842.15	2213.37	1193.32	844.32	-	-	-	20.22	61.73	0.01	5175.12
Exports	-863.14	-2159.50	-1242.64	-863.25	-	-	-	-18.97	-59.35	-0.01	-5206.85
Stock changes	-36.66	-12.46	-15.23	-8.81	-	-	-	-1.41	-	-	-74.58
TPES	**3918.49**	**4349.86**	**-64.56**	**2900.58**	**661.35**	**334.94**	**181.07**	**1412.91**	**2.38**	**2.10**	**13699.13**
Transfers	-0.47	-204.86	231.24	-	-	-	-	-	-	-	25.92
Statistical differences	-21.91	0.12	4.51	14.68	-	-	-0.06	0.16	-0.43	-0.45	-3.38
Electricity plants	-2112.98	-40.62	-201.89	-771.07	-653.73	-334.94	-140.89	-95.03	1868.42	-0.72	-2483.47
CHP plants	-164.61	-0.01	-17.07	-307.53	-7.62	-	-2.58	-57.43	179.71	148.31	-228.81
Heat plants	-130.32	-0.68	-13.19	-78.82	-	-	-1.00	-11.45	-0.38	179.67	-56.17
Blast furnaces	-209.84	-	-0.38	-0.16	-	-	-	-0.05	-	-	-210.43
Gas works	-10.92	-	-2.73	5.08	-	-	-	-0.09	-	-	-8.67
Coke/pat.fuel/BKB/PB plants	-76.25	-	-2.80	-0.01	-	-	-	-0.12	-	-	-79.19
Oil refineries	-	-4123.03	4049.80	-	-	-	-	-	-	-	-73.43
Petrochemical plants	-	33.00	-32.62	-	-	-	-	-	-	-	0.38
Liquefaction plants	-9.67	14.03	-	-17.42	-	-	-	-	-	-	-13.07
Other transformation	-0.43	10.07	-0.52	-11.88	-	-	-	-82.90	-	-0.73	-86.40
Energy industry own use	-101.76	-11.42	-205.29	-291.69	-	-	-0.00	-13.94	-174.52	-34.81	-833.44
Losses	-3.89	-8.90	-0.65	-21.77	-	-	-0.01	-0.19	-169.29	-19.58	-224.29
TFC	**1075.42**	**17.57**	**3743.64**	**1419.98**	**-**	**-**	**36.54**	**1151.86**	**1705.90**	**273.77**	**9424.69**
INDUSTRY	**858.49**	**6.80**	**294.67**	**548.54**	**-**	**-**	**0.78**	**193.52**	**725.37**	**123.00**	**2751.17**
Iron and steel	329.62	-	7.71	55.34	-	-	-	3.50	101.39	15.47	513.02
Chemical and petrochemical	99.40	0.06	55.00	121.06	-	-	0.00	1.63	100.81	50.24	428.20
Non-ferrous metals	24.28	-	4.97	16.80	-	-	0.00	0.06	79.63	3.35	129.09
Non-metallic minerals	242.62	0.01	41.50	54.75	-	-	0.00	9.07	51.78	3.12	402.84
Transport equipment	3.63	-	2.06	11.93	-	-	0.00	0.05	23.59	4.04	45.31
Machinery	14.39	-	7.21	25.71	-	-	0.00	0.16	78.57	5.35	131.40
Mining and quarrying	10.28	-	23.01	7.20	-	-	0.00	0.17	29.52	2.31	72.48
Food and tobacco	32.20	0.01	10.92	45.22	-	-	0.00	30.82	40.51	11.01	170.69
Paper pulp and printing	19.03	-	4.47	23.25	-	-	0.20	61.18	33.92	11.90	153.95
Wood and wood products	3.63	-	2.07	2.90	-	-	0.00	7.59	10.20	2.02	28.41
Construction	4.86	-	28.81	6.79	-	-	0.00	0.33	15.02	1.34	57.16
Textile and leather	13.95	0.01	4.02	6.24	-	-	0.00	0.27	28.71	6.96	60.16
Non-specified	60.60	6.71	102.91	171.33	-	-	0.57	78.69	131.73	5.91	558.45
TRANSPORT	**2.86**	**-**	**2426.33**	**97.90**	**-**	**-**	**0.00**	**73.89**	**26.04**	**-**	**2627.02**
World aviation bunkers	-	-	168.48	-	-	-	-	-	-	-	168.48
Domestic aviation	-	-	107.52	-	-	-	-	-	-	-	107.52
Road	-	-	1864.65	38.10	-	-	-	73.12	0.27	-	1976.14
Rail	2.81	-	29.66	-	-	-	-	0.25	19.95	-	52.68
Pipeline transport	-	-	0.35	59.00	-	-	-	-	2.72	-	62.06
World marine bunkers	-	-	194.64	-	-	-	-	0.08	-	-	194.72
Domestic navigation	-	-	53.35	0.11	-	-	-	0.43	-	-	53.88
Non-specified	0.05	-	7.69	0.70	-	-	0.00	0.01	3.09	-	11.54
OTHER	**155.39**	**0.18**	**424.53**	**613.41**	**-**	**-**	**35.76**	**884.45**	**954.49**	**150.78**	**3218.98**
Residential	75.05	-	207.08	419.66	-	-	27.09	847.51	460.41	105.31	2142.13
Comm. and public services	34.97	-	85.50	181.72	-	-	6.48	24.49	376.24	35.25	744.64
Agriculture/forestry	15.13	0.01	105.89	8.68	-	-	1.25	9.83	47.92	3.15	192.87
Fishing	0.00	-	5.84	0.06	-	-	0.07	0.01	0.50	0.02	6.50
Non-specified	30.23	0.16	19.22	3.29	-	-	0.87	2.60	69.42	7.05	132.85
NON-ENERGY USE	**58.68**	**10.60**	**598.11**	**160.13**	**-**	**-**	**-**	**-**	**-**	**-**	**827.52**
in industry/transf./energy	58.12	10.60	566.46	160.13	-	-	-	-	-	-	795.31
of which: chem./petrochem.	*3.17*	*10.54*	*414.10*	*158.57*	-	-	-	-	-	-	*586.38*
in transport	-	-	5.38	-	-	-	-	-	-	-	5.38
in other	0.56	-	26.27	-	-	-	-	-	-	-	26.83
Electricity and Heat Output											
Elects. Generated - TWh	9707.49	143.71	879.39	5154.83	2535.33	3894.71	1005.26	492.85	-	2.24	23815.80

Energy intensity, Self-sufficiency …

Efficiencies of transformation sector

Shares of energy consumption by sector

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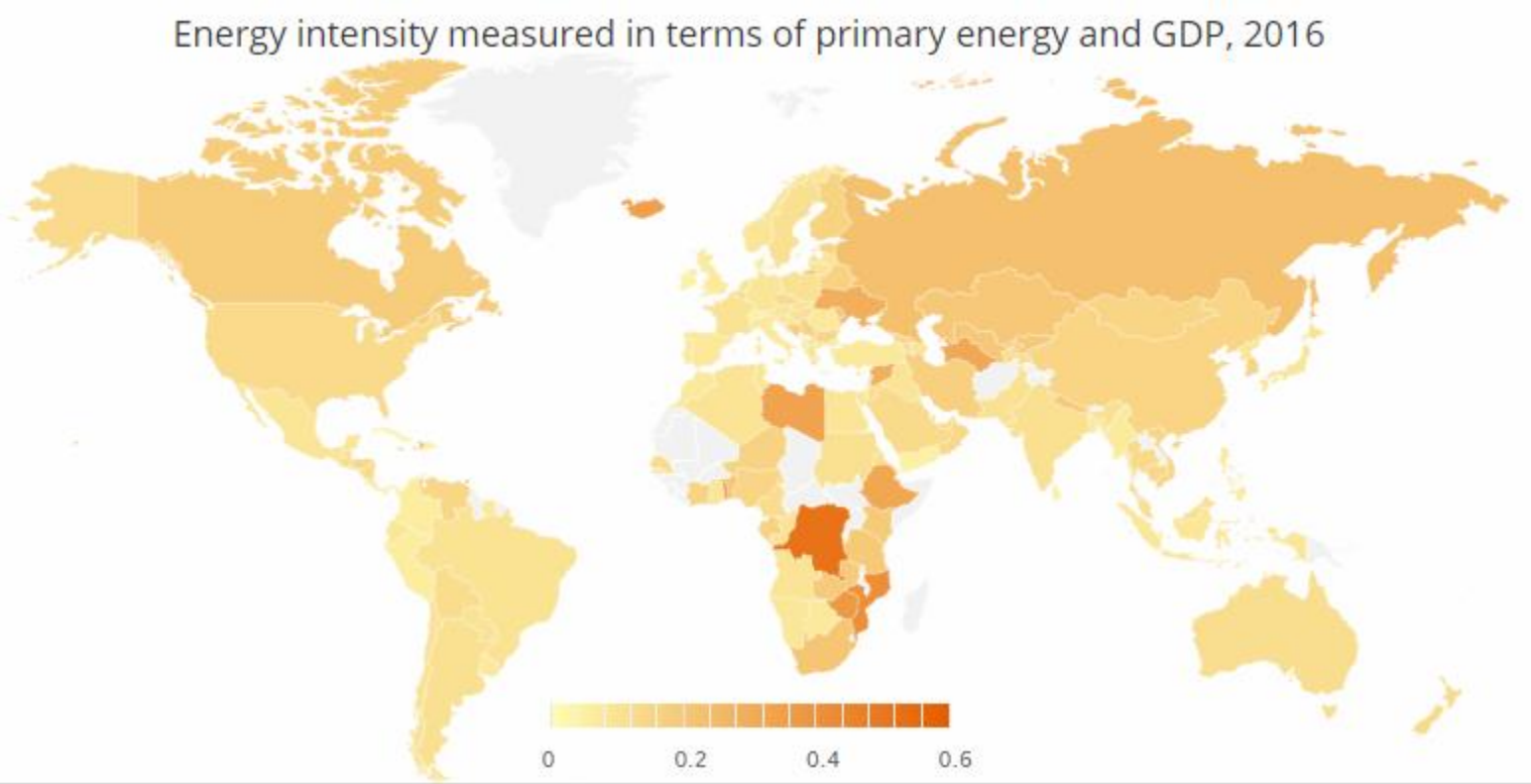
…calculate aggregated energy intensities and other indicators



Coupling energy balances data with various macro-economic variables: Tracking SDG 7.3 al global level

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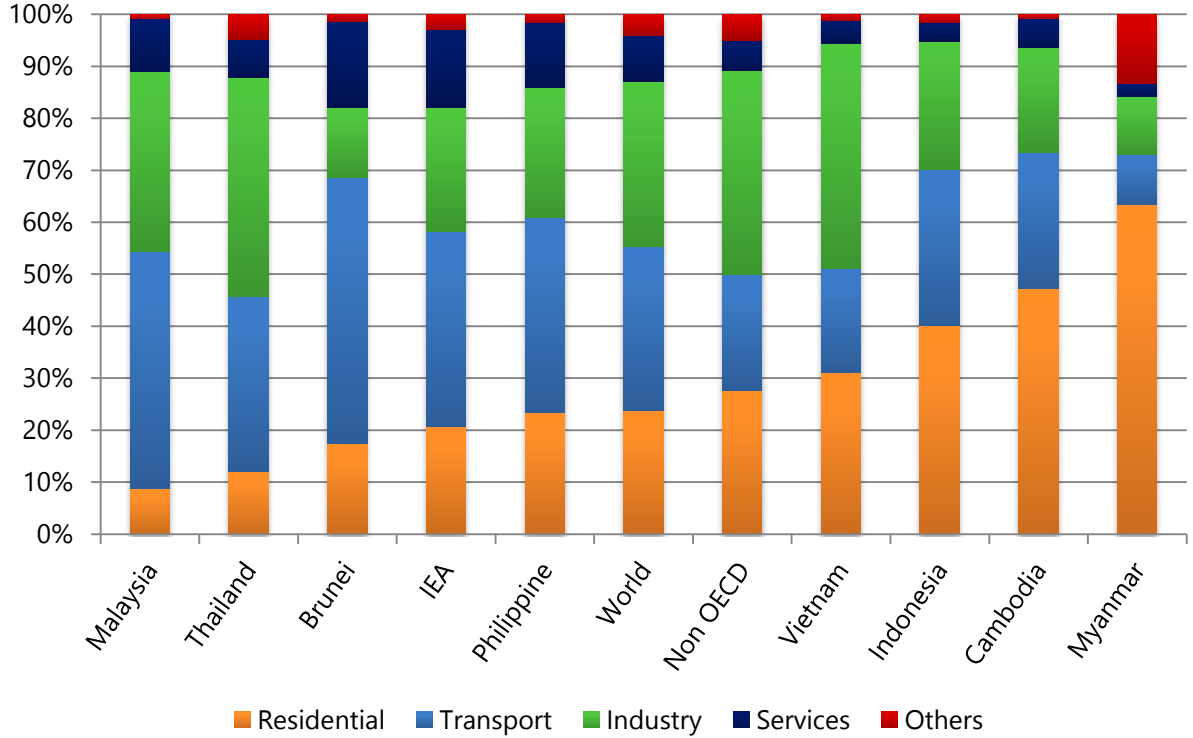
…understand the shares of sectors in total final consumption



** Total Final Consumption excluding Non-energy uses*

Source, IEA World Energy Balances, 2018

Key to understand where energy is used and to define policy priorities

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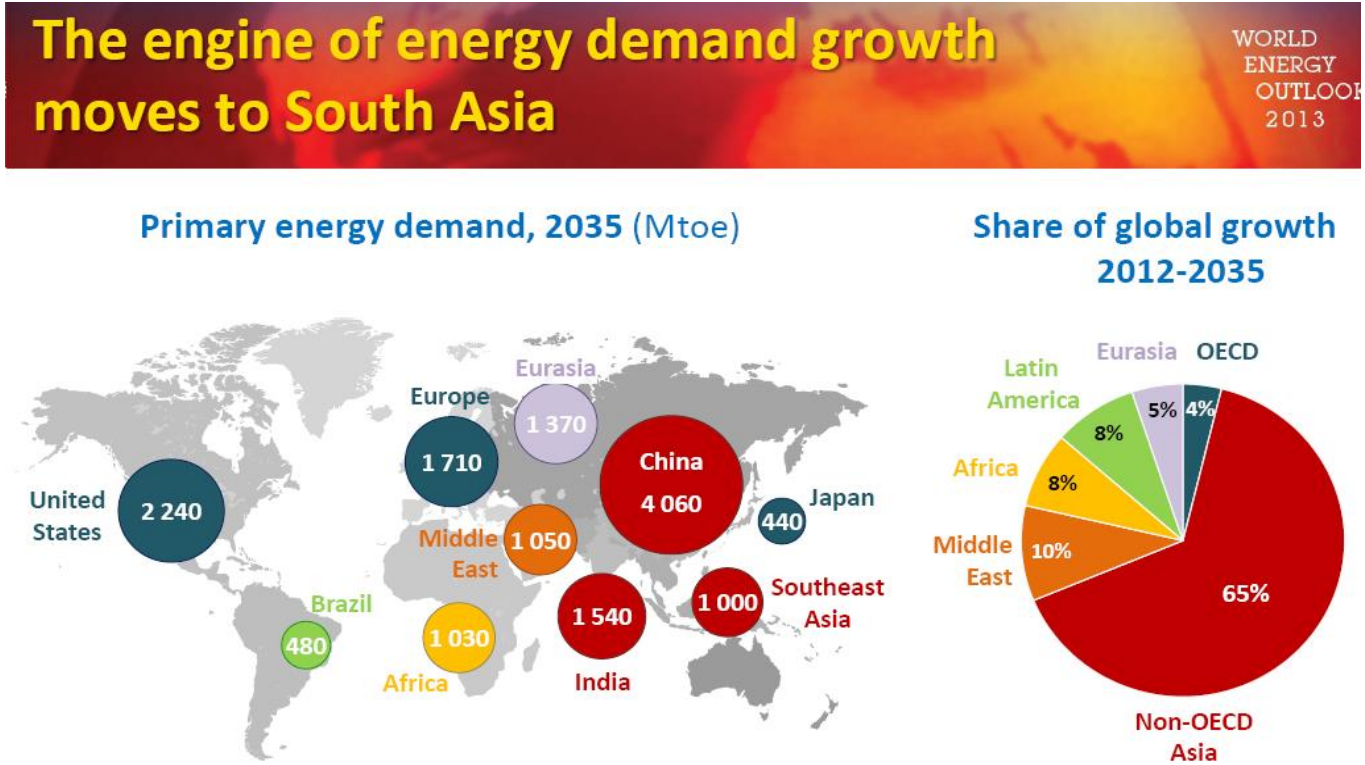
... project energy demand across countries



Source: IEA, World Energy Outlook, 2013

Comparability of energy statistics across countries is key

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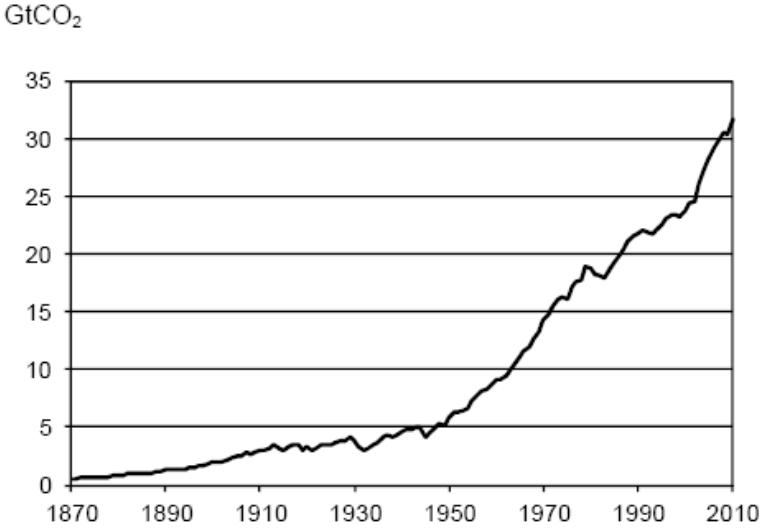
… estimate CO_2 emissions from fuel combustion

Figure 3. Trend in CO_2 emissions from fossil fuel combustion



Source: Carbon Dioxide Information Analysis Center, Oak Ridge National Laboratory, US Department of Energy, Oak Ridge, Tenn., United States.

Source: IEA, World CO_2 Emissions from Fuel Combustion, 2016

Based on energy balances and IPCC methodologies

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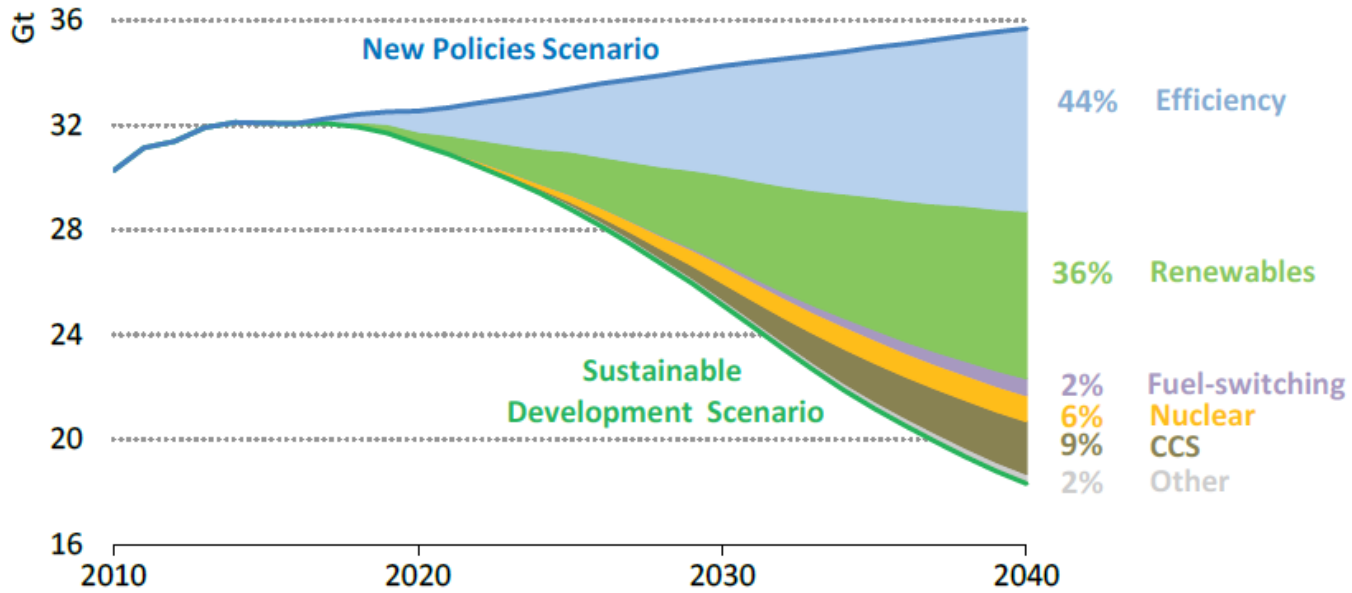
Long-term CO_2 projection for 2 different policy scenarios

Figure 1.8 Global carbon dioxide (CO_2) emissions reductions in the WEO 2017 New Policies and Sustainable Development Scenarios



Source: IEA, World Energy Outlook, 2018

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Example of applications of aggregated indicators

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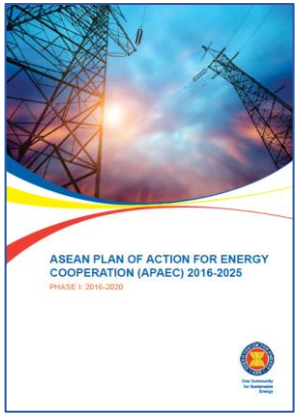
Indicators: key to set targets and tracking efficiency progress



Reduce **EI** by
20% in 2020
30% in 2025
based on
2005 level

Country	Targets on Energy Efficiency
Malaysia	Reducing **Electricity** Consumption by 8% in 2025.
Myanmar	Reducing **Electricity** Consumption by 20% in 2030.
Philippines	• Reducing **TFC** by 1% per year until 2040, equivalent with the reduction of one third of energy demand. • Reducing **Energy Intensity** (TFC/GDP) by 40% in 2040 as compared to 2005 level.
Thailand	Reducing **Energy Intensity** (TFC/GDP) by **30%** in 2036 compared 2010 level.
Vietnam	• Reducing **TFC** by 8% in 2020 as compared to BAU. • Reduce **Energy Intensity** of Energy Intensive Industries by 10% by 2020.

Source: ASEAN Plan of Action for Energy Cooperation (APAEC)

But what indicators?

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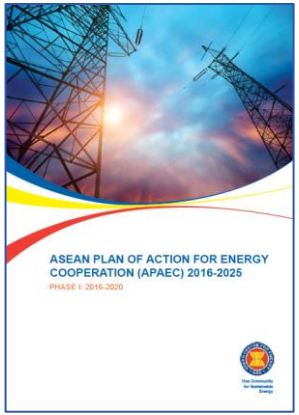
Indicators: key to set targets and tracking efficiency progress



Reduce **EI** by
20% in 2020
30% in 2025
based on
2005 level

Country	Targets on Energy Efficiency
Brunei Darussalam	Reducing **Energy Intensity** (TFC/GDP) to 2035 by 45% based in 2005 level.
Cambodia	• **Reducing TFC** by 20% in 2035 compared to BAU. • Industry: up to 20% in garment factories and 70% in ice factories • Residential: up to 50% • Commercial: 20 to 30% • Rural Electrification Energy Savings: up to 80% • Replacement of biomass use 30-50%
Indonesia	• To achieve 1% **energy intensity** reduction per annum. • Reducing TFC in 2025 by 17% in industry, 20% in Transportation, 15% in household, 15% in commercial building compared to BAU.
Lao PDR	Reducing **TFC** 10% in 2030 compared to BAU.

Source: ASEAN Plan of Action for Energy Cooperation (APAEC)

But what indicators?

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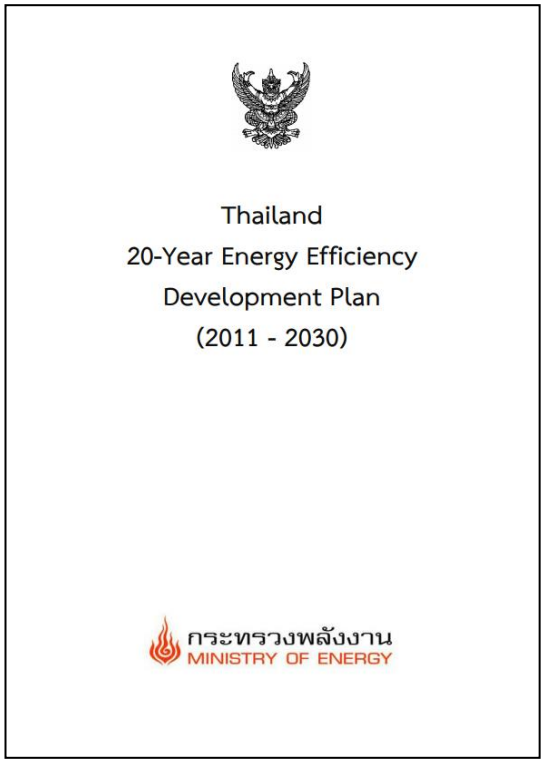
Example of application – Thailand



- **20-year Energy Efficiency Development Plan** (EEDP) is formulated with a target to reduce energy intensity by 25% in 2030 compared with that in 2005.

or

- reduction of final energy consumption by 20% in 2030, or about 30,000 ktoe.

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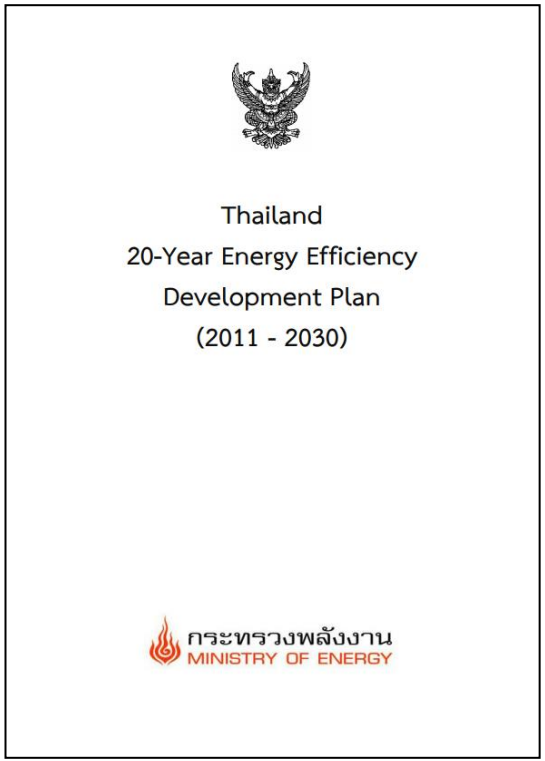
Example of application – Thailand



- The priority sectors are the **transportation** sector (13,400ktoe in 2030) and the **industrial** sector (11,300ktoe in 2030).

- Both mandatory measures, via rules and regulations, and supportive/promotional measures will be introduced.
  - *mandatory measures:* Minimum Energy Performance Standards (MEPS) and energy efficiency labelling
  - *supportive and promotional measures*: Standard Offer Program (SOP), or funding for the amount of energy saving achieved, which can be proven or assessed.

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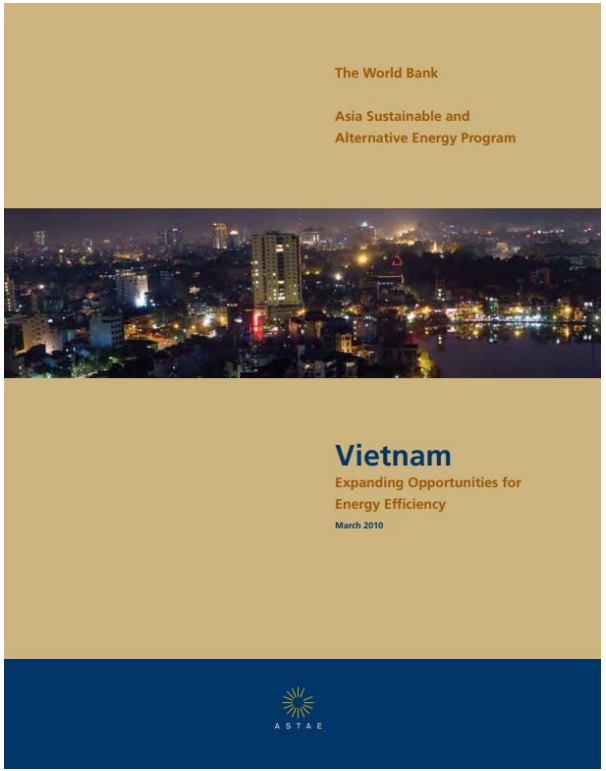
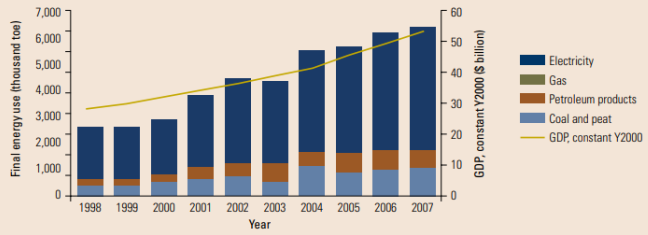
Vietnam



- A **target of 8%–10%** in savings is expected to be achieved by 2020
- The **government** monitors progress in meeting the targets through **estimates of energy intensity**
- It is difficult to assess the degree to which Viet Nam has met the government's energy efficiency targets – however there have been initiatives promoting EE.

Source: ADB (2015) Energy efficiency developments and potential energy savings in the greater mekong subregion

FIGURE 5: VIETNAM RESIDENTIAL FINAL ENERGY USE, 1998–2007



Source: IEA, Energy Statistics of Non-OECD Countries (2009).

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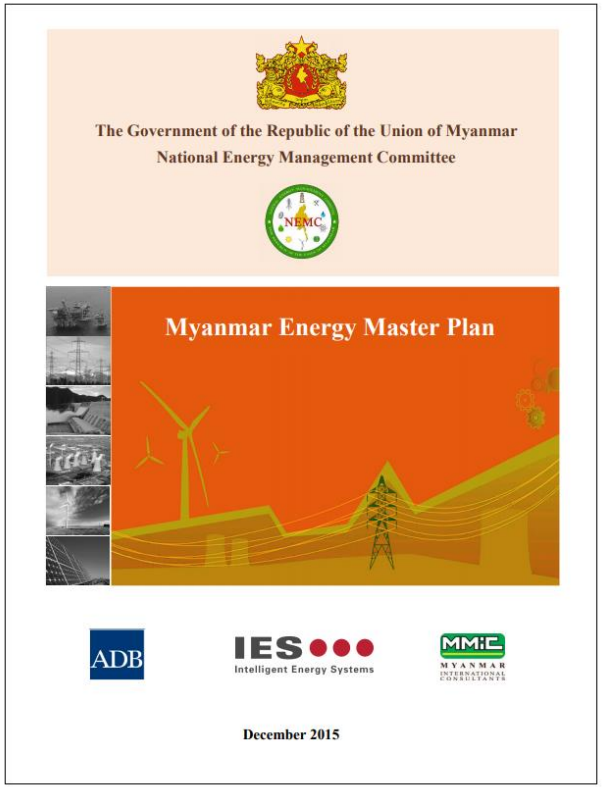
Example of application – Myanmar



- The **Myanmar Energy Master Plan** provides supply strategies through viable energy mix scenarios to secure the stable and reliable energy supply in the long term view.
- Developed to ensure the efficient use of energy resources, to create effective investment environment, to employ innovative technologies and to minimize the environment and social impacts
- Designed to ensure the integration of Global and ASEAN commitments and to provide strategic support to the national Government

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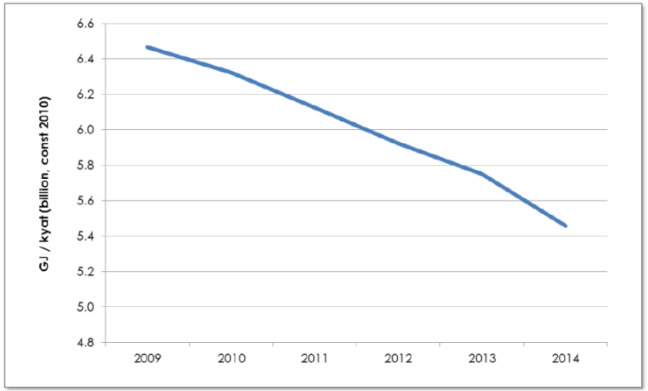
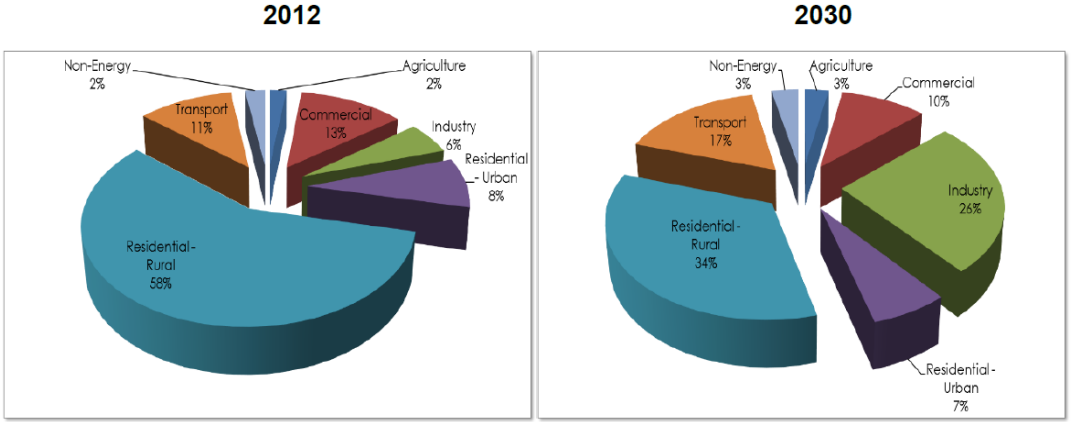
Example of application – Myanmar

Figure E2: Myanmar Energy Intensity (2009 to 2014)



- Example of **aggregated indicators** and high-level data used to characterize the national energy systems – and projections for 2030.

Figure E3: Final Energy Consumption



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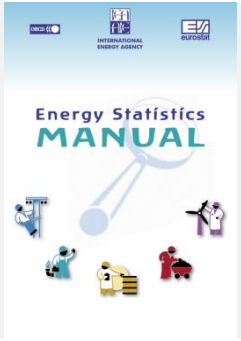
Resources on Energy Statistics

The IEA produced a comprehensive Energy Statistics Manual covering most of our data collection methodologies, consistently with the IRES framework.

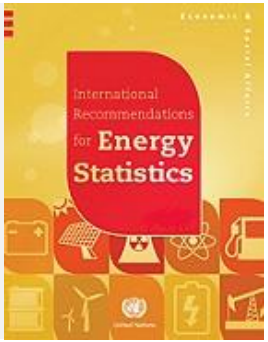
A comprehensive Energy Statistics Manual available in 10 languages.

Click on the manual to download it free of charge!



*Visit the **IEA's Statistics website** to access additional resources, including our questionnaires, glossary and documentation related to our data collection methodologies.*

To learn more about the international framework for energy statistics, please refer to the United Nations' International Recommendations for Energy Statistics (IRES).



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