Data Dissemination and communication

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Beijing, 23rd – 25th May 2018

Overview

- Why dissemination is important
- Charts – the basics of visualization
- Specific issues with communication on:
  - renewables and
  - energy efficiency

Fundamental Principles of Official Statistics

- **Principle 1.** Official statistics provide an indispensable element in the information system of a democratic society, serving the Government, the economy and the public with data about the economic, demographic, social and environmental situation. To this end, official statistics that meet the test of practical utility are to be compiled and made available on an impartial basis by official statistical agencies to honour citizens' entitlement to public information.

- **Principle 2.** To retain trust in official statistics, the statistical agencies need to decide according to strictly professional considerations, including scientific principles and professional ethics, on the methods and procedures for the collection, processing, storage and presentation of statistical data.

- **Principle 3.** To facilitate a correct interpretation of the data, the statistical agencies are to present information according to scientific standards on the sources, methods and procedures of the statistics.

- **Principle 4.** The statistical agencies are entitled to comment on erroneous interpretation and misuse of statistics.

Selected Recommendations from IRES

- The dissemination policy should be user oriented, reaching and serving all user groups, including format, and provide quality information
- While recognizing the importance of statistical confidentiality, countries should implement those rules in a way to promote access to data while ensuring confidentiality
- Countries make their energy data available on a calendar period basis
- For international comparability, countries which use the fiscal year, should undertake efforts to report annual data according to the calendar year
- Countries announce in advance the precise dates when energy statistics will be released

Selected Recommendations from IRES

- Release dates:
  - monthly data, within 2 calendar months
  - quarterly data within 3 calendar months after the end of the reference quarter;
  - annual data within 15 calendar months after the end of the reference year

- Countries are encouraged to harmonize their data with international standards

- It is recommended that countries disseminate their energy statistics internationally as soon as they become available to national users and without any additional restrictions.

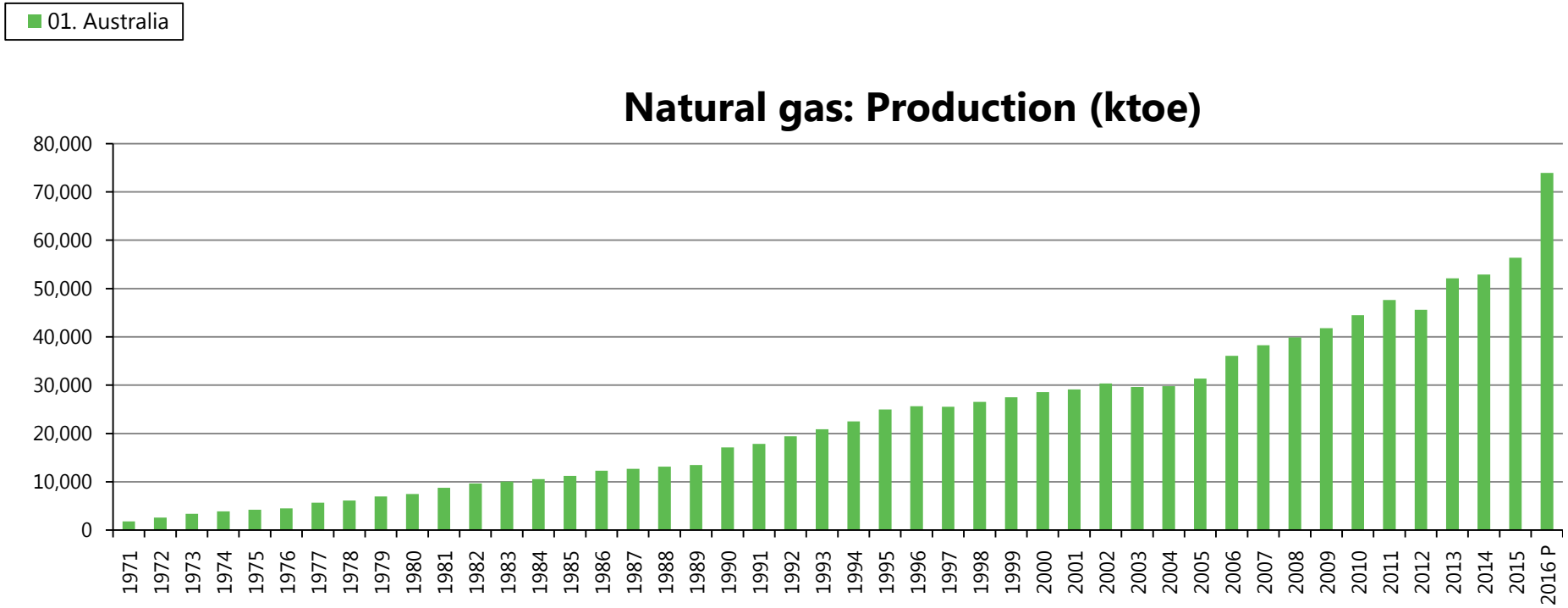
- a glossary of terms should always accompany the disseminated tabulations of energy statistics.

What are good (energy) data?

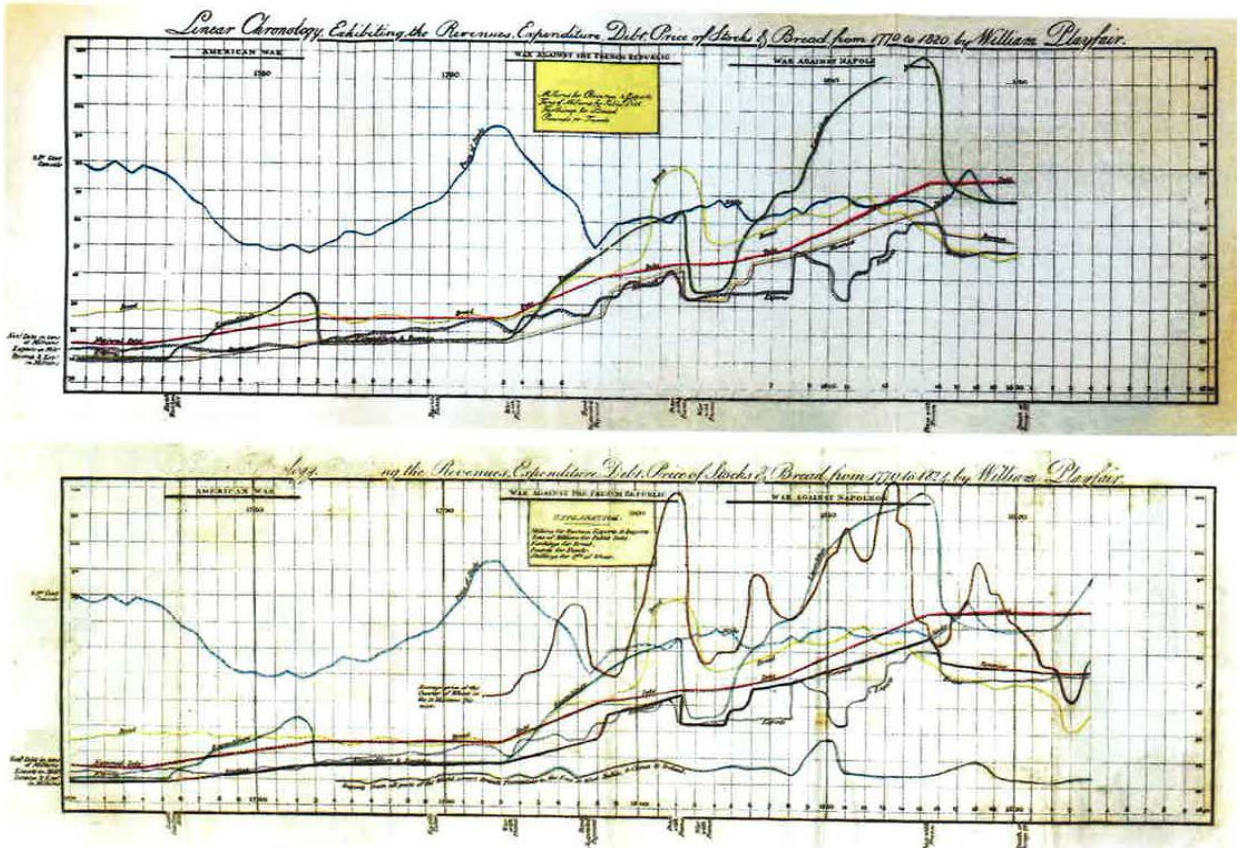
- Relevant
- Reliable
- Timely
- Consistent
- Cost efficient
- Comparable over time
- Comparable between countries, provinces, cities… according to needs
- Used!

A good picture is worth a thousand words

Everyone can understand a good chart!

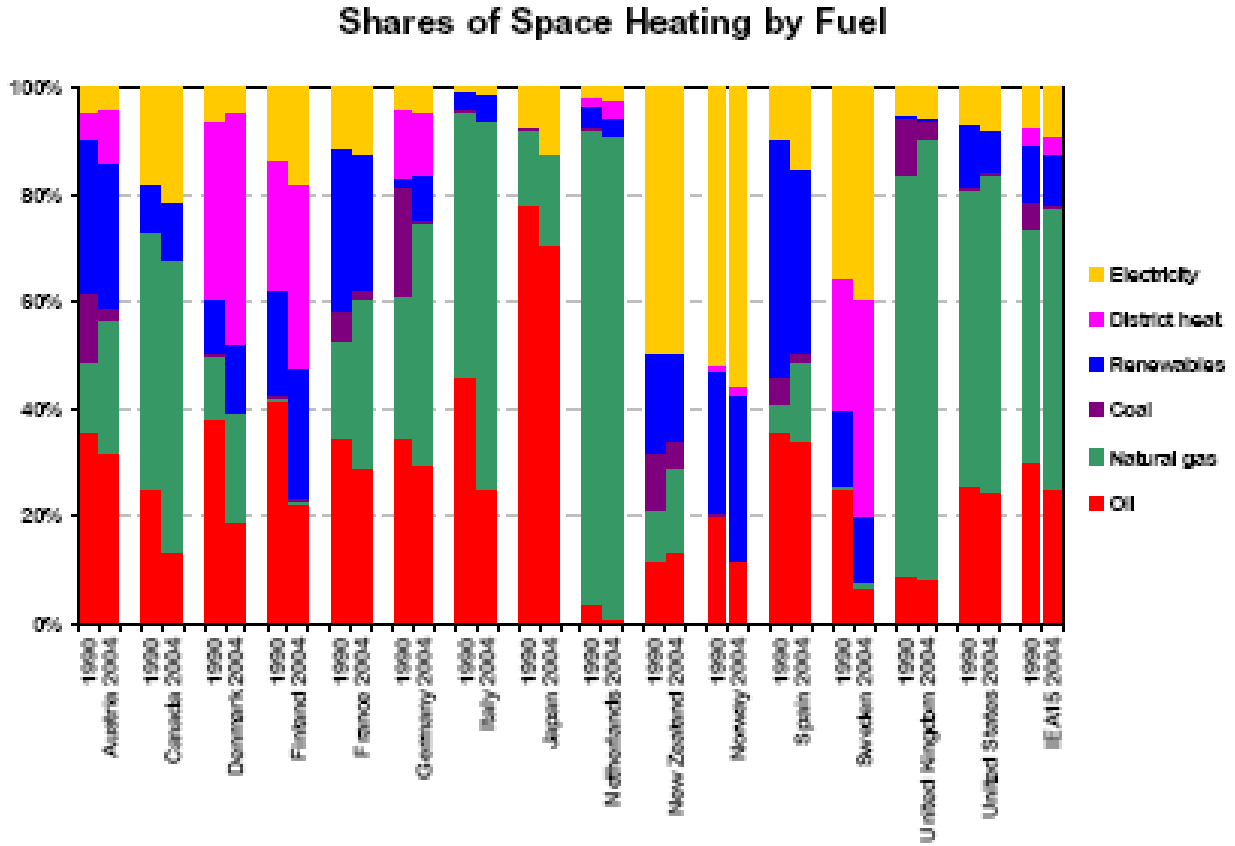


The first stats chart? – William Playfair, 1821

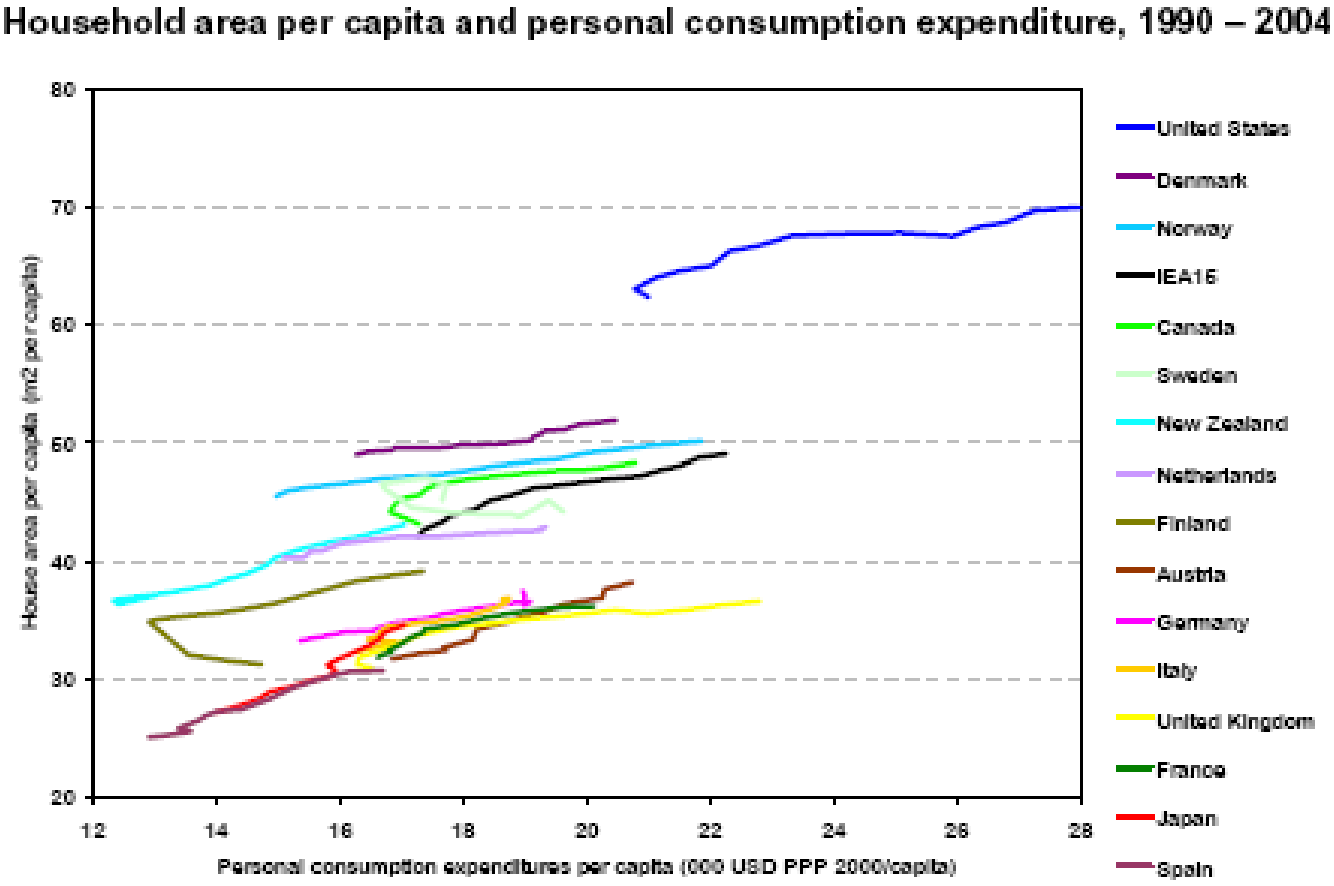


Source: 1821 and 1824 editions Chronology of Public events and Remarkable Occurrences via RSS Significance

Good chart?

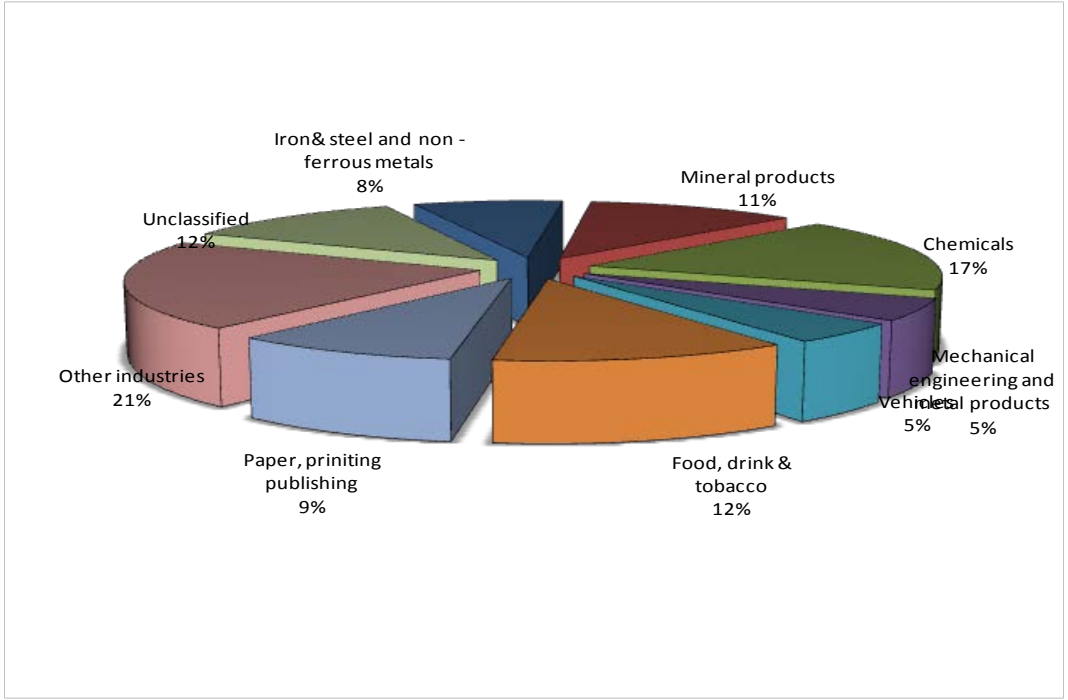


Good chart?



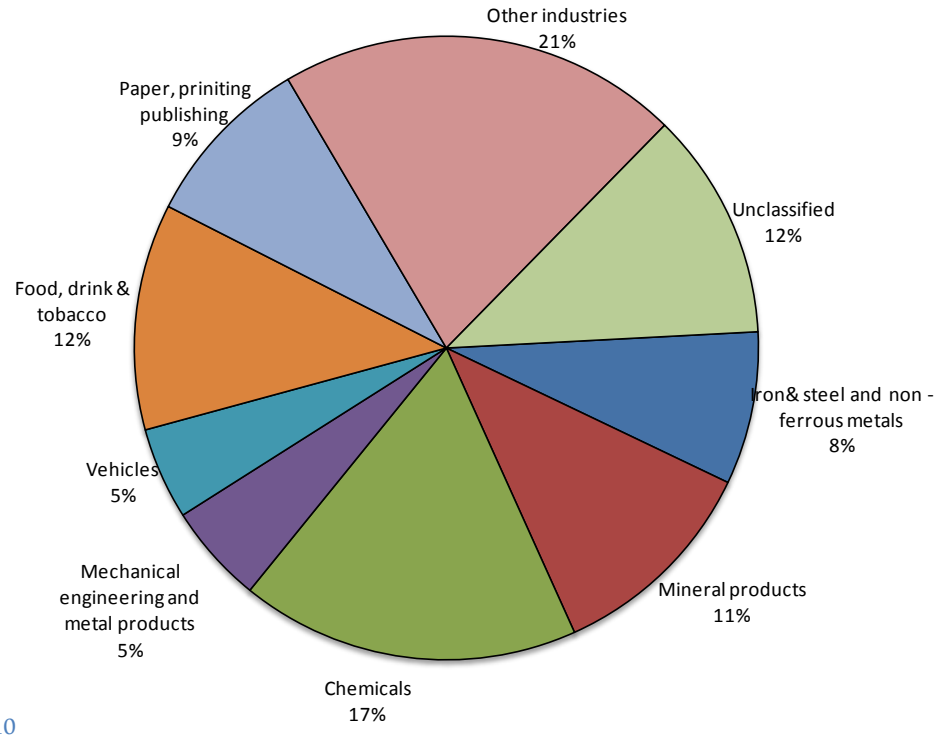
Good Chart?

UK Energy consumption by main industrial groups 2009



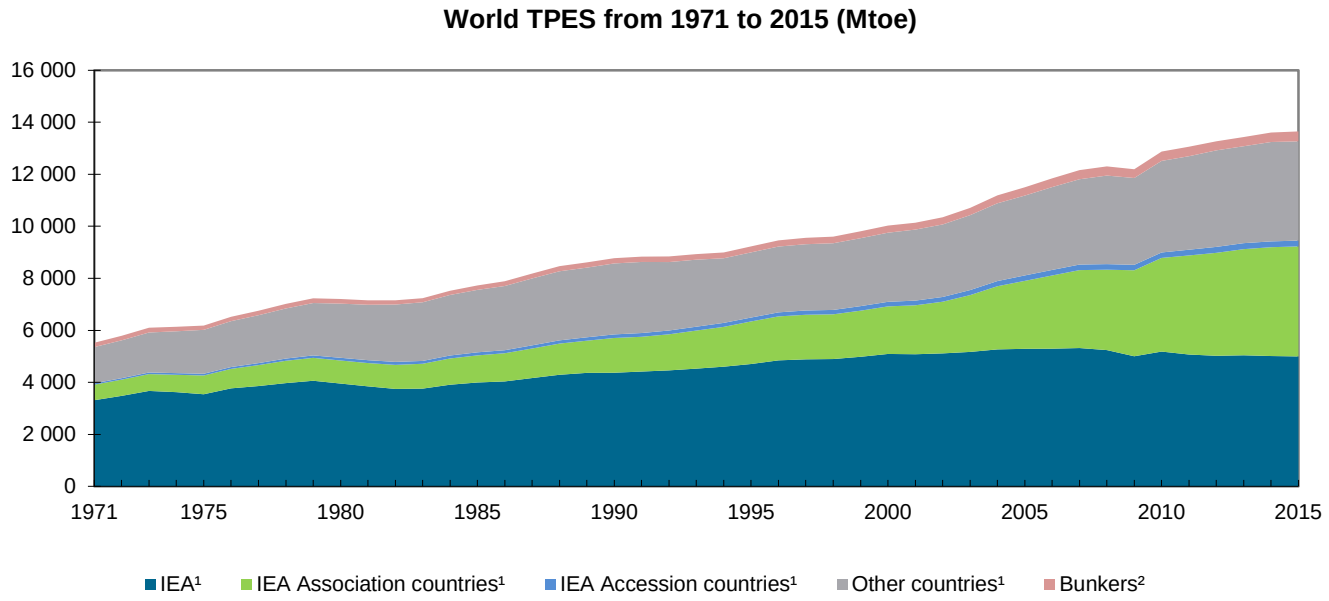
Clearer Chart?

UK Energy Consumption by main industrial groups 2009



Source: Energy Consumption in the UK 2010

The evolution of energy demand, 1971-2016

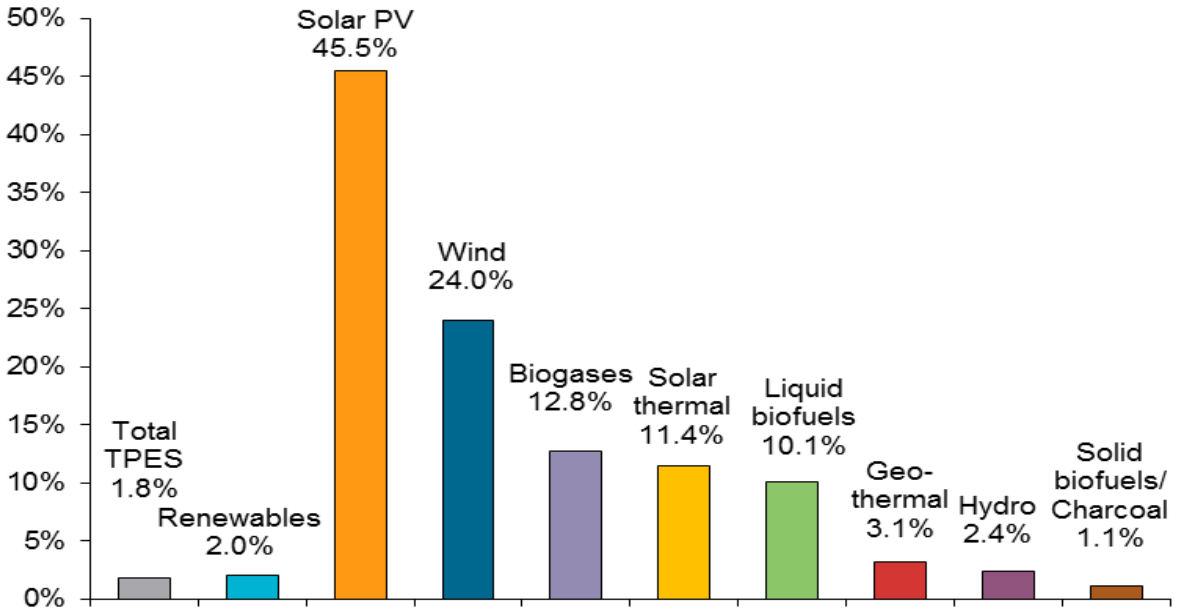


IEA Association countries have seen over a 6 fold increase in energy demand in 40 years

Specific issues with communication on: renewables

Rates of change and importance

Annual growth rates of world renewables supply from 1990 to 2015



Source: IEA, Renewables information, 2017

Using and understanding the energy balance

Supply

Transformation

Final consumption

World

Million tonnes of oil equivalent

SUPPLY AND CONSUMPTION	Coal & peat	Crude oil	Oil products	Natural Gas	Nuclear	Hydro	Geotherm. solar etc.	Biofuels & waste	Electricity	Heat	Total
Production	3596.04	4069.38	-	2719.10	718.96	295.62	112.02	1277.08	-	1.04	12789.25
Imports	640.82	2295.06	1053.71	817.02	-	-	-	10.78	51.38	0.00	4868.77
Exports	-681.28	-2211.55	-1111.80	-826.35	-	-	-	-9.29	-50.74	-0.01	-4891.01
Stock changes	-79.80	6.49	6.16	17.84	-	-	-	-0.54	-	-	-49.86
TPES	**3475.77**	**4159.37**	**-51.93**	**2727.61**	**718.96**	**295.62**	**112.02**	**1278.03**	**0.64**	**1.04**	**12717.16**
Transfers	0.00	-156.64	179.33	-	-	-	-	-	-	-	22.69
Statistical differences	-49.50	11.30	-27.05	-1.68	-	-	0.00	-0.40	1.43	-1.24	-67.14
Electricity plants	-1974.84	-34.63	-201.57	-705.47	-715.67	-295.62	-88.61	-63.40	1671.71	-0.37	-2408.47
CHP plants	-161.19	-0.01	-22.50	-304.76	-3.13	-	-1.06	-35.21	171.56	150.84	-205.45
Heat plants	-103.61	-0.81	-12.92	-90.14	-0.15	-	-0.22	-10.42	-0.34	189.23	-29.38
Blast furnaces	-168.50	-	-0.79	-0.11	-	-	-	-	-	-	-169.40
Gas works	-8.80	-	-3.53	2.81	-	-	-	-0.02	-	-	-9.54
Coke/pat.fuel/BKB plants	-51.08	-	-2.40	-0.00	-	-	-	-0.01	-	-	-53.49
Oil refineries	-	-3964.42	3921.30	-0.80	-	-	-	-	-	-	-43.92
Petrochemical plants	-	30.51	-31.35	-	-	-	-	-	-	-	-0.84
Liquefaction plants	-16.20	7.85	-	-7.10	-	-	-	-	-	-	-15.45
Other transformation	0.01	0.13	-0.17	-2.22	-	-	-	-53.14	-	-0.39	-55.77
Energy industry own use	-86.22	-10.10	-210.37	-275.36	-	-	-0.13	-13.27	-156.15	-40.51	-792.10
Losses	-2.70	-8.23	-0.58	-24.63	-	-	-0.14	-0.15	-153.17	-22.67	-212.27
TFC	**853.14**	**34.34**	**3535.48**	**1318.16**	**-**	**-**	**21.87**	**1102.01**	**1535.69**	**275.93**	**8676.63**
INDUSTRY	**677.86**	**12.51**	**310.02**	**463.87**	**-**	**-**	**0.46**	**195.83**	**636.96**	**125.43**	**2422.94**
Iron and steel	248.74	0.03	11.36	51.71	-	-	0.01	4.16	87.06	17.48	420.54
Chemical and petrochemical	58.37	2.18	47.73	99.18	-	-	0.00	2.30	95.52	45.11	350.39
Non-ferrous metals	14.47	0.00	6.84	16.16	-	-	0.00	0.11	68.40	2.97	108.96
Non-metallic minerals	176.70	0.07	36.98	50.61	-	-	0.00	7.08	40.97	3.01	315.43
Transport equipment	4.67	0.01	3.19	11.35	-	-	0.00	0.01	18.39	4.22	41.83
Machinery	14.34	0.05	10.04	23.24	-	-	0.00	0.17	67.77	6.78	122.39
Mining and quarrying	6.93	-	16.96	15.93	-	-	-	0.06	23.72	2.52	66.11
Food and tobacco	22.70	0.12	26.68	37.22	-	-	0.00	29.92	34.93	11.20	162.78
Paper pulp and printing	21.66	0.01	8.08	26.06	-	-	0.15	53.10	40.87	10.88	160.79
Wood and wood products	2.71	0.01	4.78	3.30	-	-	0.00	11.58	7.89	5.87	36.14
Construction	6.12	0.05	26.92	6.38	-	-	0.00	0.16	8.00	1.78	49.41
Textile and leather	11.18	0.06	5.59	7.14	-	-	0.00	0.23	23.22	7.01	54.44
Non-specified	89.28	9.93	104.85	115.59	-	-	0.30	86.95	120.21	6.60	533.72
TRANSPORT	**3.36**	**0.04**	**2195.89**	**89.06**	**-**	**-**	**-**	**57.56**	**23.91**	**-**	**2369.81**
World aviation bunkers	-	-	153.65	-	-	-	-	-	-	-	153.65
Domestic aviation	-	-	96.42	-	-	-	-	-	-	-	96.42
Road	-	0.03	1666.60	28.52	-	-	-	57.53	0.00	-	1752.68
Rail	3.22	-	28.37	-	-	-	-	0.02	18.04	-	49.65
Pipeline transport	-	-	0.43	59.99	-	-	-	-	2.90	-	63.31
World marine bunkers	-	-	200.72	-	-	-	-	-	-	-	200.72
Domestic navigation	0.12	-	43.98	0.05	-	-	-	0.01	-	-	44.16
Non-specified	0.01	0.00	5.73	0.49	-	-	-	0.00	2.97	-	9.21
OTHER	**135.96**	**6.75**	**435.64**	**612.83**	**-**	**-**	**21.41**	**848.62**	**874.82**	**150.50**	**3086.53**
Residential	78.65	0.55	210.54	421.08	-	-	9.42	820.70	426.24	105.72	2072.88
Comm. and publ. services	22.94	0.11	102.97	179.56	-	-	2.01	17.76	358.61	31.52	715.47
Agriculture/forestry	10.90	0.09	101.47	6.07	-	-	0.67	7.43	38.98	3.76	169.37
Fishing	0.01	-	6.23	0.02	-	-	0.06	0.00	0.39	0.05	6.77
Non-specified	23.47	6.00	14.43	6.10	-	-	9.25	2.73	50.60	9.45	122.04
NON-ENERGY USE	**35.97**	**15.05**	**593.93**	**152.40**	**-**	**-**	**-**	**-**	**-**	**-**	**797.35**
in industry/transf./energy	35.63	15.05	569.93	152.40	-	-	-	-	-	-	773.01
of which: feedstocks	*2.44*	*14.49*	*362.42*	*149.75*	-	-	-	-	-	-	*529.10*
in transport	-	-	6.63	0.00	-	-	-	-	-	-	6.63
in other	0.33	-	17.38	-	-	-	-	-	-	-	17.71
Electricity and Heat Output											
Electr. Generated - GWh	**8697512**	**27881**	**961377**	**4768076**	**2756289**	**3437483**	**449596**	**331679**	**-**	**1573**	**21431466**
Electricity plants	*8091865*	*27864*	*891872*	*3582493*	*2746188*	*3437483*	*446008*	*211248*	*-*	*827*	*19435848*
CHP plants	*605647*	*17*	*69505*	*1185583*	*10101*	*-*	*3588*	*120431*	*-*	*746*	*1995618*
Heat Generated - TJ	**5706864**	**26036**	**751312**	**6597541**	**27357**	**-**	**346248**	**761894**	**7495**	**60077**	**14284824**
CHP plants	*2058353*	*216*	*299046*	*3489955*	*20944*	*-*	*10389*	*434740*	*208*	*24958*	*6338809*
Heat plants	*3648511*	*25820*	*452266*	*3107586*	*6413*	*-*	*335859*	*327154*	*7287*	*35119*	*7946015*

TPES

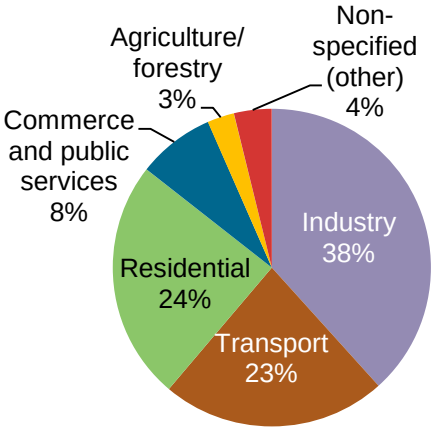
TFC

Electricity generation by fuel

Specific issues with communication on: Energy Efficiency

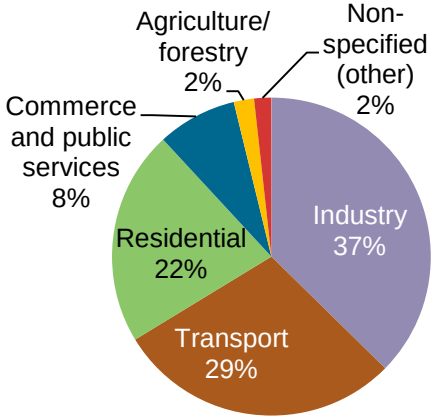
World total final consumption by sector

1971



4 244 Mtoe

2015

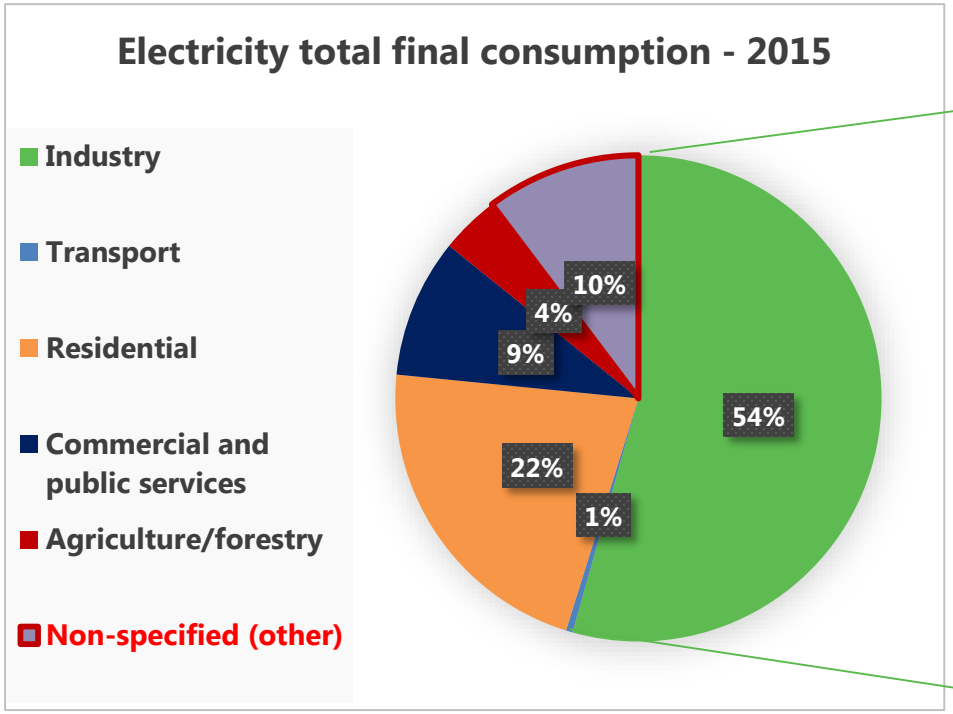


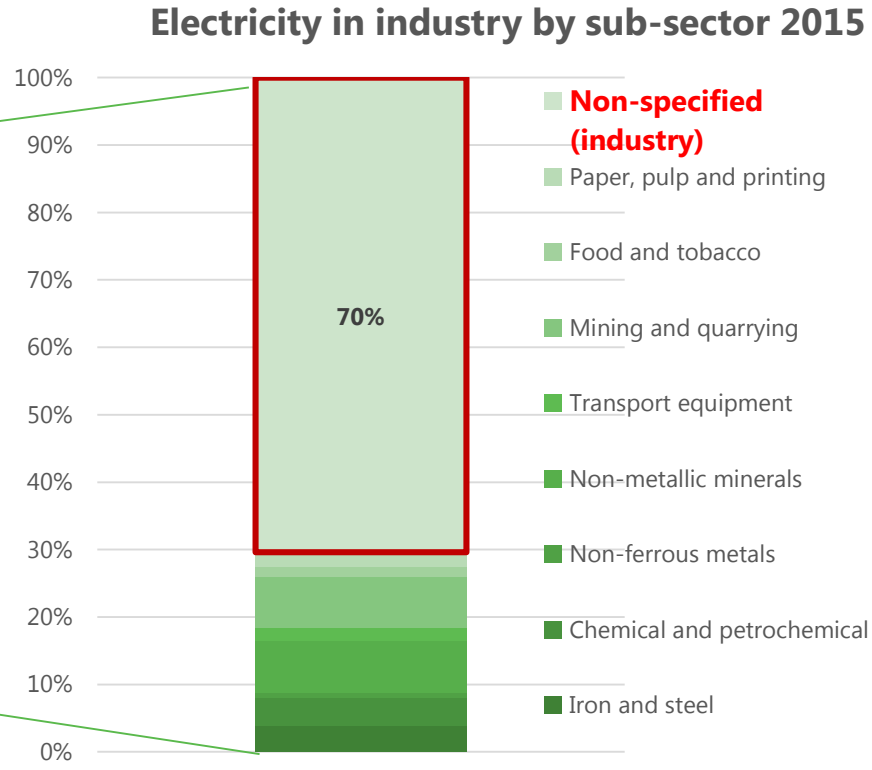
9 384 Mtoe

Source: IEA, World Energy Balances, 2017

Transport's importance for energy consumption is growing

Who are the final users of electricity?





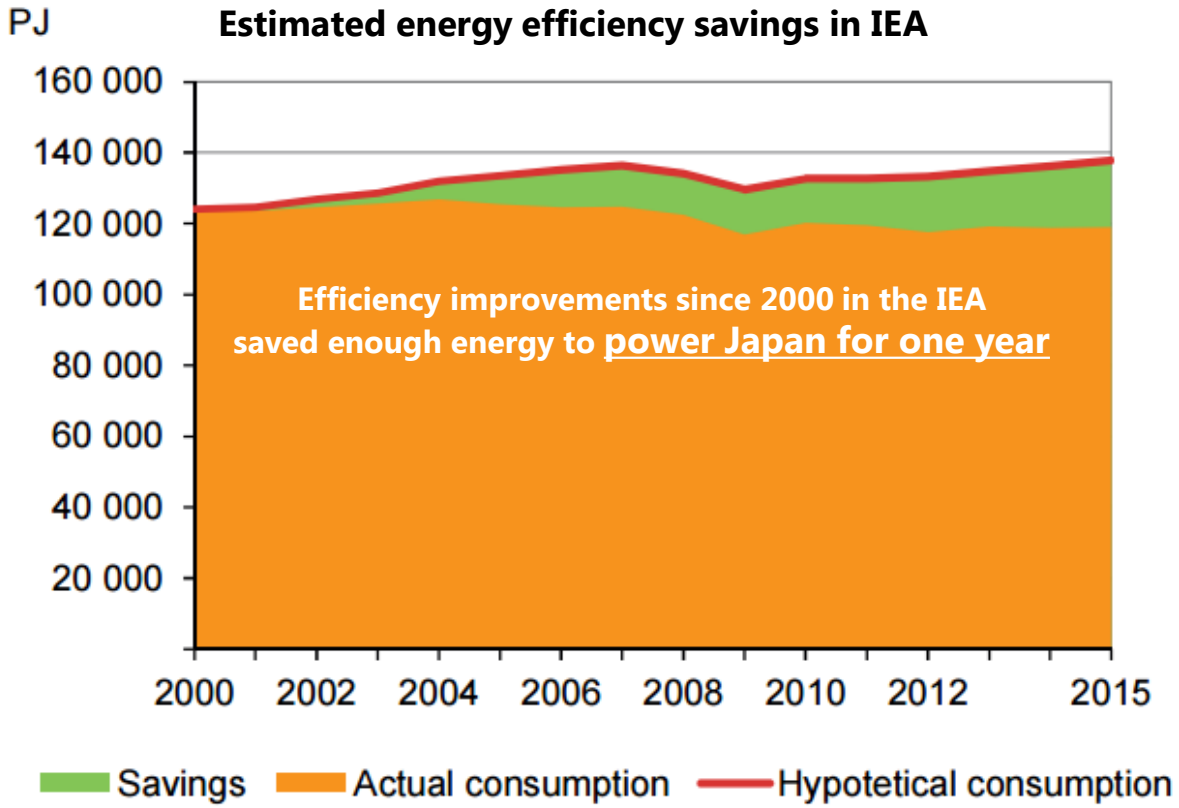
Source: IEA World Energy Balances, 2017

In energy balance, almost half electricity final consumption is " non-specified"

How to describe what doesn't happen?

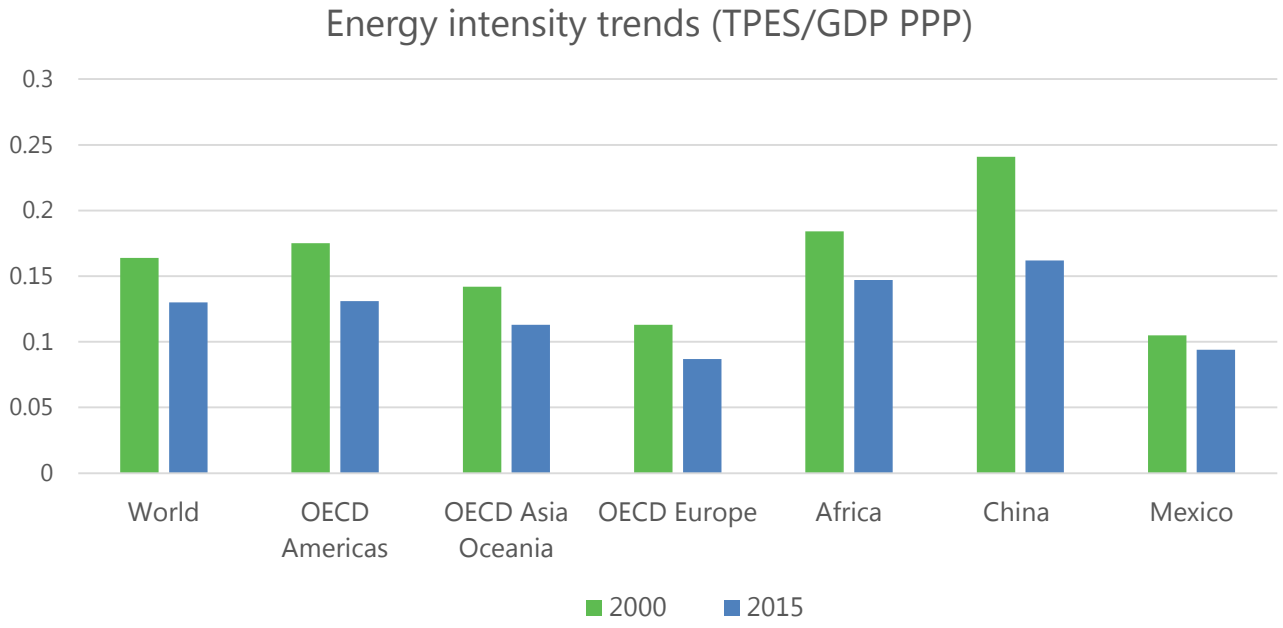
- Energy efficiency can be considered as using less energy for the same or higher output
- So measuring and presenting something that doesn't happen
- Eg replacing a 60watt lightbulb with a 10watt low energy lightbulb means around 100 kWh of electricity are not used.
- But not all energy savings are efficiency (eg the closure of a factory) and energy growth can include more use of energy efficiently
- Often need to look at a counterfactual – what would have happened

And for example analysing efficiency savings



Source: IEA *Energy Efficiency Market Report 2016;*
Energy efficiency indicators Highlights, 2016

What drives energy intensity trends?



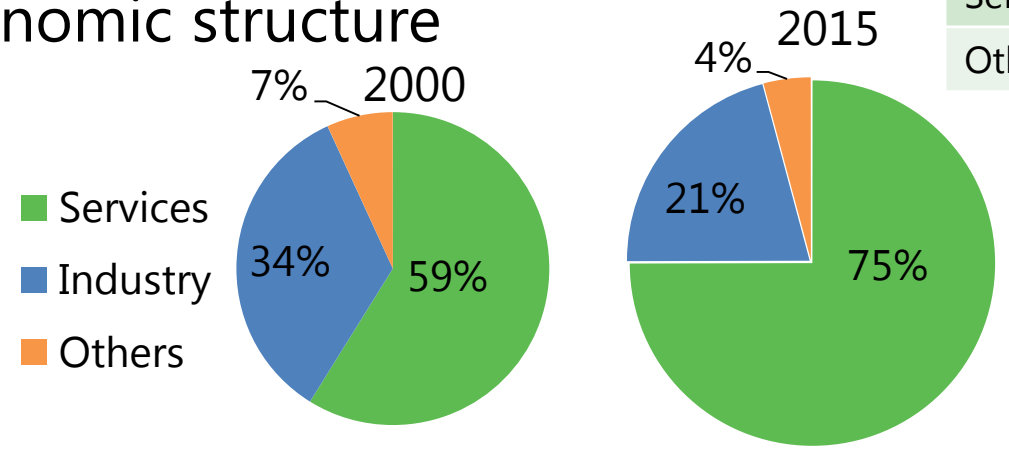
Source: IEA World energy balances, 2017

Efficiency progress and also other factors (mainly structural changes)

What other factors affect energy intensity?

- Size of the country
- Climate
- Economic structure

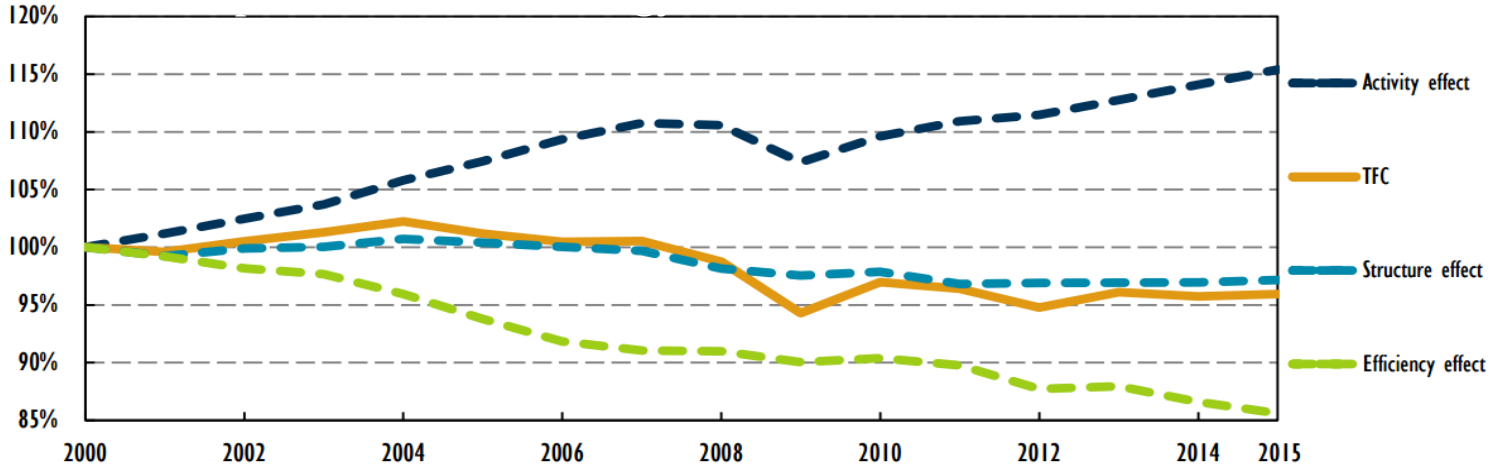
Energy intensity MJ/US$PPP	2000	2015
Total	**3.2**	**3.0**
Industry	7.2	10.4
Services	1.0	1.0
Others	2.1	2.9



A decrease in energy intensity is possible without any energy efficiency improvement

Understanding energy consumption drivers

Drivers of final energy consumption in IEA



Note: Analysis based on the *IEA Energy Efficiency Indicators* database (2016 edition). TFC in this analysis covers the following sectors: residential, industry and services, passenger and freight transport. It does not include agriculture, non-energy, and energy supply sectors. The energy consumption decomposed in this analysis represents 90% of TFC in IEA countries in 2015.

Energy intensity of the economy: TPES/GDP

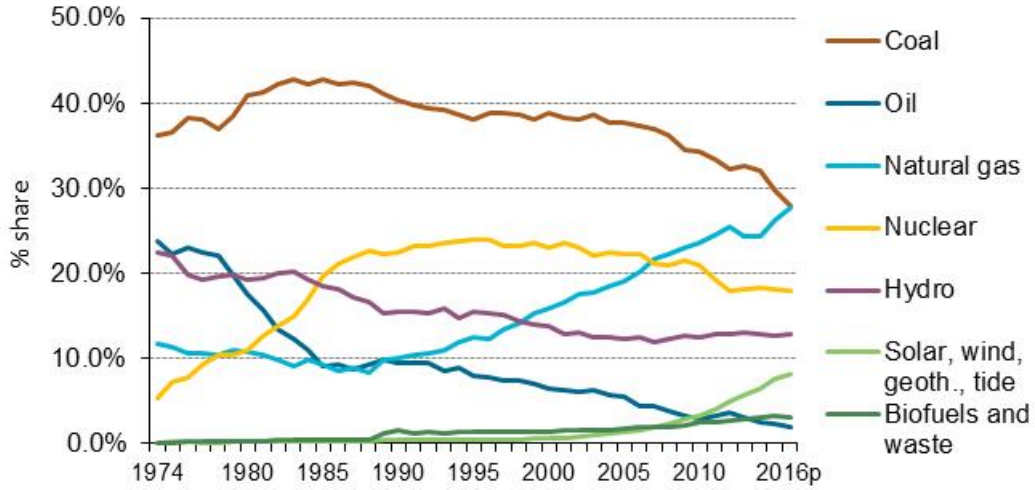
Source: IEA (2016), *Energy Efficiency Market Report*, OECD/IEA, Paris.

Social media

https://twitter.com/iea

Promotion of work through Twitter

OECD gross electricity production



OECD generation changing: gas on par with coal for first time, rise of non-hydro renewables

Outputs

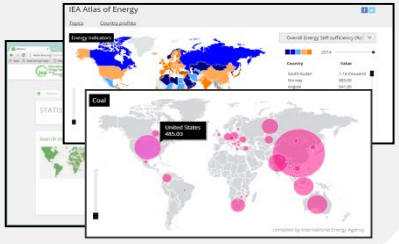
Annual and quarterly Publications

Fuel Information books, World energy statistics & balances, CO_2 emissions...

Free overviews from books saw15,000 downloads in first 3 weeks

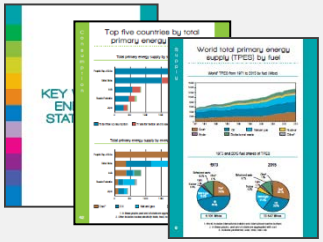
IEA website

Atlas, Sankey flows...



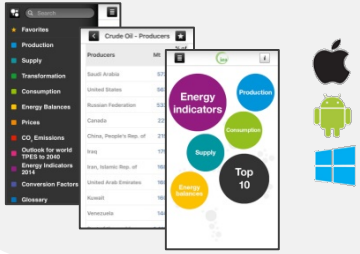
Booklet

Key World Energy Statistics



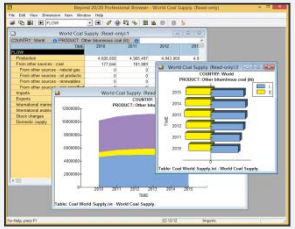
Mobile App

Android, apple and windows



Electronic data files

Data online service



Dissemination of Statistics

- ✓ Keep it simple but factual
- ✓ Who is audience, what level of numerical skill
- ✓ Charts must make point easier to understand – they are the hook
- ✓ Should raise a “why” question