



Enhancing energy statistics to track progress on sustainable energy

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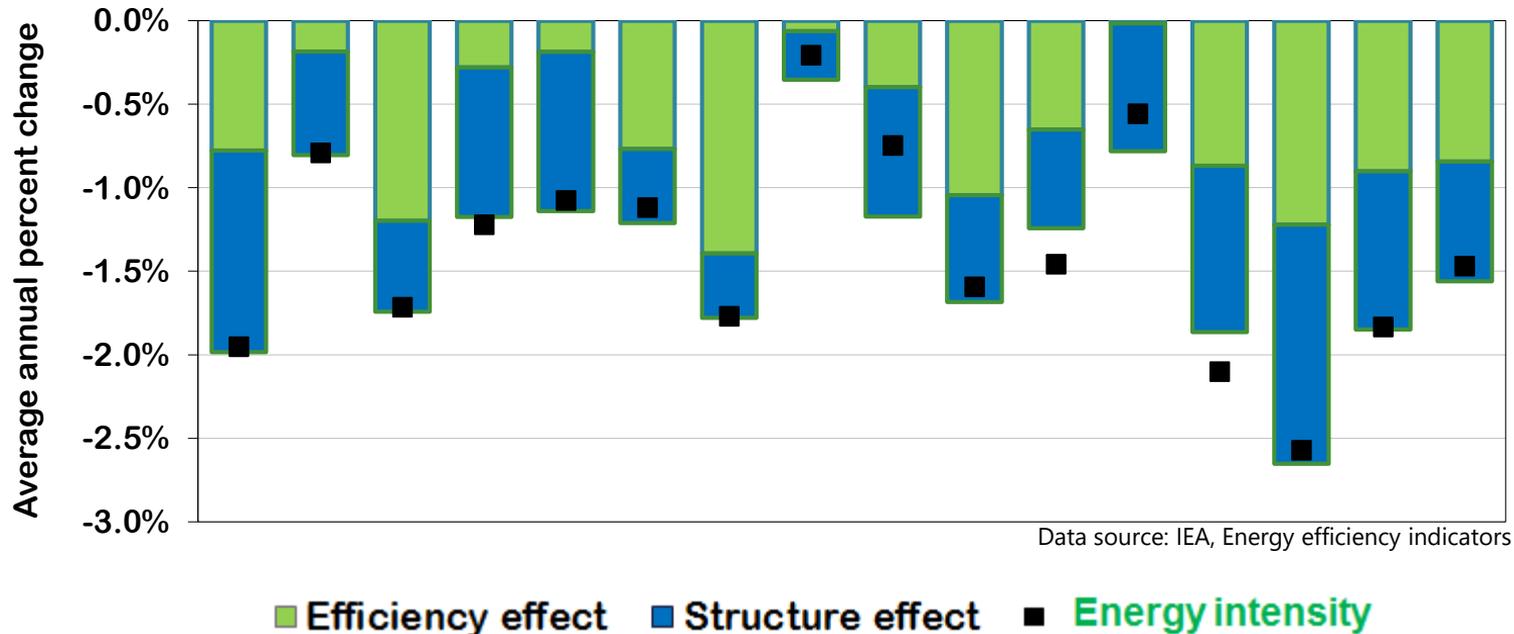
UNECE - 26th Session of the Committee on Sustainable Energy - 27 September 2017

- SDG7 recognizes central role of energy within sustainable development
- Emphasis on tracking enhance policy/statistics communities cooperation - raising profile of energy statistics
- Large effort to develop a coherent international tracking framework, optimising use for policy tracking of available data (e.g. energy balances)

Current SDG7 indicator set: good initial picture of national energy trends

However, high-level indicators may not tell us the full story

For example, can energy intensity really track energy efficiency progress?



Need more disaggregated data to understand driving factors

Question 1: How to improve sustainable energy tracking?



- Complement/refine current indicator set to track goal more accurately, eg:
 - Access: refine “universal access” definition to capture reliability/affordability concepts;
 - Renewables: distinguish traditional from modern; track electricity/heat/transport;
 - Efficiency: track end-use intensities at sectoral level (buildings; transport; industry)
- Expand indicator set to understand the broader picture to reflect national complexities (e.g. import dependency; climate mitigation; pollution; etc)
- Disaggregate at sub-national level; by categories to look at interdependencies; etc

Any new data /indicators: based on national policy priorities

Question 2: How to enhance the underlying statistical capacity?

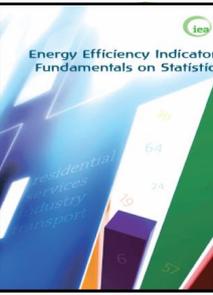
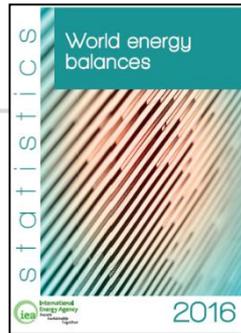


- National: strengthen statistics capacity / embed energy data in statistical plans (resources; legal framework; institutional arrangements to share data/coordinate collection across areas; etc). Consolidate energy balance first.
- International: optimize cooperation (sharing good practices across countries; harmonizing methodologies/definitions; minimizing data collection burden; etc).

A key role of international organisations in support of countries' work

IEA contributing work to sustainable energy tracking

- Consolidated work on global data collection and energy statistics methodologies



- Soon releasing analysis on: access, renewables and efficiency

WEO 2017 Energy Access Outlook – key areas of focus

- IEA has a long history in this area; including connecting across agendas (renewables, digitalisation, capacity building etc.)
- Energy Access Outlook will:
 - Include updated country-by-country energy access estimates and outlook
 - Present a strategy on how to achieve modern energy access (by region, technology, fuel, levels of investment etc.)
 - Examine how energy development can unleash productivity serving to accelerate economic growth
 - Analyse the intersection between energy access and other issues such as health, the environment & gender
- Launch of the report: **19 October 2017**

Energy Efficiency Market Report 2016

Often called the "first fuel" of the global economy, energy efficiency is one of the most important steps that any government can take to reduce greenhouse gas emissions.

To check on the progress made on this front, the IEA expands the scope of analysis by examining the core indicators of energy efficiency in buildings, industry and transport.

Medium-Term Renewable Energy Market Report 2016
Market Analysis and Forecasts to 2021

ISBN PRINT 978-92-64-26496-0 / PDF 978-92-64-26497-7

Subject: Climate Change ; Electricity ; Energy Projections ; Renewable Energy ;

The rapid spread of renewable energy is a bright spot in the global energy landscape. Despite lower fossil fuel prices, renewable power expansion rate in 2015, thanks to supportive government policies and shared leadership, Renewables accounted for more than half of the world's additional electricity generation. Yet, even with this remarkable progress, there are questions about whether the world is on track to reach targets set by the Paris Agreement.

- Statistics and policy capacity building focus on this region: EU4Energy

International Energy Agency

ABOUT NEWSROOM PUBLICATIONS TOPICS COUNTRIES STATISTICS

Home » Newsroom » News » 2017 » June

Improving energy data and policy as the key focus of EU4Energy programme

26 June 2017



www.iea.org



Additional reference material

The IEA work on energy efficiency indicators data

Sound energy balances are the basis for high-level indicators



Supply

Transformation

Final consumption

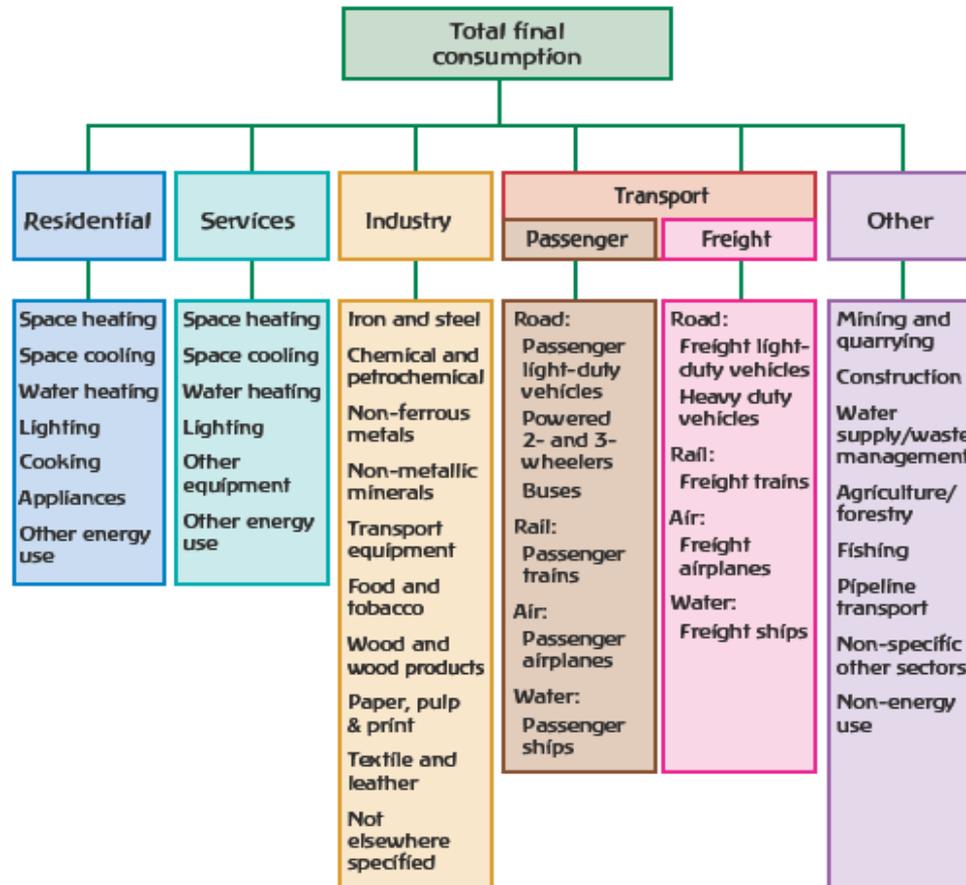
ENERGY BALANCE											
Million tonnes of oil equivalent											
SUPPLY AND CONSUMPTION	Coal & peat	Crude oil	Oil products	Natural Gas	Nuclear	Hydro	Geotherm. solar etc.	Biofuels & waste	Electricity	Heat	Total
Production	3596.04	4069.38	-	2719.10	718.96	295.62	112.02	1277.08	-	1.04	12789.25
Exports	640.82	2295.06	1053.71	817.02	-	-	-	10.78	51.38	0.00	4868.77
Imports	-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
TPE	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	171.96	150.84	-206.45
Heat plants	-103.61	-0.81	-12.92	-90.14	-0.15	-	-0.22	-10.42	-0.34	188.23	-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/peat/fuel/BKE 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 waste	-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	1162.01	1535.69	275.93	8676.63
INDUSTRY	677.86	14.51	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	57.77	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	88.06	-	-	-	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/transport/energy of waste/stock	35.63	15.05	569.93	152.40	-	-	-	-	-	-	773.01
In transport	2.44	14.49	362.42	149.75	-	-	-	-	-	-	509.10
In other	0.33	-	17.38	0.00	-	-	-	-	-	-	6.53
											17.71
Electricity and Heat Output											
Electr. Generated - GWh	8697512	27881	961377	4768076	2756289	3437483	449596	331679	-	1573	21431466
Electricity plants	8091805	27854	891872	3582493	2746188	3437483	446008	21248	-	827	19435848
CHP plants	605647	17	69505	1185583	10101	-	3588	120431	-	746	1995618
Heat Generated - TJ	5766864	26036	751312	6597541	27357	-	346248	761894	7495	60077	14264824

Energy intensity, Self-sufficiency, Carbon intensity

Efficiencies of transformation sector

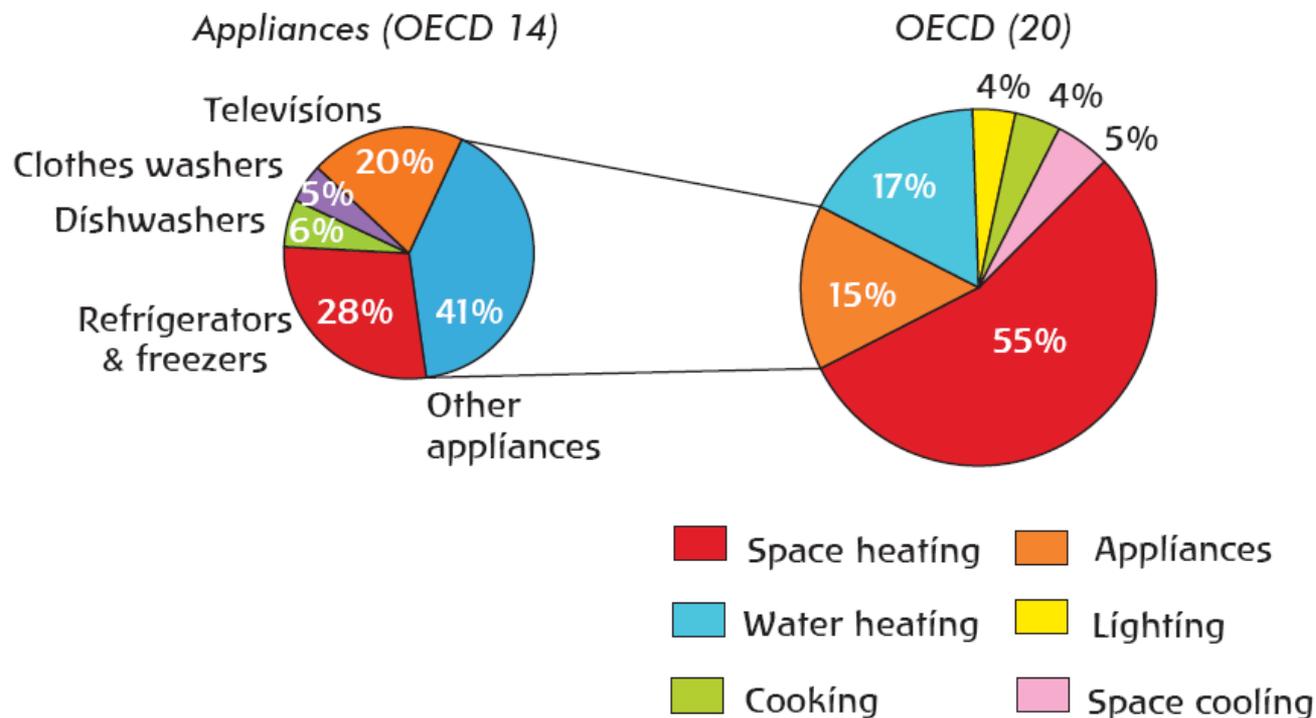
Shares of energy consumption by sector

However, more detailed data are needed to understand energy use



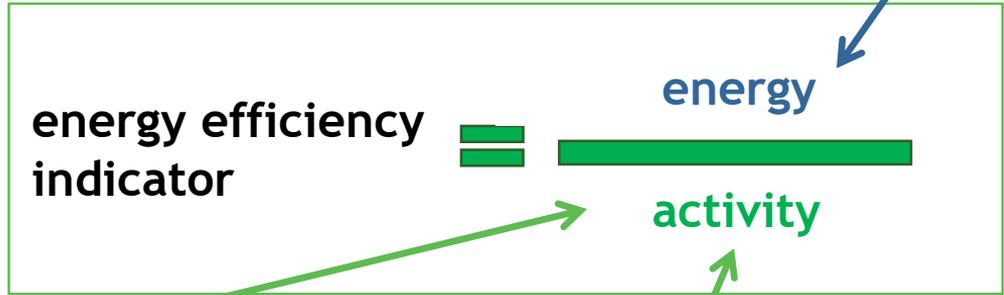
Different end-uses drive sectoral consumption

Figure 4.4 • Breakdown of residential consumption by end use in 2010 for 20 selected OECD countries



Note: The breakdown into individual appliances is available only for 14 countries.

Energy efficiency indicators: residential sector



For each end-use:

- Space heating*
- Space cooling*
- Water heating
- Cooking
- Lighting
- Appliances (energy use, stock, diffusion)
 - Refrigerator
 - Freezer
 - Dishwasher
 - Clothes washer
 - Clothes dryer
 - TV
 - Computers

of dwellings



floor area (m²)



* Temperature corrected, using HDD & CDD

Energy efficiency indicators: industry sector

For 19 major ISIC sub-sectors
(by fuel type)

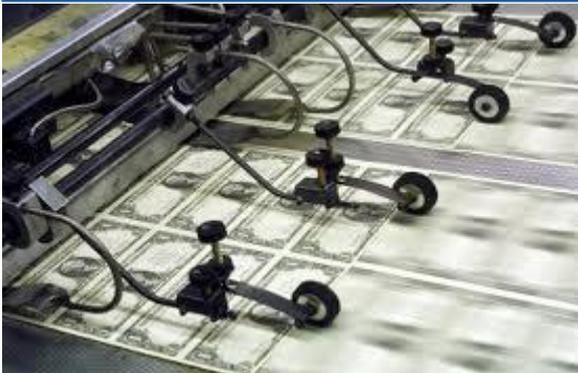
Energy efficiency
indicator



energy

activity

Value added (\$)

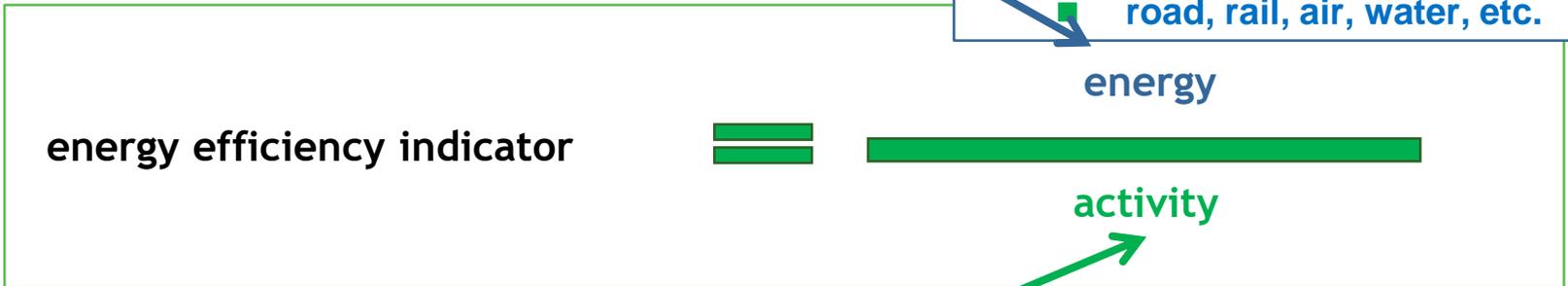


Physical production (t)



Energy efficiency indicators: transport sector

- Transport segment
 - passenger / freight
- Transport modes
 - road, rail, air, water, etc.

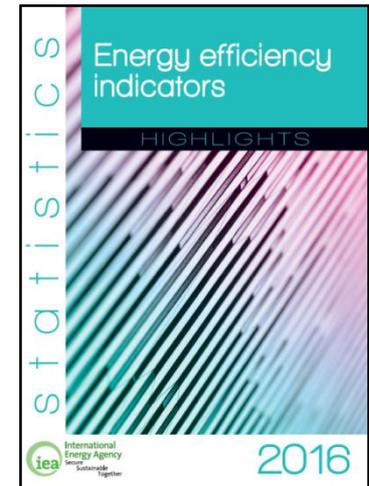


Passenger-km or tonne-km

Vehicle stock × **Distance travelled** × **Occupancy** × **Load factor**

- Agreed by member countries in 2009 (IEA Ministerial)
- Developed with international community of experts, based on historical work on indicators (Odyssee, LBNL, etc.)
- A user-friendly Excel template (available online)
- Collects energy consumption and activity data
- Covers four sectors: residential, services, industry, transport
- A publication: *Energy efficiency indicators Highlights*

Draft Energy Efficiency Indicators Template country name	
COUNTRY DATA SECTION (to be reviewed and updated)	
MACRO ECONOMIC DATA	Macro economic and activity data
COMMODITIES	Production outputs from selected energy-consuming industries
INDUSTRY	Energy consumption by ISIC categories
SERVICES	Energy consumption by end-uses in the services sector
RESIDENTIAL	Household energy consumption by end-uses and selected appliances data
TRANSPORT	Energy and activity data for passenger and freight transport
IEA DATA and AGGREGATE INDICATORS	
ELECTRICITY GENERATION	Electricity generation from combustible fuels and efficiencies
BASIC INDICATORS	Predetermined set of aggregate energy and activity indicators
SUPPORT TOOLS	
USER REMARKS	To incorporate comments associated to the data from the individual sheets
DATA COVERAGE	Generates a graphical summary of data coverage (completed vs. expected)
SINGLE INDICATOR GRAPHS	To generate a graph for one energy indicator
MULTIPLE INDICATORS GRAPHS	To generate a graph comparing trends from multiple indicators
CONSISTENCY CHECKS	To run the integrated consistency checks



Fundamentals on statistics:

to provide guidance on how to collect the data needed for indicators

- Includes a compilation of existing practices from across the world
- <https://goo.gl/Y8QD1G>

Essentials for policy makers:

to provide guidance to develop and interpret energy efficiency indicators

- <https://goo.gl/agcNg2>

Both available also in:

- Spanish
- Russian
- Chinese

