

Germany

Figure 1. Energy production

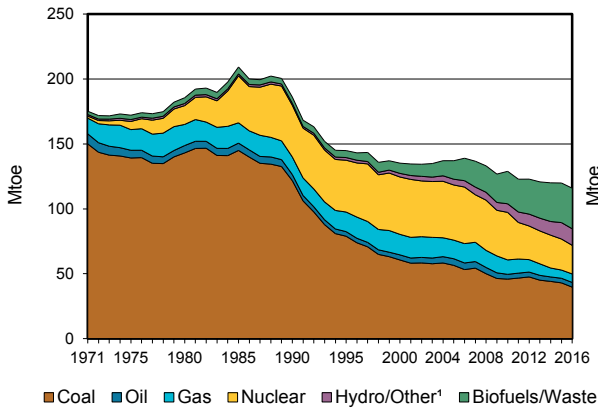


Figure 2. Total primary energy supply²

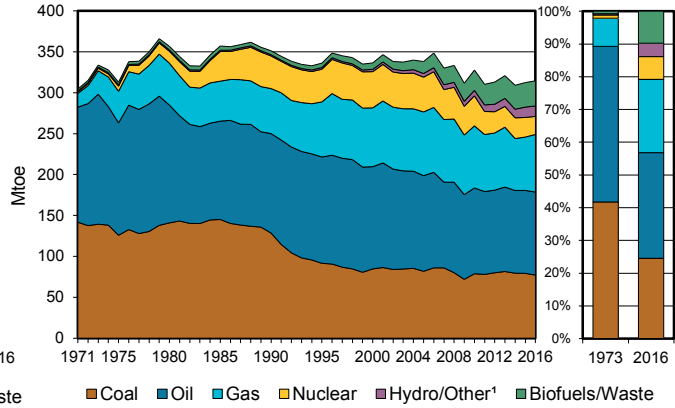


Figure 3. Energy self-sufficiency

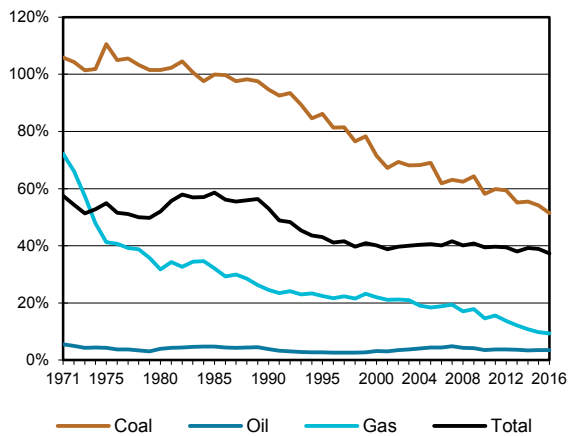


Figure 4. Breakdown of sectoral final consumption by source in 1973 and 2016³

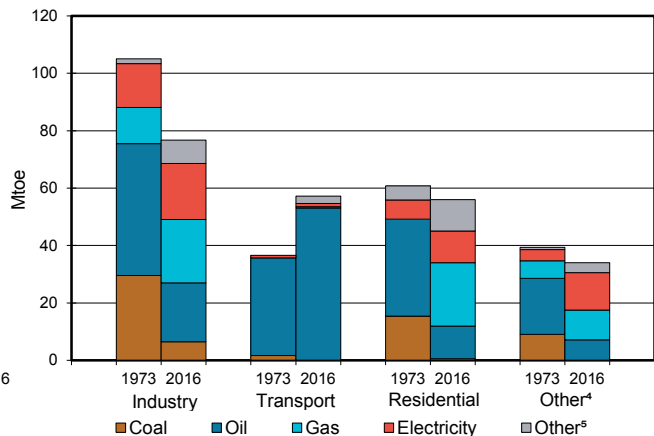


Figure 5. Electricity generation by source

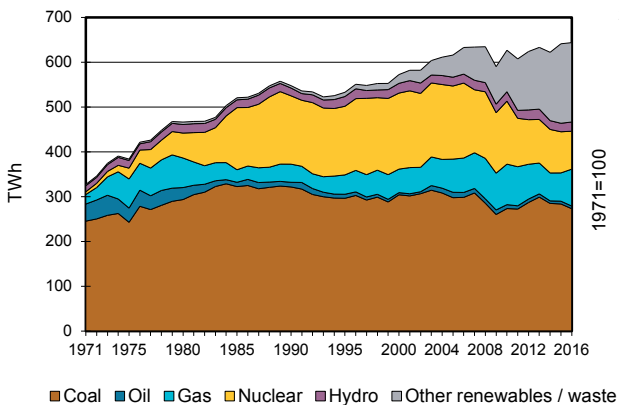
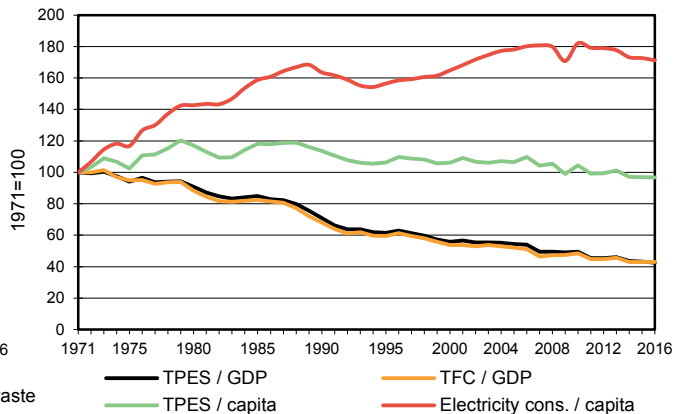


Figure 6. Selected indicators



In these graphs, peat and oil shale are aggregated with coal, where applicable.

1. Includes geothermal, solar, wind, tide/wave/ocean, heat and other.

2. Excluding electricity trade.

3. Includes non-energy use.

4. Includes commercial and public services, agriculture/forestry, fishing and non-specified.

5. Includes biofuels and waste, direct use of geothermal/solar thermal and heat produced in CHP/heat plants.

6. Includes geothermal, solar, wind, tide/wave/ocean, biofuels, waste, heat and other.

Germany

2016

Thousand tonnes of oil equivalent (ktoe)

SUPPLY AND CONSUMPTION	Coal	Crude oil	Oil products	Natural gas	Nuclear	Hydro	Geo-therm./Solar/etc.	Biofuels/Waste	Electricity	Heat	Total
Production	39725	3597	-	6551	22056	1767	10976	31250	-	-	115922
Imports	39664	92632	39411	81613	-	-	-	889	2437	-	256645
Exports	-1401	-103	-22700	-19328	-	-	-	-1455	-6782	-3	-51772
Intl. marine bunkers	-	-	-2790	-	-	-	-	-	-	-	-2790
Intl. aviation bunkers	-	-	-8657	-	-	-	-	-	-	-	-8657
Stock changes	-755	773	-737	1495	-	-	-	-	-	-	775
TPES	77232	96899	4527	70330	22056	1767	10976	30684	-4345	-3	310123
Transfers	-	1405	-660	-	-	-	-	-	-	-	745
Statistical differences	-1044	11	-858	3373	-	0	-	1	-	-	1484
Electricity plants	-54256	-	-783	-3110	-22056	-1767	-10186	-5699	44639	-	-53217
CHP plants	-6495	-	-436	-12099	-	-	-	-8434	10704	8125	-8634
Heat plants	-332	-	-137	-2198	-	-	-38	-1346	-	3081	-970
Blast furnaces	-5531	-	-32	-	-	-	-	-	-	-	-5564
Gas works	-	-	-	-	-	-	-	-	-	-	-
Coke/pat. fuel/BKB/PB plants	-941	-	-355	-	-	-	-	-	-	-	-1296
Oil refineries	-	-104174	102579	-	-	-	-	-	-	-	-1595
Petrochemical plants	-	5859	-6006	-	-	-	-	-	-	-	-148
Liquefaction plants	-	-	-	-	-	-	-	-	-	-	-
Other transformation	-	5859	-6006	-	-	-	-	-	-	-	-148
Energy industry own use	-821	-	-5624	-1257	-	-	-	-535	-4289	-299	-12825
Losses	-807	-	-	-	-	-	-	-23	-2215	-1125	-4170
TFC	7005	-	92214	55039	-	-	752	14649	44494	9780	223933
INDUSTRY	6055	-	2352	19489	-	-	-	3906	19487	4272	55563
Iron and steel	2874	-	25	2156	-	-	-	0	2327	31	7413
Chemical and petrochemical	948	-	1152	5324	-	-	-	431	4608	2485	14947
Non-ferrous metals	29	-	75	834	-	-	-	7	1374	31	2350
Non-metallic minerals	1344	-	437	2510	-	-	-	1155	1059	20	6526
Transport equipment	216	-	44	876	-	-	-	7	1550	336	3029
Machinery	17	-	239	1761	-	-	-	102	2878	248	5245
Mining and quarrying	69	-	29	107	-	-	-	20	153	3	382
Food and tobacco	205	-	166	2784	-	-	-	57	1593	264	5069
Paper, pulp and printing	346	-	37	2026	-	-	-	682	1842	619	5553
Wood and wood products	-	-	14	130	-	-	-	1330	399	50	1922
Construction	-	-	-	-	-	-	-	-	-	-	-
Textile and leather	5	-	22	240	-	-	-	2	188	16	474
Non-specified	1	-	113	742	-	-	-	113	1516	169	2653
TRANSPORT	-	-	52820	446	-	-	-	2572	1010	-	56847
Domestic aviation	-	-	781	-	-	-	-	-	-	-	781
Road	-	-	51301	163	-	-	-	2555	9	-	54027
Rail	-	-	329	-	-	-	-	17	1000	-	1346
Pipeline transport	-	-	-	283	-	-	-	-	-	-	283
Domestic navigation	-	-	266	-	-	-	-	-	-	-	266
Non-specified	-	-	144	-	-	-	-	-	-	-	144
OTHER	547	-	18564	32481	-	-	752	8171	23997	5507	90019
Residential	520	-	11447	22092	-	-	663	5845	10974	4419	55959
Comm. and public services	27	-	7009	10388	-	-	89	2327	13024	1089	33952
Agriculture/forestry	-	-	-	-	-	-	-	-	-	-	-
Fishing	-	-	-	-	-	-	-	-	-	-	-
Non-specified	-	-	108	-	-	-	-	-	-	-	108
NON-ENERGY USE	403	-	18478	2623	-	-	-	-	-	-	21504
in industry/transf./energy	403	-	18143	2623	-	-	-	-	-	-	21169
of which: chem./petrochem.	20	-	14699	2623	-	-	-	-	-	-	17341
in transport	-	-	325	-	-	-	-	-	-	-	325
in other	-	-	10	-	-	-	-	-	-	-	10
Electricity and heat output											
Electr. Generated - GWh	273196	-	5846	82294	84634	20547	118759	58255	-	-	643531
Electricity plants	251387	-	3237	19223	84634	20547	117869	22164	-	-	519061
CHP plants	21809	-	2609	63071	-	-	890	36091	-	-	124470
Heat generated - TJ	140759	-	5166	211589	-	-	8192	103553	-	-	469259
CHP plants	130288	-	1081	136983	-	-	5082	66822	-	-	340256
Heat plants	10471	-	4085	74606	-	-	3110	36731	-	-	129003

WHAT CAN WE LEARN FROM AN ENERGY BALANCE?

TOTAL

1. Is the overall energy use (measure by TPES) increasing/ decreasing? [Graphs, Figure 2]
2. Can we observe the same trend if we look at energy use per capita? Per GDP? [Graphs, Figure 6]
3. Is the country becoming more or less dependent on other countries to satisfy its energy needs [Graphs, Figure 3]?
4. Which sector explains most of the growth in total final energy consumption since 1973? [Graphs, Figure 4]

BY FUEL

5. Has the fuel mix significantly changed since 1973? [Graphs, Figure 2]
6. What fuels are driving the growth of energy production in this country? [Graphs, Figure 1]
7. How is the electricity consumption per capita evolving in this country? [Graphs, Figure 6]

WHAT CAN WE LEARN FROM AN ENERGY BALANCE?

(Hide answers)

Country: Germany

Year: 2016

- 1 What is the total energy demand of this country (measured by TPES)?
- 2 How large is the energy demand in this country (measured by TPES) compared to:
 - A) World total? (≈ 13400 Mtoe in 2016)
 - B) China? (≈ 2900 Mtoe in 2016)
 - C) Ukraine? (≈ 95 Mtoe in 2016)
- 3 Can the production cover the energy demand of the country (measured by TPES)? ¹
- 4 What is the energy source most used in this country (measured by TPES)?
- 5 What is the share of this energy source in the energy mix (measured by TPES)?
- 6 Which sector has the largest share in the total final consumption (TFC)?
- 7 Which sectors are the biggest consumers of natural gas?
- 8 What is the main source for electricity in the country? ²

Notes:

1 Calculate the energy self-sufficiency ratio (production divided by TPES)

2 Largest share of the electricity output