



## The European Union, thanks to its policies, leads the global transition towards a carbon-free economy

1. Renewables is the largest source of energy in 2040, accounting for 29% of EU energy consumption.
2. Primary energy use in power generation grows by 10% over the Outlook but falls in all end-use sectors.
3. Carbon emissions in 2040 decrease by 36% compared to the 2017 levels.

**-13%**

Decline in energy consumption

**8%**

Share of global energy consumption in 2040

**+3%**

Growth in energy production

**4%**

Share of global energy production in 2040

- ▶ Primary energy use in power generation grows by 10% in 2040, reflecting a strong process of electrification.
- ▶ Final energy consumption declines across the board: non-combusted uses (-26%), industry (-18%), buildings (-11%), and transportation (-18%).
- ▶ As a result of those trends, power generation amounts to 52% of total primary energy consumption in 2040, up from 42% in 2017.
- ▶ Accelerated electrification boosts renewables in power (+169%) and, to a lesser extent, hydro (+6%). Electrification sustains natural gas consumption, which declines marginally (-2%) over the Outlook.
- ▶ Renewables become the largest source of energy in 2035-2040, surpassing oil. Among renewable sources, wind represents about two-thirds of total renewable energy in 2040.
- ▶ Despite the decrease in final energy consumption by transport, biofuels increase by 37% over the Outlook. In addition, electricity consumption in transport increases by around 700% over 2017-2040.
- ▶ Coal and nuclear consumption fall significantly (-66% and -46%, respectively) largely driven by policy.
- ▶ Production of fossil fuels all see robust declines: oil (-28%), natural gas (-52%) and coal (-73%).
- ▶ The decline in natural gas production leads to a deterioration self-sufficiency, with the import ratio rising from 75% to 88%.
- ▶ Energy intensity decreases by 35%, in line with the global average for 2017-2040.
- ▶ Carbon emissions decrease sharply (-36%) due to the decline in demand and the shift toward a cleaner energy mix.





	Level		Shares		Change (abs.)		Change (%)		Change (annual)*	
	2017	2040	2017	2040	1995-2017	2017-2040	1995-2017	2017-2040	1995-2017	2017-2040
Primary energy consumption (units in Mtoe unless otherwise noted)										
Total	1689	1475			12	-215	1%	-13%	0%	-0.6%
Oil† (Mb/d)	13	8	37%	27%	-1	-5	-10%	-37%	-0.5%	-2.0%
Gas (Bcm)	467	457	24%	27%	78	-10	20%	-2%	0.8%	-0.1%
Coal	234	79	14%	5%	-129	-155	-36%	-66%	-2.0%	-4.6%
Nuclear	188	102	11%	7%	-12	-86	-6%	-46%	-0.3%	-2.6%
Hydro	68	72	4%	5%	-7	4	-10%	6%	-0.5%	0.2%
Renewables (including biofuels)	166	429	10%	29%	160	263	>100%	158%	>10%	4.2%
Transport^	431	404	26%	27%	83	-27	24%	-6%	1.0%	-0.3%
Industry^	563	462	33%	31%	-99	-101	-15%	-18%	-0.7%	-0.9%
Non-combusted^	83	61	5%	4%	-23	-22	-21%	-26%	-1.1%	-1.3%
Buildings^	613	547	36%	37%	50	-66	9%	-11%	0.4	-0.5%
Power	701	768	42%	52%	70	67	11%	10%	0.5%	0.4%
Production										
Oil† (Mb/d)	2	1			-2	0	-55%	-28%	-3.5%	-1.4%
Gas (Bcm)	118	56			-103	-62	-47%	-52%	-2.8%	-3.2%
Coal	124	34			-141	-90	-53%	-73%	-3.4%	-5.5%

\* Compound annual growth rate.

† Oil supply includes crude oil, shale oil, oil sands, natural gas liquids, liquid fuels derived from coal and gas, and refinery gains, but excludes biofuels. Oil demand includes consumption of all liquid hydrocarbons but excludes biofuels.

^ Includes electricity and the associated conversion losses in power generation.

