



Global energy consumption grows by around one-fifth and CO₂ emissions half of current levels. Renewables amount to almost one-third of total primary energy in 2040

1. Renewables increase eightfold over the Outlook, offsetting the decline in coal and oil consumption.
2. The consumption of natural gas increases around 40% from 2017, becoming the second largest energy source.
3. Power generation increases around 60% due to an accelerated process of electrification.

+0.8%

Annual growth in global energy consumption

29%

Share of renewables in primary energy consumption

18%

Proportion of CO₂ emissions from power sector in 2040

-46%

Change in global CO₂ emissions from energy use

- ▶ In the Rapid transition scenario world energy demand increases by one-fifth from 2017 to 2040, compared with an increase of one-third in the Evolving transition scenario.
- ▶ Energy intensity decreases by around 40%, but it cannot fully offset the increase in energy demand due to higher prosperity.
- ▶ OECD economies have a small decrease in energy consumption over the Outlook (-0.3% p.a.), while developing economies show a relative solid growth of 1.6% p.a..
- ▶ Natural gas grows consistently and becomes the second largest energy source after renewables.
- ▶ Oil demand in 2040 decreases by 14 Mb/d. However, biofuels grow by 4 Mb/d.
- ▶ Global coal consumption declines substantially (-71%). In OECD economies it becomes a marginal energy source (1% of total primary energy consumption).
- ▶ Solar and wind energy grow exponentially (around 14% and 10% p.a., respectively), ranking 3rd and 4th in terms of the largest primary energy sources.
- ▶ The growth in power (2% p.a.) outpaces the growth in total energy consumption (0.8% p.a.), as a result of a strong electrification process.
- ▶ Non-combusted is the sector with the strongest increase in demand (+48%) followed by buildings (+36%), transport (+17%) and industry (10%).
- ▶ CO₂ emissions from energy use decline by 46% by 2040. Among end-use sectors in 2040, transport and industry contribute around 40% of CO₂ emissions, while buildings contribute just over 20%.
- ▶ Carbon capture, usage and store (CCUS) plays a significant role in the decarbonization of the energy system. CCUS accounts for one-third of the reduction in CO₂ emissions.



BP Energy Outlook – 2019

Insights from the Rapid transition scenario – Global



	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	13511	16390			4946	2879	58%	21%	2.1%	0.8%
Oil† (Mb/d)	96	82	34%	23%	26	-14	37%	-15%	1.4%	-0.7%
Gas (Bcm)	3670	5051	23%	26%	1558	1381	74%	38%	2.5%	1.4%
Coal	3731	1079	28%	7%	1507	-2653	68%	-71%	2.4%	-5.3%
Nuclear	596	1012	4%	6%	71	416	13%	70%	0.6%	2.3%
Hydro	919	1403	7%	9%	355	484	63%	53%	2.2%	1.9%
Renewables (including biofuels)	571	4708	4%	29%	526	4138	>1000%	725%	>10%	9.6%
Transport [^]	2817	3294	21%	20%	1117	477	66%	17%	2.3%	0.7%
Industry [^]	5853	6429	43%	39%	2093	575	56%	10%	2.0%	0.4%
Non-combusted [^]	856	1263	6%	8%	346	407	68%	48%	2.4%	1.7%
Buildings [^]	3985	5405	29%	33%	1390	1419	54%	36%	2.0%	1.3%
Power	5751	9109	43%	56%	2515	3358	78%	58%	2.6%	2.0%

* Compound annual growth rate.

† Oil demand includes consumption of all liquid hydrocarbons but excludes biofuels.

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



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