



Energy Outlook – 2020

Insights from the Rapid, Net Zero and Business-as-usual scenarios – India

Under all scenarios, there is a strong growth in primary energy lead by renewable energy and, to a lesser extent, natural gas. This growth is underpinned by increased population and prosperity

1. Under all three scenarios, India's primary energy consumption more-than doubles by 2050
2. Renewable energy grows strongly in all the scenarios, becoming the largest energy source in 2050
3. Natural gas is the only fossil fuel that shows growth in levels in all the scenarios

Over 100%

Growth in primary energy in 2018-2050 under all scenarios

5% to 40%

Share of coal in primary energy in 2050

22% to 69%

Share of renewables in primary energy in 2050

-99% to +90%

variation in CO₂ emissions by 2050

- ▶ Primary energy grows strongly in all three scenarios, more-than doubling the energy consumed between 2018-2050. Average growth per year is in the band 2.5% – 3.0%.
- ▶ Renewable energy growth is intense in the three scenarios with average growth per year in the band 9% – 13%. As a result, renewable energy becomes the largest source of primary energy in 2050 in **Rapid** and **Net Zero**, and the second largest under **BAU** after coal. Renewable energy represents between 22% and 69% of total primary energy in 2050.
- ▶ There is also a significant process of electrification, underpinned by substantial build-out of new generating capacity. Power demand increases threefold in all scenarios by 2050. As a result of this strong growth, this sector absorbs over 50% of total primary energy in 2050 under **BAU** and around three-quarters in **Rapid** and **Net Zero**.
- ▶ Remarkably, the share of natural gas in total primary energy grows in all scenarios, increasing from 6% in 2018 to 10% – 16% in 2050.
- ▶ Carbon emissions vary dramatically by scenario. In **BAU** emissions increase by around 90% in 2050. In **Rapid** and **Net Zero**, emissions decrease by 53% and 99%, respectively.
- ▶ As result of this strong growth, India accounts for 35% of the increase in global primary energy consumption in 2018-2050 in the **Business-as-usual (BAU)** scenario. In **Rapid** and **Net Zero**, India absorbs 85% and 89% of the global increase in primary energy consumption over the Outlook, respectively.
- ▶ The share of coal in total primary energy consumed has been broadly stable around 2018-levels (56%) over the past 40 years. However, in all the scenarios coal's share declines, between 5% and 40% by 2050.





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	Level in 2050				Shares in 2050 (%)				Change 2018-2050 (%)			Change 2018-2050 (% p.a.)		
	2018	Rapid	Net Zero	BAU	2018	Rapid	Net Zero	BAU	Rapid	Net Zero	BAU	Rapid	Net Zero	BAU
Primary energy consumption (EJ)														
Total	34	75	77	86	100	100	100	100	>100	>100	>100	2.5	2.6	3.0
Oil†	9.9	9.9	3.8	19	30	13	4.9	22	0	-62	87	0.0	-3.0	2.0
Gas	2.1	12	7.7	8.7	6.2	16	10	10	>100	>100	>100	5.6	4.2	4.6
Coal	19	9.2	3.9	35	56	12	5.0	40	-51	-80	83	-2.2	-4.8	1.9
Nuclear	0.3	4.6	5.3	2.7	1.0	6.1	6.8	3.2	>100	>100	>100	8.4	8.9	6.7
Hydro	1.2	2.7	3.0	2.3	3.7	3.6	3.9	2.7	>100	>100	85	2.4	2.8	1.9
Renewables (incl. biofuels)	1.2	37	54	19	3.4	49	69	22	>100	>100	>100	11.4	12.8	9.2
Oil† (Mb/d)														
Oil† (Mb/d)	5.1	5.2	2.4	9.7	30	13	5	22	2	-54	89	0.1	-2.4	2.0
Gas (Bcm)														
Gas (Bcm)	58	332	215	241	6	16	10	10	>100	>100	>100	5.6	4.2	4.6
Transport^														
Transport^	4.5	13	16	14	13	17	20	16	>100	>100	>100	3.4	3.9	3.5
Non-combusted^	2.3	4.8	3.0	5.9	7	6	4	7	>100	31	>100	2.4	0.8	3.0
Buildings^	9.9	19	20	25	29	26	25	29	97	98	>100	2.1	2.2	2.9
Industry^	17	37.8	39.2	42.0	50	50	51	49	>100	>100	>100	2.5	2.6	2.9
Power														
Power	17	55	62	48	49	73	80	56	>100	>100	>100	3.8	4.2	3.4
Production														
Oil† (Mb/d)	1.0	0.2		1.0					-79		-2	-4.7		0.0
Gas (Bcm)	27	76		96					>100		>100	3.2		4.0
Coal	13	5.7		27					-56		>100	-2.5		2.4
Emissions														
Net CO ₂ (Gt)	2.5	1.2	0.0	4.7					-53	-99	90	-2.3	-13	2.0

EJ = exajoules

† 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.