



# bp Energy Outlook – 2022

## Insights from the Accelerated, Net Zero and New Momentum scenarios – India

Under all scenarios, there is a strong growth in primary energy led by renewables and, to a lesser extent, natural gas. This growth is underpinned by increasing population, industrialization 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 **Accelerated** and **Net Zero**
3. Natural gas is the only fossil fuel that shows growth in levels throughout to 2050 in all scenarios

### Over 100%

growth in primary energy in 2019-2050 in all scenarios

### 6% to 34%

share of coal in primary energy in 2050

### 31% to 66%

share of renewables in primary energy in 2050

### -71% to +96%

variation in CO<sub>2</sub> emissions by 2050 vs 2019 level

- ▶ Primary energy grows strongly in all three scenarios, more than doubling between 2019-2050. Average growth per year is between 2.5%-2.7%.
- ▶ As result of this strong growth, India accounts for around 13%-14% of the global primary energy consumption in 2050 across all scenarios, up from around 7% in 2019.
- ▶ The share of coal in total primary energy has been broadly stable around 2019 levels (45%) over the past 40 years. However, coal's share declines in all scenarios, reaching between 6% and 34% by 2050.
- ▶ Renewable energy growth is strong in the three scenarios, averaging between 4%-6% p.a. As a result, renewable energy becomes the largest source of primary energy in 2050 in **Accelerated** and **Net Zero**, and the second largest in **New Momentum** (after coal). Renewable energy represents between 31% and 66% of total primary energy in 2050.
- ▶ The share of natural gas in total primary energy grows in all scenarios, increasing from 5% in 2019 to 12% in 2050 in **New Momentum**, supported by coal-to-gas switching in power, industry and heavy road transport demand. In **Accelerated** and **Net Zero** the gas share in primary energy is between 8% and 10%.
- ▶ There is also a significant process of electrification. Power generation more than triples in all scenarios by 2050, with solar and wind power accounting for 55% to 95% of that growth.
- ▶ Solar and wind installed capacity by 2050 reaches 1.2-2.1 TW and 0.2-1.1TW, respectively.
- ▶ Carbon emissions vary significantly by scenario. In **New Momentum** emissions increase by around 96% in 2050. In **Accelerated** and **Net Zero**, emissions decrease by 26% and 71%, respectively.





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## Insights from the Accelerated, Net Zero and New Momentum scenarios – India

	Level in 2050			2019	Shares in 2050 (%)			Change 2019-2050 (% p.a.)			
	2019	Accelerated	Net Zero		New Momentum	2019	Accelerated	Net Zero	New Momentum	Accelerated	Net Zero
<b>Primary energy consumption (EJ)</b>											
<b>Total</b>	<b>42</b>	<b>91</b>	<b>88</b>	<b>96</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>2.5%</b>	<b>2.5%</b>	<b>2.7%</b>
Oil†	10.0	11	6.1	18	24%	12%	6.9%	19%	0.2%	-1.6%	1.9%
Natural gas	2.1	8.7	7.0	11	5.1%	9.6%	8.0%	12%	4.6%	3.9%	5.5%
Coal	19	8.6	5.2	33	45%	9.5%	5.9%	34%	-2.5%	-4.0%	1.9%
Nuclear	0.4	5.9	6.8	2.6	1.0%	6.5%	7.7%	2.7%	9.0%	9.5%	6.2%
Hydro	1.4	4.5	5.0	2.0	3.5%	5.0%	5.6%	2.1%	3.7%	4.1%	1.0%
Renewables (incl. biofuels)	9.1	53	58	30	22%	58%	66%	31%	5.8%	6.2%	3.9%
<b>Primary energy consumption (native units)</b>											
Oil† (Mb/d)	5.2	5.6	3.3	9.5							
Natural gas (Bcm)	59	241	196	311							
<b>Total final consumption by sector (EJ)</b>											
<b>Total</b>	<b>30</b>	<b>57</b>	<b>49</b>	<b>69</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>2.0%</b>	<b>7.9%</b>	<b>9.1%</b>
Transport	4.6	12	12	13	15%	22%	24%	19%	3.2%	3.1%	3.4%
Feedstocks	1.9	3.8	3.1	4.5	6.3%	6.7%	6.3%	6.6%	2.2%	1.5%	2.8%
Buildings	9.7	13	10	17	32%	22%	21%	25%	0.9%	0.2%	1.8%
Industry	14	28	24	34	47%	49%	49%	50%	2.2%	1.6%	2.9%
<b>Generation (native units)</b>											
Power (TWh)	1,723	7,376	8,424	6,460					4.8%	5.3%	4.4%
Hydrogen (Mt)	4.6	23	48	15					5.4%	7.9%	3.9%
<b>Production</b>											
Oil† (Mb/d)	1.0	0.2	0.1	0.3					-5.4%	-6.9%	-4.0%
Natural gas (Bcm)	27	86	65	111					3.8%	2.9%	4.7%
Coal (EJ)	13	5.3	3.6	20					-2.8%	-3.9%	1.5%
<b>Emissions</b>											
Carbon emissions†† (Gt of CO <sub>2</sub> e)	2.7	2.0	0.8	5.4					-1.0%	-3.9%	2.2%
CCUS (Mt of CO <sub>2</sub> )	0	260	730	7.3					56%	61%	39%

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. †† Carbon emissions include CO<sub>2</sub> emissions from energy use, industrial processes, natural gas flaring, and methane emissions from energy production.