



# bp Energy Outlook – 2022

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

Strong growth in renewable electricity and bioenergy leads the decarbonization of Brazil's energy system. Hydropower retains the highest share of electricity generation in all scenarios

1. In all three scenarios Brazil's primary energy consumption grows to 2030, then falls in **Accelerated** and **Net Zero**
2. Renewable energy grows strongly in all the scenarios, becoming the largest energy source in **Accelerated** and **Net Zero**
3. Electricity in final consumption grows by over 60% in all three scenarios

**-2% to 27%**

growth in primary energy in 2019-2050

**44% to 62%**

share of renewables in primary energy in 2050

**1.5% to 1.7%**

annual growth in electricity consumption in 2019-2050

**-3% to -98%**

reduction in net CO<sub>2</sub>e emissions by 2050 relative to 2019

- ▶ Primary energy grows in all three scenarios in the short term. By 2050 it falls by 2% in **Net Zero** while it grows by 8% in **Accelerated** and by 27% in **New Momentum**. Average growth per year is in the range -0.1%-0.8%.
- ▶ The share of oil in total primary energy consumed has been broadly stable around 2019-levels (33%) over the last 35 years. However, in all the scenarios the share of oil declines, to between 6% and 24% by 2050.
- ▶ The production of hydrogen for use primarily in industry and heavy-duty transport grows in all scenarios, meeting 1%, 3% and 6% of total final consumption in **New Momentum**, **Accelerated** and **Net Zero** respectively.
- ▶ Electricity in final consumption increases by 60%-70% by 2050. As a result, the share of electricity in final consumption reaches 27% in **New Momentum**, and 33% and 44% in **Accelerated** and **Net Zero** respectively.
- ▶ Renewable power generation grows over three-fold in **Accelerated** and **Net Zero**, and more than doubles in **New Momentum**, driven by onshore wind and solar. Hydropower retains the highest share of electricity generation, at around 40% in all scenarios.
- ▶ The use of natural gas in power only grows in **New Momentum** and declines to 1%- 2% of generation in **Accelerated** and **Net Zero** by 2050.
- ▶ Biofuels continue to grow in all scenarios, meeting 9%-10% total final consumption in 2050.
- ▶ Biomass meets similar shares of total final consumption (around 20%) in all scenarios and out to 2050 with the decrease in traditional biomass in buildings offset by growth in industry.
- ▶ Carbon emissions fall by 2050 in all scenarios. In **New Momentum** emissions fall by 3% in 2050 relative to 2019. In **Accelerated** and **Net Zero**, they start to decline earlier and faster, decreasing by 62% and 98%.
- ▶ Production of oil and gas increases by an average of 0.1% and 1.3% p.a. to 2050 in **New Momentum** but declines in **Accelerated** and **Net Zero**.





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	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>16</b>	<b>17</b>	<b>15</b>	<b>20</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>0.3</b>	<b>-0.1</b>	<b>0.8</b>
Oil†	5.2	2.7	0.9	4.7	33	16	5.8	24	-2.1	-5.5	-0.3
Natural gas	1.3	0.7	0.5	2.1	8.2	3.9	3.4	11	-2.1	-2.9	1.6
Coal	0.6	0.2	0.1	0.6	4.2	1.3	0.9	3.0	-3.5	-4.8	-0.3
Nuclear	0.1	0.4	0.7	0.2	0.9	2.4	4.3	0.9	3.4	5.0	0.5
Hydro	3.5	3.6	3.7	3.5	23	21	24	18	0.1	0.1	0
Renewables (incl. biofuels)	4.8	9.3	9.4	8.6	31	55	62	44	2.2	2.2	1.9
<b>Primary energy consumption (native units)</b>											
Oil† (Mb/d)	2.6	1.4	0.5	2.4							
Natural gas (Bcm)	36	18	14	57							
<b>Total final consumption by sector (EJ)</b>											
<b>Total</b>	<b>12</b>	<b>11</b>	<b>9.0</b>	<b>15</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>-0.2</b>	<b>2.6</b>	<b>4.2</b>
Transport	4.1	3.6	2.7	4.3	34	32	30	29	-0.4	-1.3	0.2
Feedstocks	0.6	0.7	0.5	0.9	5.1	6.6	5.8	6.4	0.7	-0.5	1.4
Buildings	2.2	2.1	1.8	2.8	18	19	20	19	-0.1	-0.7	0.7
Industry	5.0	4.9	4.0	6.7	42	43	44	45	-0.1	-0.7	0.9
<b>Generation (native units)</b>											
Power (TWh)	651	1,176	1,295	1,141					1.9	2.2	1.8
Hydrogen (Mt)	0.1	3.8	6.4	1.1					13	14	7.9
<b>Production</b>											
Oil† (Mb/d)	2.9	1.3	0.5	3.0					-2.5	-5.4	0.1
Natural gas (Bcm)	26	16	12	39					-1.5	-2.3	1.3
Coal (EJ)	0.1	0	0	0.1					-3.8	-4.6	0
<b>Emissions</b>											
Carbon emissions†† (Gt of CO <sub>2</sub> e)	0.5	0.2	0	0.5					-3.1	-13	-0.1
CCUS (Mt of CO <sub>2</sub> )	0	55	110	8.2					49	52	40

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.