Energy Outlook – 2020

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

Strong growth of renewable power is the key driver of China's energy transition

1. Despite slowing demand growth, China remains the world's largest primary energy consumer, accounting for over 20% of global consumption in 2050 in all three scenarios
2. Primary energy consumption peaks in all the three scenarios around the first half of the 2030s
3. Coal consumption and its share of primary energy consumption fall steadily in all three scenarios

2% to 14%
Increase in primary energy between 2018 and 2050

-44% to -94%
Decline in coal consumption between 2018 and 2050

34% to 55%
Share of renewables in power generation by 2050

35% to 99%
Net decline in CO_2 emissions by 2050

- China's economy grows at 3.5% p.a. between 2018 and 2050, down from 9.6% p.a. between 1990 and 2018.
- Primary energy consumption in China increases slightly, in all three scenarios With the economy size nearly tripling from 2018 to 2050, China's energy intensity declines by over 60% in all scenarios.
- China's share in global energy demand drops from 24% in 2018 to 23% in **Rapid**, 22% in **Net Zero** and 21% in **BAU** by 2050. Nonetheless, China remains the world's largest consumer.
- Renewables expand rapidly, with an annual growth rate >5.5% p.a. in all scenarios. Renewables' share of the energy mix increases sharply, reaching 48%, 55% and 23% in **Rapid**, **Net Zero** and **BAU**, respectively.
- Coal's share of the China power generation mix declines sharply under all scenarios, falling to 4% in **Rapid**, 1% in **Net Zero** and 31% in 2050 in **BAU**.
- Production of coal declines in China, dropping by nearly 90% in **Rapid**, and 57% under **BAU**.
- Nuclear power grows quickly in all scenarios, increasing its share of primary energy demand from 2% in 2018, to 11%, 12% or 9% in **Rapid**, **Net Zero** and **BAU** scenarios respectively.
- Production of natural gas greatly increases in China, by 76% in **Rapid** and 114% in **BAU** scenario. Conversely, production of oil declines by 73% in **Rapid** and 21% in **BAU**.
- Under all three scenarios liquids demand in China peaks in the next 5 years, driven by increased efficiency and fuel substitution in industry and mobility.
- Net CO_2 emissions from energy use drop by 99% in the Net Zero scenario, 84% under **Rapid** and 35% under **BAU**.

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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	136	141	139	155	100	100	100	100	4	2	14	0.1	0.1	0.4
Oil†	27	13	7	23	20	9	5	15	-52	-74	-15	-2.2	-4.1	-0.5
Gas	10	19	17	23	7	13	12	15	84	65	>100	1.9	1.6	2.6
Coal	80	10	5	44	59	7	4	29	-88	-94	-44	-6.3	-8.2	-1.8
Nuclear	3	16	17	14	2	11	12	9	>100	>100	>100	5.7	6.0	5.4
Hydro	11	16	17	14	8	11	12	9	50	55	34	1.3	1.4	0.9
Renewables (incl. biofuels)	6	68	77	36	4	48	55	23	>100	>100	>100	7.9	8.3	5.8
Oil† (Mb/d)	13	6	4	11	20	9	5	15	-52	-74	-15	-2.3	-4.1	-0.5
Gas (Bcm)	282	520	467	633	7	13	12	15	84	65	>100	1.9	1.6	2.6
Transport^	16	28	32	24	12	20	23	15	73	100	49	1.7	2.2	1.2
Non-combusted^	7	10	6	12	5	7	4	8	29	-20	58	0.8	-0.7	1.4
Buildings^	29	40	40	47	22	28	29	31	36	37	61	1.0	1.0	1.5
Industry^	83	64	62	72	61	56	44	47	-23	-26	-13	-0.8	-0.9	-0.4
Power	65	106	110	101	48	75	79	65	64	46	55	1.1	0.9	1.4
Production														
Oil† (Mb/d)	4	1		3					-73		-21	-4.0		-0.8
Gas (Bcm)	162	285		345					76		>100	1.8		2.4
Coal	77	8		35					-90		-54	-6.8		-2.4
Emissions														
Net CO_2 (Gt)	9.5	1.5	0.1	6.1					-84	-99	-35	-5.7	-12.8	-1.4

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.