Energy Outlook – 2020

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

Russia shifts towards a carbon-free economy in Rapid and Net Zero scenarios, but remains relatively unchanged in Business-as-usual (BAU)

1. In **Net Zero** renewables become the largest source of energy consumption in Russia by 2050
2. Under **BAU**, oil and gas demand in Russia remains flat, while under **Rapid** and **Net Zero** oil demand falls by 39% and 64% by 2050 respectively. Gas consumption falls by 22% and 61% in these two scenarios
3. Gas remains a key energy export, with production increasing across all three scenarios

-1% to -11%
Decline in primary energy 2020-2050

4% to 48%
Share of renewables by 2050

24% to 92%
Net decline in CO_2 emissions by 2050

- Russia's economy grows at a rate of 1.1% per annum in 2018-2050, higher than 0.7% over 1990-2018.
- Due to modest efficiency gains, Russia's primary energy consumption is flat in **BAU** (-1.4% over 2018-2050) and declines slightly in **Rapid** (-7%) and **Net Zero** (-11%).
- Gas remains the leading energy source in Russia, with its share growing to 57% of the primary energy mix in **BAU**, holding steady at 48% in **Rapid** and falling to 23% in **Net Zero**.
- At the same time, renewables' output grows significantly in all scenarios, driven mainly by wind. Renewables share of primary energy increases to 4% in **BAU**, 20% in **Rapid** and 48% in **Net Zero**, in which it becomes the largest source of energy.
- Coal demand falls across all scenarios – to zero under **Rapid** and **Net Zero** by 2050.
- Demand for oil in Russia remains almost flat in **BAU** (+6% over 2018-2050) and declines by 40% and 60% in **Rapid** and **Net Zero** respectively.
- Production of gas grows across all three scenarios in Russia, reaching 671 bcm under **Rapid** and 917 bcm, under **BAU** by 2050.
- Nuclear output grows across all three scenarios: by 17% under **BAU**, 32% under **Rapid** and 94% under **Net Zero** by 2050. Nuclear reaches 9% of the primary energy mix under **Rapid** and 13% under **Net Zero.**
- These effects combine to reduce net CO_2 emissions by 92% in the **Net Zero** scenario, 69% under **Rapid** and 24% 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	30	27	28	30	100	100	100	100	-11	-6.8	-1.4	-0.4	-0.2	0.0
Oil†	6	4	2	7	21	15	8	22	-39	-64	2.1	-1.6	-3.1	0.1
Gas	16	13	6	17	55	48	23	57	-22	-61	2	-0.8	-2.9	0.1
Coal	4	0	0	1	12	1	0	4	-92	-99	-66	-7.7	-13	-3.3
Nuclear	2	2	4	2	6	9	13	7	32	94	17	0.9	2.1	0.5
Hydro	2	2	2	2	6	7	7	6	4.3	21	2	0.1	0.6	0.1
Renewables (incl. biofuels)	0	5	14	1	0	20	48	4	>100	>100	>100	21	25	16
Oil† (Mb/d)	3	2	1	3	21	15	8	22	-36	-59	5.5	-1.4	-2.8	0.2
Gas (Bcm)	454	355	179	464	55	48	23	57	-22	-61	2	-0.8	-2.9	0.1
Transport^	4	4	5	3	12	15	19	11	14	48	-7	0.4	1.2	-0.2
Non-combusted^	3	5	3	5	10	18	12	18	63	14	87	1.5	0.4	2.0
Buildings^	7	7	7	8	25	25	25	26	-9.1	-7.5	2.3	-0.3	-0.2	0.1
Industry^	16	11	13	13	54	42	45	45	-31	-22	-17	-1.2	-0.8	-0.6
Power	12	13	20	11	40	50	71	36	12	65	-12	0.3	1.6	-0.4
Production														
Oil† (Mb/d)	11	7		12					-39		0	-1.6		0.0
Gas (Bcm)	669	671		917					0		37	0.0		1.0
Coal	9	1		6					-89		-32	-6.7		-1.2
Emissions														
Net CO_2 (Gt)	1.6	0.5	0.1	1.2					-69	-92	-24	-3.6	-7.7	-0.8

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.