

Where coal power stands in Korea

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SFO°C

Solutions for Our Climate

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“Second, Korea will end all public financing for new overseas coal-fired power plants. Since the launch of my government, Korea has stopped issuing permits for building new domestic coal power plants, shut down ten aged units earlier than scheduled and, as a result, drastically reduced its reliance on coal for power generation. Instead, we are swiftly moving to ramp up the production of renewable energy such as solar and wind power. To become carbon neutral, it is imperative for the world to scale down coal-fired power plants.” (April 2021, excerpt from President Moon speech @ US Leaders Summit)

Coal finance becoming history, with private sector support

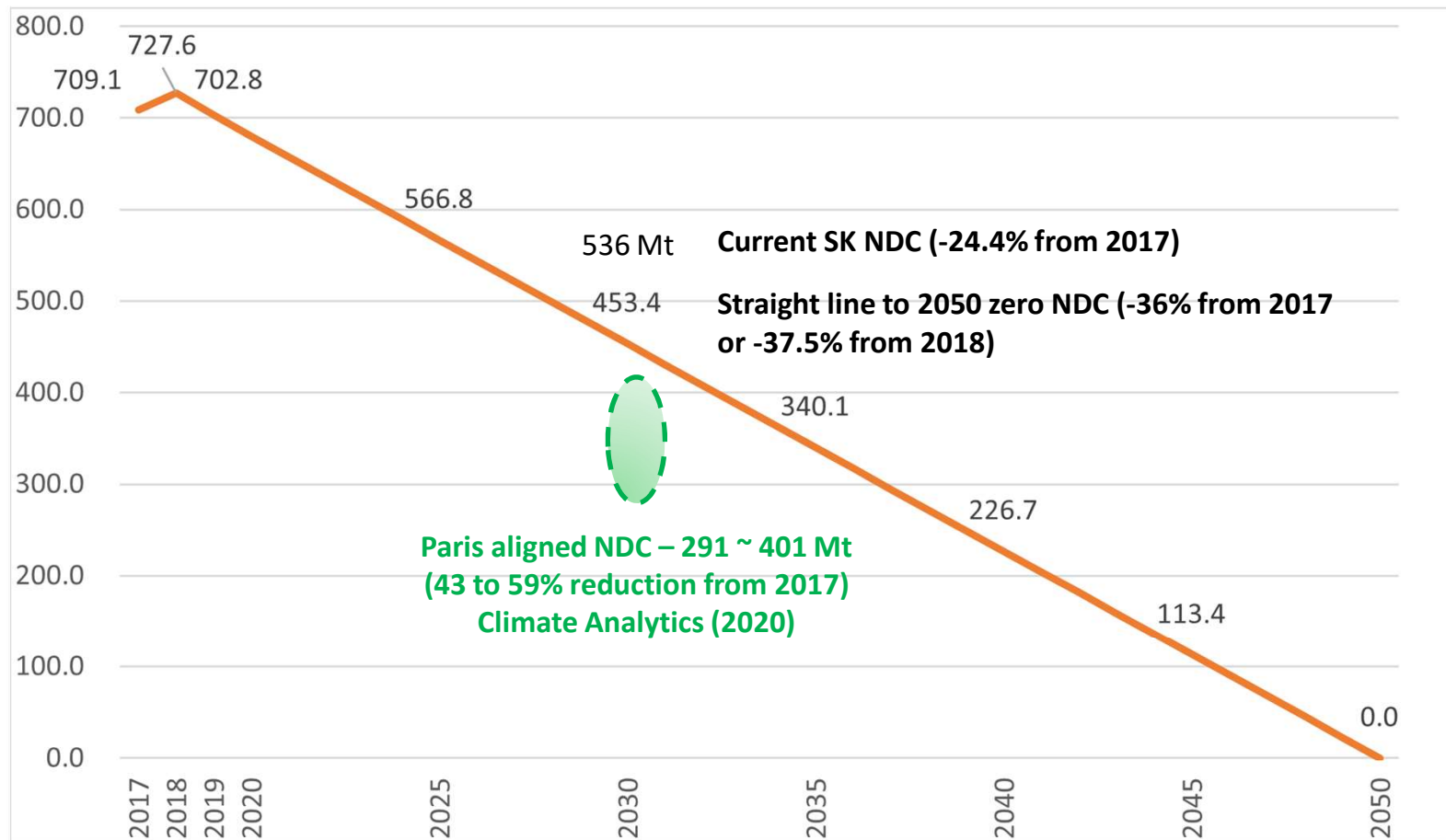
| 90+ financial institutions with no coal financing commitments

Year	Major Developments
2017	<ul style="list-style-type: none">• Cirebon 2 (Indonesia) financed by Korean Government• Criticism of “coal financing” appears in legislature for first time
2018	<ul style="list-style-type: none">• Nghi Son 2 (Vietnam) financed by Korean Government• Two pension funds announce no new coal financing commitment
2019	<ul style="list-style-type: none">• Three more financial institutions announce no new coal financing
2020	<ul style="list-style-type: none">• National debate over Korean Government investment in coal projects in Indonesia (Jawa 9, 10) and Vietnam (Vung Ang 2) – eventually financed to support domestic industry• Major financial institutions (e.g., Samsung) make no coal announcements
2021	<ul style="list-style-type: none">• Continuous flow of no new coal finance announcements (more than ninety companies until now committed to no new coal)• President Moon announces “no more overseas coal finance”

Overseas oil and gas financing will be a big problem with Korean Gov’t financing amount more than ten times larger than that for coal power

Key Topic of 2021 - NDC Enhancement

Discussion up to end of 2021 expected, with enhanced 2030 target available in October



Reduction target proposals becoming more ambitious

With mounting global pressure after US Leaders Summit

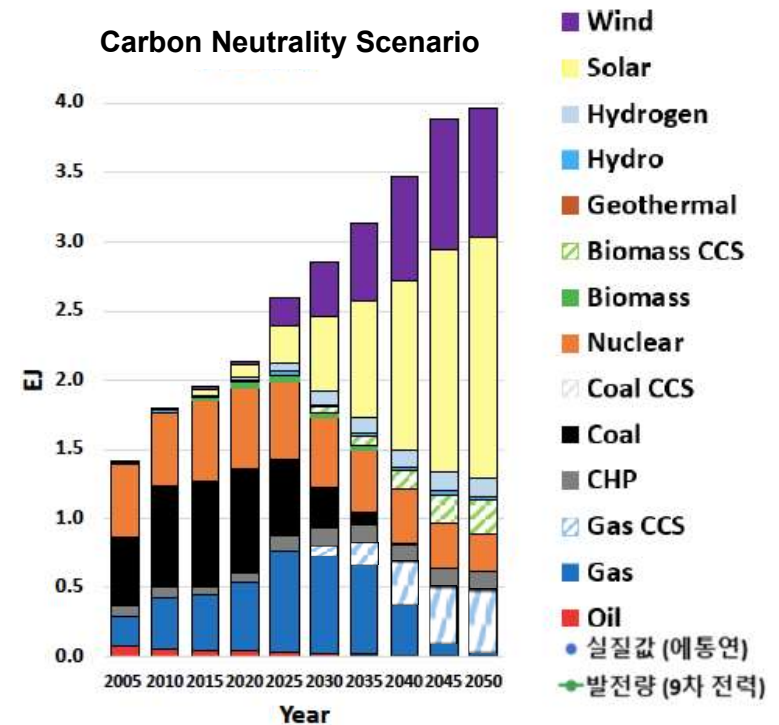
Date	Who said?	Position	Ambition Level
May 5, 2021	Jung-Ae Han,	Minister of Environment	“Difficult to refer to specific level of ambition”
May 20, 2021	Hee-Ryong Won,	Governor of Jeju Province (opposition party)	At least 37.5% to 2017
June 16, 2021	Young-Gil Song,	Party Leader, Democratic Party (governing party)	At least 40% to 2017
June 17, 2021	Jung-Gee Hong	Vice Minister, Ministry of Environment	37.5% to 2018 should be basis
June 30, 2021	Korean Government scenarios	Leaked Government Document	34.3% to 39.5% to 2017
July 20, 2021	Korean Government scenarios	Leaked Government Document	32.5% to 42.5% to 2018
Aug. 4, 2021	Mi-Ae Choo	Former Attorney General, Presidential Candidate	50% reduction

What Net Zero by 2050 (or a ~40% reduction by 2030) means to the Power Sector

| SFOC / KAIST – GCAM Net Zero Pathway Study (Supported by SPIPA)

Strategic Partnerships for the Implementation of the Paris Agreement (SPIPA)

NZ2050	2020	2030	2040	2050
	Ratio(%)	Ratio(%)	Ratio(%)	Ratio(%)
Oil	1.9%	0.8%	0.1%	0.0%
Gas	23.8%	26.2%	7.9%	1.3%
Gas CCS	0.0%	2.8%	10.9%	12.6%
CHP	2.4%	2.0%	1.0%	0.8%
Coal	36.3%	8.9%	0.1%	0.0%
Nuclear	27.2%	17.7%	10.3%	6.3%
Biomass	1.8%	1.4%	0.1%	0.0%
Biomass CCS	0.0%	1.4%	4.7%	6.9%
Hydro	0.8%	0.7%	0.7%	0.8%
Solar	4.2%	22.8%	40.7%	47.1%
Wind	1.6%	15.2%	23.5%	24.2%
Total Generation (GCAM)	100.0%	100.0%	100.0%	100.0%



How coal phase out ambition is developing

Heading towards the right direction with coal phase out year announcement in horizon

Year	Major Coal Phase Out Developments
2016-17	<ul style="list-style-type: none">• Eleven coal power plants commissioned (15% increase in emissions)• Seven units begin construction and receive gov't financing• Government announces to permit no more new coal plants
2018	<ul style="list-style-type: none">• Chungnam Province joins Powering Past Coal Alliance
2019	<ul style="list-style-type: none">• Several coal plant retrofit projects suspended, leading to life period cap on existing coal power plants
2020	<ul style="list-style-type: none">• Ban Ki-Moon led government council (NCCA) recommends 2040 to 2045 coal phase out to Korean Government
2021	<ul style="list-style-type: none">• Fate of last new coal projects (whether they will be cancelled early) is the most contentious issue in 2050 net zero scenario and 2030 NDC discussions led by the Carbon Neutrality Committee

Practically **no coal mining** in South Korea and Japan. However, transition issue of **national utility** has been significant barrier to coal phase out and renewable transition

How to reach net zero by 2050

Carbon Neutrality Committee draft scenarios

(Unit: million tons CO₂eq)

Category	2018	Emissions in 2050		
		1 st Scenario	2nd Scenario	3 rd Scenario
Total (net emissions)*	727.6(686.3)	25.4	18.7	Net-Zero
Electricity	269.6	46.2 coal(O) gas(O)	31.2 coal(X) gas(O)	0.0 coal(X) gas(X)
Industrial	260.5	53.1	53.1	53.1
Transport	98.1	11.2(-9.4)	11.2(-9.4)	2.8
Building	52.1	7.1	7.1	6.2
Agriculture Livestock & Fisheries	24.7	17.1	15.4	15.4
Waste	17.1	4.4	4.4	4.4
Fugitive emissions, etc.	5.6	1.2	1.2	0.7
Carbon Sink	-41.3	-24.1	-24.1	-24.7
CCUS	-	-95.0	-85.0	-57.9
Hydrogen	-	13.6	13.6	0.0

Key issues

Power mix, especially fate of new coal power plants

No more blast furnaces

Internal combustion engine policy

Is biomass generation carbon neutral?
Reliance on CCS, incl. overseas CCS

Fair Market Value of New Coal Power Plant

How will the Korean Government prepare funds for plant closure?

- Fate of last remaining coal power plants is a contentious topic
- Fair market value of a new coal power plant under construction, whose accumulated constructions costs are roughly USD 3~4 B, are actually very low due to already existing climate regulations and renewable targets (low capacity factors)
- Compensating and cancelling plants may be less burdensome than expected

Capacity Factors (depending on GHG regulation level)	Variable Power Price (\$)
	High (KRW 107/kWh)
9 th Power Plan level capa. factor	KRW 1,171 B (USD 1 B)
Capa. factor when power sector emission cap (193 MtCO ₂ e) applied	KRW 377 B (USD 320 M)
2035 coal phase out scenario capa. Factor	KRW -767 B (USD – 650 M)

CLIMATE CHANGE

Philippines and Vietnam coal-fired plants to retire in ADB-led plan

Bank partners with Prudential and HSBC for pilot project



Asia needs to cut its reliance on coal power. © Reuters

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HO CHI MINH CITY -- The Asian Development Bank and the UK-based insurer Prudential plan to announce an ambitious investment scheme to cut carbon emissions in Asia at the United Nations' COP26 climate conference in November.

The proposals will include a shortlist of existing coal-fired power plants across Asia