### Korea's fossil financing at SEA/Indonesia : Challenges and opportunities

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Solutions for Our Climate Oil and Gas public finance program lead

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I Korea, world's 3<sup>rd</sup> largest coal financier

□ Korean government fueled coal industry of Korea by exporting them to SEA



Top 15 G20 countries for international public finance for fossil fuels compared to renewable energy, annual average 2018-2020, USD billions Source: Oil Change International(2021)

Korea, world's 3<sup>rd</sup> largest coal financier

### □ 87%(8.7bn) of downstream coal finance went to SEA(2011-2020)



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**I** South Korean public finance steps out of coal(April 2021)

### S.Korea's Moon vows to end new funding for overseas coal projects



I Beyond coal : Public financing for oil and gas

94.7% of the world's CO<sub>2</sub> emissions comes from burning fossil fuels. Emissions from oil and natural gas account for 54.4% of global CO<sub>2</sub> emissions. CO2 emissions by fuel type, World 35 billion t 30 billion t Oil 25 billion t 20 billion t 15 billion t Coal 10 billion t 5 billion t Ot 1750 1800 1900 1950 1850 2000 2019 Source: Our World in data

# LNG is not a "bridge"



Life-Cycle LNG : 688gCO<sub>2</sub>/kWh Coal Power Plant : 887gCO<sub>2</sub>/kWh



### IEA 2050 Global Energy Roadmap



Coal finance, Tip of the *fossil* iceberg



Source : Fueling the Climate Crisis (Solutions For our Climate, 2021)

State of play, role of International oil and gas financing of Korea(2011-2020)



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Oil and gas financing by value chain at SouthEast Asia(2011-2020)



Refinery/Petrochem(\$4.4bn)

LNG power(\$0.5bn)

- Most of Korea's oil&gas financing went to Downstream industry at SEA
- Korean E&C companies exported Refinery/Petrochemical facilities

Oil and gas financing by countries at SEA

Oil and gas financing by SEA countries and Indonesia

#### Indonesia specific Indonesia, the biggest recipient of Korea's O&G finance 2.5 -2.0 2.0 Refinerv Jawa 1 / Muara Tawar CCGT Plant LNG \_ 1.6 Donggi Senoro LNG(KOGAS) terminal 1.5 0.4 Tangguh LNG train 3(Daewoo E&C) Gas power plant 1.1 Balikpapan refinery project(SK Ecoplant 1.0 0.9 Cilacap RFCC project(GS E&C) 1.2 0.5 0.2 0.1 0.1 0.0 Myanmar Philippines Singapore Malaysia Thailand Vietnam Indonesia (Source: SFOC, 2021)

Oil and gas financing

Potential drivers of additional O&G investment – Korea factor

[Gas expansion planned in 9 <sup>th</sup> Basic plan for	-
1	•
electricity]	•
	•

#### [Korea's Hydrogen scheme]

 Year
 Unit
 Capacity(GW)

 2020
 99
 41.3

 2034
 118
 59.1

Planned Hydrogen Supply by Year		2020	2030	2050
Domestic production		22	194	500
Fossil fuel	Grey hydrogen	22	94	
	Blue hydrogen		75	200
Renewable energy	Green hydrogen		25	300
Foreign import			196	2,290
Fossil fuel	Grey hydrogen	-	-	-
	Blue hydrogen	-	-	-
Renewable energy	Green hydrogen	-	-	-

source : Korea government(2021)

- ✓ LNG plant expansion is expected to rise until 2034
- ✓ LNG expansion would lead to further upstream investment
- ✓ Korea's hydrogen scheme relies heavily on fossil hydrogen
- ✔ Until 2030, Korea will secure 1.7Mt of fossil hydrogen through LNG
- ✔ Fossil development could be accelerated, if government tries tot
- secure 'import hydrogen' with fossil hydrogen.

Potential drivers of additional O&G investment – Korea factor

Expanding O&G fields driven by POSCO Int.

POSCO International to Develop Gas Field in Indonesia



POSCO International will push for the development of a large-scale oil and gas field in Indonesia.

Posco Int expanding it's upstream business



### POSCO Int starts gas field exploration at Mala in addition to Indonesia 포스코인터내셔널, 인도네시아 이어 말레이시

입력 2021.08.10 11:00 수정 2021.08.10 11:02

아서도 가스전 탐사

한경 ESG



Potential drivers of additional O&G investment – Overall Asia demand



#### Figure 6: Gas-fired Power Plant Capacity Operating and in Development in Asia, June 2021

Source: Global Energy Monitor, Global Gas Plant Tracker, September 2021.

### □ SEA's transition to Gas could drive further downstream gas financing

Potential drivers of additional O&G investment – Overall Asia demand



Vung Ang III Thermal Power Plant will be completed in 2026-2027

#### Investors proposes \$4.59 billion Vung Ang III plant

July 12, 2021 | 21:36

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The joint venture of Siemens Energy, Korea Electric Power Corporation, and Power Engineering Consulting JSC 2 (PECC2) proposed to develop the \$4.59 billion Vung Ang III Thermal Power Plant.

#### □ KEPCO proceeds with Vung Ang 3 thermal power plant

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### Challenge 1 : Asia's gas lock-in

Transition to LNG would endanger asia's Paris target by adding GHG for decades



### Figure 4. Comparison of Carbon Budget Against Developed Fossil Fuel Reserves

Source: Big Oil Reality Check, OCI (2020)

There's no room for additional O&G field development considering

### Challenge 2 : CCS can't be a silver bullet

fossil with CCS makes fossil fuel more expensive, without practical mitigation effect.



## Current capital costs by technology(CSIRO,2022)

### Challenge 2 : CCS can't be a silver bullet

Gas with CCS makes gas more expensive, without practical mitigation effect.

Projected emission of Barossa gas project, promoted as "CO-2 free LNG" to Korean media



"Transporting CO2 over such a large distance creates high emissions from the needed compression and processing, **The emissions are so high, any effort for CO2 storage is negated**, even before assuming CO2 storage actually works." - John Robert, IEEFA

### Challenge 3 : Stranded asset risk

Low competitiveness of Gas power could possibly cause financial crisis to regional utility company



#### Figure 7: Levelized Costs of Energy for Renewables vs. Gas

Source: Lazard's Levelized Cost of Energy Analysis - Version 14.0. The data presented in this figure are global, unsubsidized mean values for utility-scale generation.

### Renewable energy already became cheaprer than Gas power plant

# End of Document



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