kosif Korea Sustainability Investing Forum

YANG YI Won Young,
Member of the National Assembly

2022
White Paper on Fossil Fuel Finance

Discussing Fossil Fuel Finance Beyond Coal

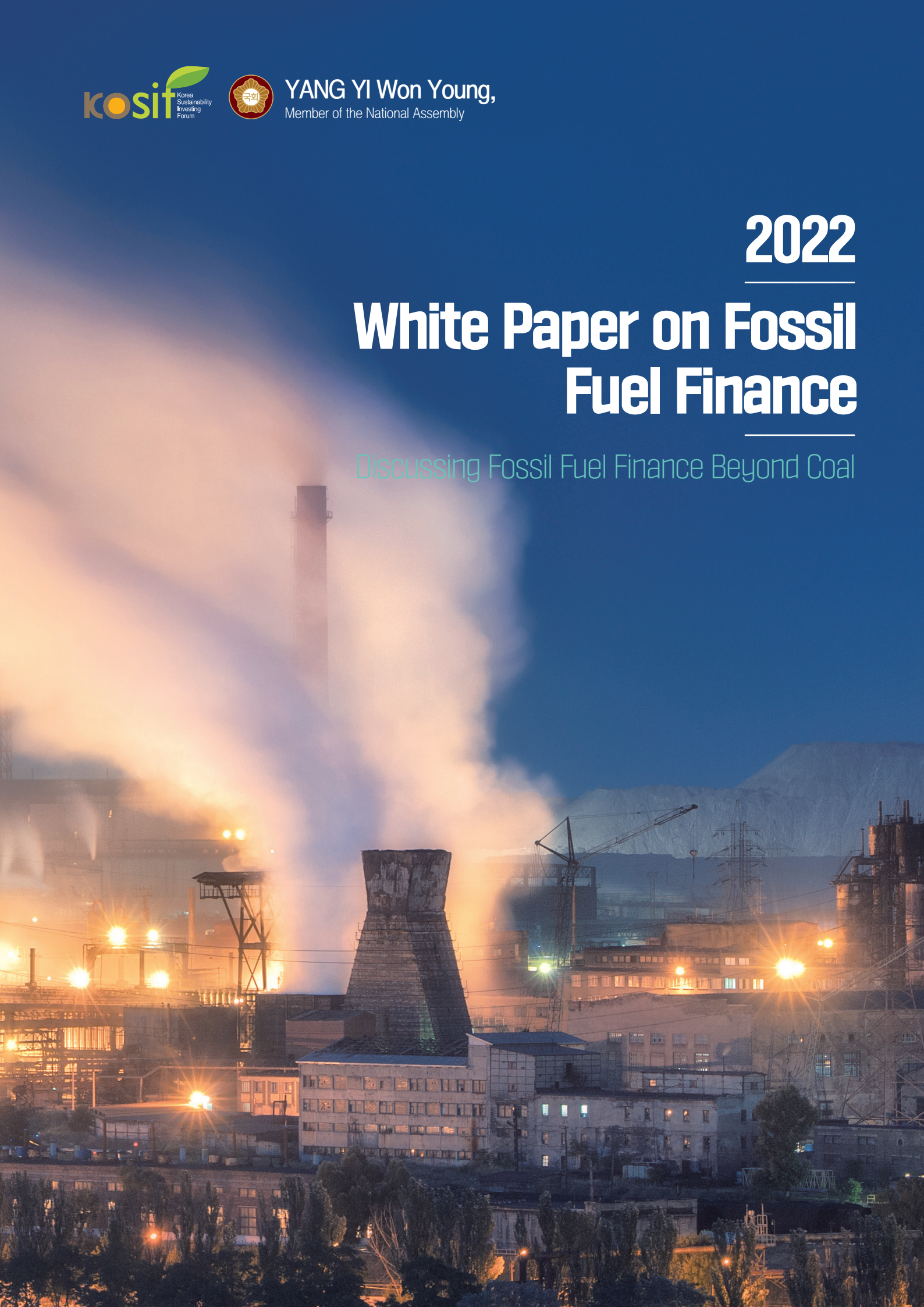


Table of Contents

〈Survey Overview〉

- **Surveying subject**: Korean public and private financial institutions (respondents: public – 82, private – 39)
- **Surveying methods**: (Public) Questionnaires were sent to competent ministries with public financial institutions through the parliamentary office of YANG YI Won Young (In the case of the National Pension Service (NPS), we used some data submitted to the parliamentary office of Kang Hoon-sik)
  (Private) Data were requested from the Financial Supervisory Service through the parliamentary office of YANG YI Won Young, and the Financial Supervisory Service collected data from each financial institution
- **Surveying content**:
  - Asset status
  - Current balance of financial support (coal, oil, natural gas)
  - Amount of financial support by year (coal, oil, natural gas, renewable energy)
  - Net-zero target and action plan
  - Renewable energy investments (financial support)
  - Fossil fuel-free finance (coal phase-out finance)
- **Target asset class**: Project financing (PF) loans, business loans, corporate bonds, stock, and insurance
- **Target area**: Korean and international
- **Target period**: 2012 through June 30, 2022
- **Exchange rates**: Each financial institution's internal criteria were applied

This report is a synthesis of the 2022 White Paper on Fossil Fuel Finance published by the Korea Sustainability Investing Forum (KoSIF) and the parliamentary office of YANG YI Won Young.

Disclaimer

© 2022 KoSIF All Rights Reserved. The content of this white paper is based on data provided by the parliamentary office of YANG YI Won Young. Please note that this material is not a guarantee or promise of any return. The information contained in this document is based on information obtained from sources believed to be reliable by KoSIF, but its accuracy and completeness are not fully guaranteed. The information, data, analytical reports and opinions provided in this material are proprietary to KoSIF, may not be reproduced or distributed, are for informational purposes only, and are subject to change without notice.

KIM YOUNG-HO

Chief Director, Korea Sustainability Investing Forum

"Choices made and actions taken over the next decade will have an impact now and for thousands of years."
A key conclusion of the Intergovernmental Panel on Climate Change[IPCC]'s Sixth Assessment Report, released in last March, is a call for immediate and bold climate action. The report content is grim. It is analyzed that the policies implemented up to 2020 would result in more greenhouse gas[GHG] emissions in 2030 than the emissions specified in the nationally determined contributions[NDC].
Based on the current climate policy -that is, in the absence of additional policy efforts- the report warns that the global average temperature rise is expected to be 3.2 degrees Celsius by 2100. So, the iconic phrase that sums up the report's content is "Now or Never."

Global GHG emissions reductions have fallen off the Paris Agreement's target of a 1.5-degree trajectory. Humanity is now walking on thin ice. To get us back to a 1.5-degree orbit, we need to drastically reduce our use of fossil fuels, starting especially with coal, and even better, phase them out in bulk without the least delay. At the same time, renewable energy needs to be scaled up even more than they are now.

The process of scaling up and transitioning to different means of reduction requires finance. It is because without capital, none of this is possible. According to IPCC's Sixth Assessment Report, current climate finance is highly inadequate for limiting warming to 1.5 degrees or even 2 degrees. Public and private funds, etc. that have been invested in fossil fuels need to be redirected to climate finance for the transition. That is why it is so important to understand the reality of the volume, methods, etc. of the finance invested in each fossil fuel, including especially coal.

KoSIF, in collaboration with Congresswoman YANG YI Won Young, released the country's first-ever "2022 White Paper on Fossil Fuel." KoSIF published the "2020 White Paper on Coal Finance" for the first time in Korea by conducting a comprehensive survey of public and private financial institutions' status of support solely for coal and has continued to do so in 2021 and 2022. Our "White Paper on Fossil Fuel Finance" published at this time analyzed both natural gas and oil, not just coal.

Total assets of Korean fossil fuel finance (public and private) stood at KRW 118.5 trillion (as of 30 June 2022). In the form of loans, bonds, and stock investments, KRW 56.5 trillion was being supported for coal and KRW 62.0 trillion for oil and natural gas. We did not add it up in the current report, but when including coverage (insurance) as well, the figure becomes KRW 213.4 trillion. This is equivalent to one-third of the government budget in 2023. The numbers show that financial institutions have been generously fueling the fossil fuel industry, not just coal, but all fossil fuels, including oil and natural gas. In contrast, the cumulative investment in renewable energy (6.2012–2022) is only KRW 37.2 trillion. This is a serious investment imbalance.

From a "net-zero by 2050" perspective, financial institutions need to reconfigure their long-term asset portfolios, with an interim target of 2030. We need to examine market and regulatory trends in the Korean and international fossil fuel industry, including coal as well as oil and natural gas, and establish a mid- to long-term roadmap for decarbonizing assets in line with 1.5°C and actively implement it. Governments should include "climate change" in their prudent finance supervision of financial institutions. Only then can capital, especially private capital, flow into the climate transition funds and into a sustainable economy.

We hope this first white paper on fossil fuel finance will serve as a foundation for change and climate action. As long as we act, there is hope.

YANG YI Won Young

Trade, Industry, Energy, SMEs, and StartUps Committee, Member of the National Assembly

As of the first half of 2022, the total balance of fossil fuel finance of Korean financial institutions amounts to KRW 118.5 trillion. Of these, assets held by public financial institutional total KRW 78.6 trillion, or 66% of Korea's total fossil fuel balance. That is 1.5 times more than the KRW 39.9 trillion in private financial institution balances.

I am YANG YI Won Young of the Democratic Party of Korea for politics with the wind and the sun.

After publishing the White Paper on Coal Finance, which analyzed coal finance in 2020 and 2021, we saw the need to analyze fossil fuel finance as a whole, which is why we published the White Paper on Fossil Fuel Finance this year.

As of the first half of 2022, the total balance of fossil fuel finance of Korean financial institutions amounts to KRW 118.5 trillion. Of these, assets held by public financial institutions total KRW 78.6 trillion, or 66% of Korea's total fossil fuel balance. That is 1.5 times more than the KRW 39.9 trillion in private financial institution balances.

By 2021, global investment in renewable energy will be 3.1 times that of fossil fuels. However, investment in renewable energy by Korean financial institutions has not kept pace with global trends. The Korea Development Bank (KDB) has invested twice as much in coal as in renewable energy.

While financial institutions are shifting to greener investments with coal phase-out and net-zero s, the absolute volume of Korean coal finance is not shrinking. To reduce the scale of fossil fuel finance, we need to proactively create and implement a coal phase-out roadmap. However, there is no significant change in fossil fuel assets held by public financial institutions. Private financial institutions are also expecting their existing coal finance to disappear naturally and are only passively responding by stopping new investments.

In this situation, the 10th Basic Plan for Long-term Electricity is expanding liquified natural gas (LNG) power generation, which increases GHG emissions. This could negatively impact the expansion of renewable energy in Korea and the investment decisions of financial institutions.

It is time for the government to play a role in helping Korean financial institutions take a more active role in addressing the climate crisis. We hope that this year's White Paper on Fossil Fuel Finance will be used to examine the current state of fossil fuel finance and help shape policy to meet the needs of the international community and the role of finance for future generations. We would like to thank KoSIF for their hard work and support in publishing this white paper. We will continue to support efforts to create a sustainable planet and address the climate crisis.

Understanding the fossil fuel industry

Global fossil fuel consumption has risen again since 2021, driven by surging energy demand following the coronavirus endemic. With countries warning that the 1.5℃ limit is unlikely to be met with the current 2030 carbon reduction targets, increasing fossil fuel consumption is raising concerns about the likelihood of net-zero by 2050.

Trends of fossil fuel consumption

Global fossil fuel (oil, natural gas, and coal) consumption, which has been stagnant since the 2015 Paris Climate Agreement, surged in 2021, with a year-over-year increase of 5.5% growth. This is the result of responding to the energy supply-demand imbalance that was exacerbated by faster-than-expected growth in energy demand, which had been depressed by the coronavirus, with increasing fossil fuel production in the short term.[1] By fuel, coal consumption grew at an even rate of 6.0%, oil at 5.8%, and natural gas at 5.0%. Consumption of renewables also grew by 14.7% year on year in 2021, but it was not enough to keep up with soaring electricity demand.

Korean fossil fuel consumption also increased by 5.0% year-on-year. However, in contrast to the global consumption trends, natural gas consumption growth in Korea was 8.7%, outpacing coal (0.7%) and oil (6.5%), which is likely due to a shift from coal to LNG as the country reduces coal power generation to meet its 2030 NDC[Nationally Determined Contribution].

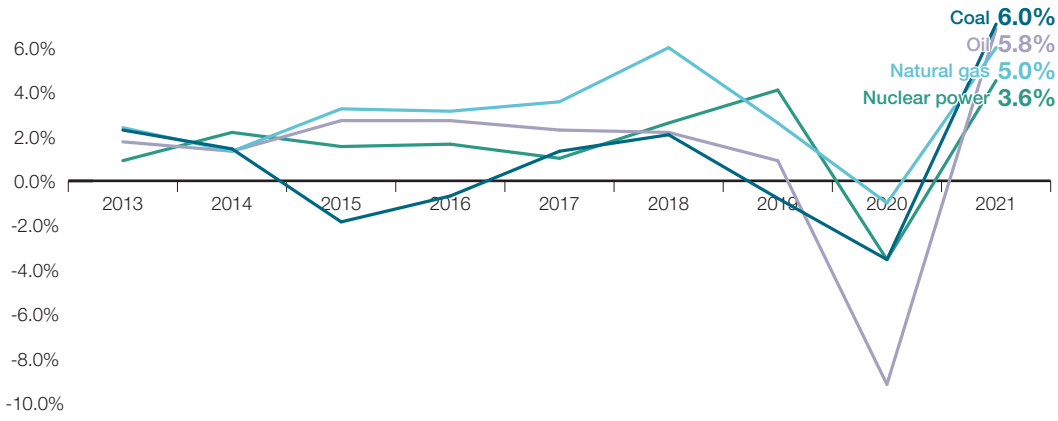
Given the growing demand for energy and the limits of expanding the penetration of renewables, fossil fuel consumption is expected to continue to grow. In its Coal Report, the International Energy Agency (IEA) forecasts a 1.2% year-on-year increase in global coal use and a 5.4% increase in production in 2022, with coal production peaking in 2023 and then declining to 2022 levels by 2025. Global oil demand is also expected to increase, with year-over-year growth of 2.3% in 2022 and 1.1% in 2023, according to the EIA Report.[2]

Recent growth in the fossil fuel market has led some global investment firms continue to invest in fossil fuel companies, with asset management company BlackRock Inc. stating that it has “no plans to stop financing new fossil fuel supplies” despite declaring to go coal phase-out. However, the IPCC, a United Nations organization, has stated in a the Report[4] that “It is impossible to prevent 1.5℃ without large-scale phasing-out of fossil fuels, including coal power,” emphasizing the need for faster and larger phasing-out of fossil fuel capacity. To reach the 2050 net-zero target, the world will eventually need to implement stronger NDCs, which will lead to a devaluation of all fossil fuels, not just coal. Financial institutions will therefore need to monitor mid- and long-term risks and have an active and close management policy for investments in fossil fuel assets with a high risk of stranding.

1. BP Statistical Review of World Energy 2022/ Woori Finance Research Institute
2. Short-Term Energy Outlook issued by the US Energy Information Administration (EIA) February 2023
3. Source: Bloomberg
4. Working Group III Report of the IPCC Sixth Assessment Report (published in April 2022)

*Data: BP Statistical Review of World Energy

Trends of growth rates of global fuel consumption



Directions of Korean energy policies

In January 2023, the "10th Basic Plan for Long-term Electricity Suppy & Demand" and the revised "K-Taxonomy" were implemented. This suggests that the main direction of Korean energy policies is to increase nuclear power generation to meet growing electricity demand and ensure energy security amidst unstable international energy circumstance, with a temporary expansion of LNG use in the process of coal phase-out.

Finalization of the 10th Basic Plan for Long-term Electricity Suppy & Demand

In January 2023, the Ministry of Trade, Industry and Energy finalized the 10th Basic Plan for Long-term Electricity Suppy & Demand (hereinafter referred to as the "10th BPLE"). The core of the 10th BPLE is to (i) increase the proportion of nuclear power generation and (ii) reduce the proportion of coal power generation and shift to LNG power generation, which has half the GHG emissions of coal power generation.

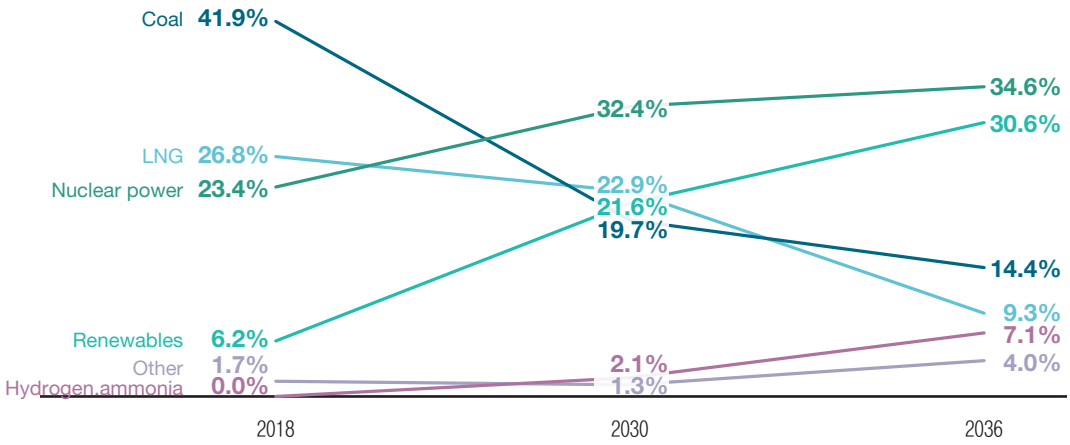
According to the 10th BPLE, the proportion of nuclear and renewables generation in the Korean energy mix will increase from 23.4% and 6.2% in 2018, respectively, to 34.6% and 30.6% in 2036. The proportion of coal, which accounted for 41.9% of Korean power generation as of 2018, will be significantly reduced to 14.4% by 2036, and the share of LNG power generation will be reduced to 9.3% by 2036 after closing 28 aged facilities from coal plants in Korea and converting them to LNG-fired power plants for a period of time. Through this change in energy mix, the government aims to reduce GHG to achieve the increased NDC target announced in October 2021 (149.9 million tons, -44.4% compared to the emission performance in 2018).

Revision of the K-Taxonomy

The revision of the K-Taxonomy, which defines the green economy and green energy sector, took effect in January 2023. The key points of the proposal, which has been revised and finalized after receiving input from many stakeholders since the guidelines were first released by the Ministry of Environment in 2021, are (i) the inclusion of nuclear R&D in the "green sector" and (ii) nuclear power generation (new construction and continued operation) in the "transition sector."

In 2021, there were ongoing discussions about the inclusion of LNG and nuclear power in K-Taxonomy, but it was decided to include LNG temporarily and not to include nuclear power generation given the situation in Korea. The Ministry of Environment said that the inclusion of nuclear power generation in the revision reflects the importance of nuclear power in achieving carbon neutrality in 2050 and energy security triggered by the crisis in Ukraine, etc. and that they have strived to establish reasonable criteria by taking into account Korean conditions while also reflecting the revision of the EU Green Taxonomy announced in July 2022.

Changes in the proportion of generation by power source



*Data: Government Proposal of the 10th Basic Plan for Long-term Electricity

Fossil fuel finance of Korean financial institutions

Comprehensive analysis of fossil fuel finance

118.5

Trillion KRW

Korean financial institutions' total fossil fuel financing balance[1] (as of June 2022)

South Korea's public and private financial institutions (banks, insurance companies, securities firms) have a fossil fuel financing balance of KRW 118.5 trillion as of June 2022.[1] The largest proportion of this is coal finance, driven by stakes in Korean Electric Power Corporation(KEPCO) and KEPCO bonds held by public financial institutions. Given that some of the questionnaires submitted by financial institutions for this report were missing answers or contained only limited data, the actual balance of Korean fossil fuel finance is expected to be larger.

Fossil fuel financial breakdown by financial sector

According to research by KoSIF, the total fossil fuel financing balance of the public and private financial sectors in Korea, excluding the NPS, was KRW 118.5 trillion2 as of June 2022, and KRW 101.7 trillion excluding the NPS. The fossil fuel financial breakdown does not include the total fossil fuel financial assets of the NPS due to insufficient data submission for some fuels.

When categorizing the scale of Korean fossil fuel finance into public and private, the public financial sector accounted for KRW 61.8 trillion, or 60.8% of the total fossil fuel financing balance, about 1.5 times more than the private financial sector's KRW 39.9 trillion.

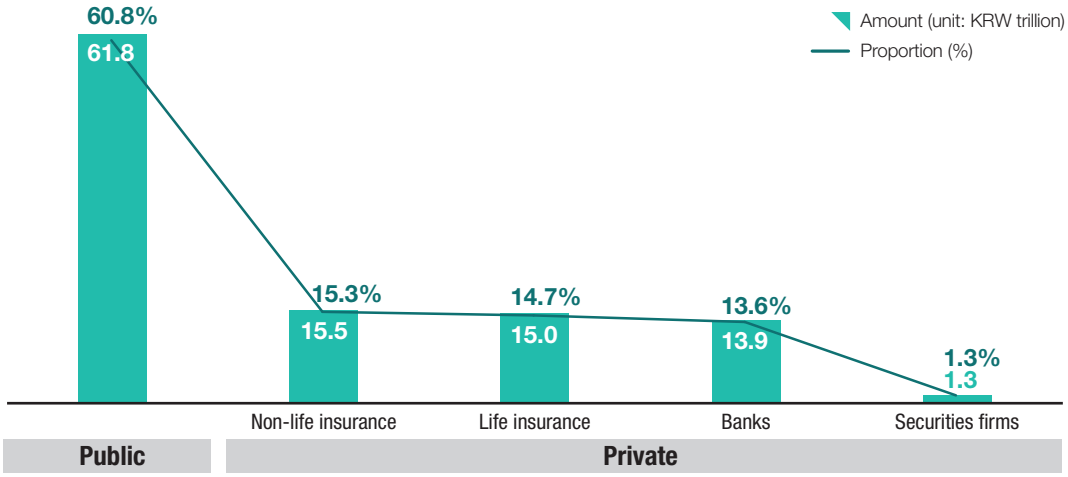
The largest proportion of fossil fuel finance in the public financial sector is coal finance (KRW 28.4 trillion), representing 45.9% of public sector fossil fuel assets. Of the coal financing, KRW 20.6 trillion is KEPCO's stake held by the KDB, representing 73% of the balance of public sector coal financing. KEPCO-related investments account for the largest proportion of Korean fossil fuel finance. When taking into account KEPCO and KEPCO subsidiary bonds held by the public and private financial sectors in addition to the KDB's stake, totaling KRW 11.8 trillion (as of June 2022, excluding bonds held by the NPS), assets related to KEPCO total KRW 32.4 trillion, representing 65.9% of the total coal financing balance of Korean financial institutions and 31.9% of the total fossil fuel financing balance.

In the public finance sector, coal is followed by oil and natural gas financing at KRW 17.0 trillion (27.6%) and KRW 16.4 trillion (26.5%), respectively, with the largest proportion of shipping finance and business loans provided by the Export-Import Bank of Korea (KEXIM)

In the private financial sector, fossil fuel assets by financial institution are KRW 9.7 trillion (9.6%) for non-life insurance, KRW 15.0 trillion (14.7%) for life insurance, KRW 13.9 trillion (13.6%) for banks, and KRW 1.3 trillion (1.3%) for securities firms. In the case of insurance companies (life and non-life), which account for 24.3% of the total, the largest assets are related to bond investments in KEPCO and its subsidiaries and power generation PF loans.

1. Natural gas/oil financial sector of the NPS includes only stock assets as of December 31, 2021 (other assets were not submitted and cannot be verified)
2. The fossil fuel financing balance of KRW 101.7 trillion excludes the total fossil fuel financing balance of KRW 16.8 trillion from the NPS (The reference material of June 30, 2022 submitted by the NPS for the natural gas/oil financial sector cannot be used due its composition of content, and also for the reference asset of December 31, 2021, questionnaires required for analysis were not answered, so detailed analysis is unviable. Hence, to ensure a balanced analysis across fuels, we have excluded the full fossil fuel finance amount of the National Pension from the detailed analysis of fossil fuels).

Fossil fuel balances and shares by financial sector (as of June 2022)



Fossil fuel finance breakdown by fuel

When looking at Korean fossil fuel finance by fuel, coal accounted for the largest share of financial assets at 48.4% (KRW 49.2 trillion), followed by natural gas at 29.7% (KRW 30.2 trillion), and oil at 21.9% (KRW 22.3 trillion). The largest share of coal is due to the public sector, namely the KDB's stakes in KEPCO and the investment in KEPCO bonds, which has increased rapidly in recent years.

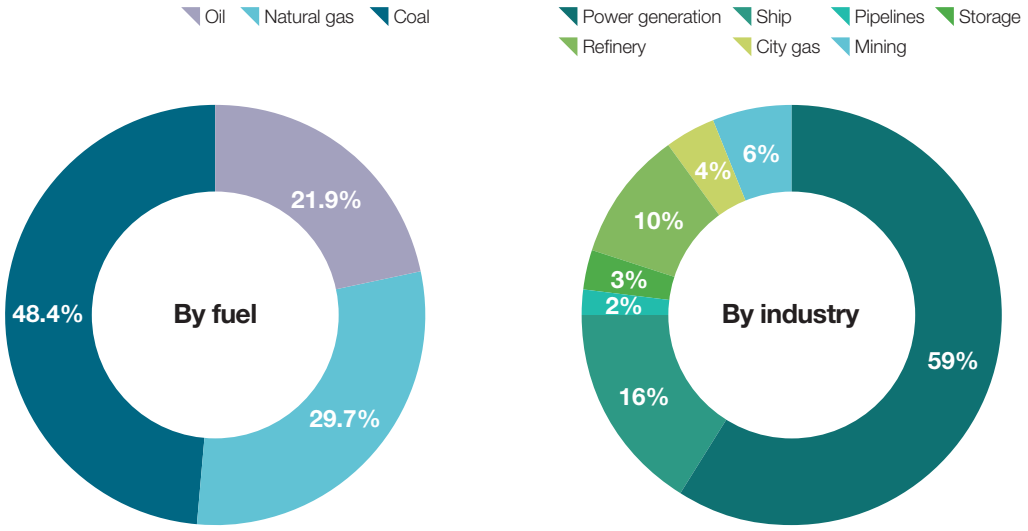
In the case of natural gas and oil, public sector holdings were also the highest at 54% and 76%, respectively, and most of this amount was in the form of Korean and overseas shipping finance (LNG ships, drilling ships) as well as PF and business loans held by the KEXIM and the KDB.

Fossil fuel finance breakdown by industry

A breakdown of Korean fossil fuel finance by industry shows that fossil fuel assets in the power generation industry accounted for 58.9% (KRW 59.9 trillion) of total fossil fuels, followed by 16.1% (KRW 16.4 trillion) in the shipping industry, 10.2% (KRW 10.4 trillion) in the refinery industry, and 6.2% (KRW 6.3 trillion) in the mining industry, and so forth.

In the power generation industry, the largest segment, 81% of financial assets are coal, driven by stakes in KEPCO and KEPCO bond investments. The next largest sector was shipping finance related to the construction of LNG ships and drilling ships, which accounted for 16.1% (KRW 16.4 trillion), with most of the assets held by the public financial sector, namely the KEXIM and the KDB.

Fossil fuel financing balance (as of the end of June 2022)



*Data: Government Proposal of the 10th Basic Plan for Long-term Electricity

Fossil fuel finance of Korean financial institutions

Comprehensive analysis of coal finance

56.5

Trillion KRW

Coal financing balances of Korean financial institutions[1] (as of the end of June 2022)

As of the end of June 2022, the coal financing balance by Korean financial institutions through loans, bonds, and stock investments was KRW 56.5 trillion.[1] While this is a decrease of about KRW 5.9 trillion compared to last year, it is only 1% of the current coal finance balance, which is insignificant in light of the recent flow of declarations by financial institutions to phase out coal finance. The guaranteed amount through insurance for coal-related companies or projects, known as the amount of coverage, was also KRW 39.5 trillion. With around KRW 4 trillion remaining in outstanding commitments for new coal plant PF loans and the recent, continual acquisition of KEPCO's bonds, the volume of coal finance by Korean financial institutions is expected to remain at the current level or increase in some cases. The comprehensive analysis of coal financing included KRW 7.3 trillion in coal financing balance from the NPS.

Coal finance breakdown by financial sector

Looking at Korean coal financing volume by public and private sector, the public coal financing balance was KRW 35.7 trillion, about 1.7 times higher than private finance (KRW 20.8 trillion).

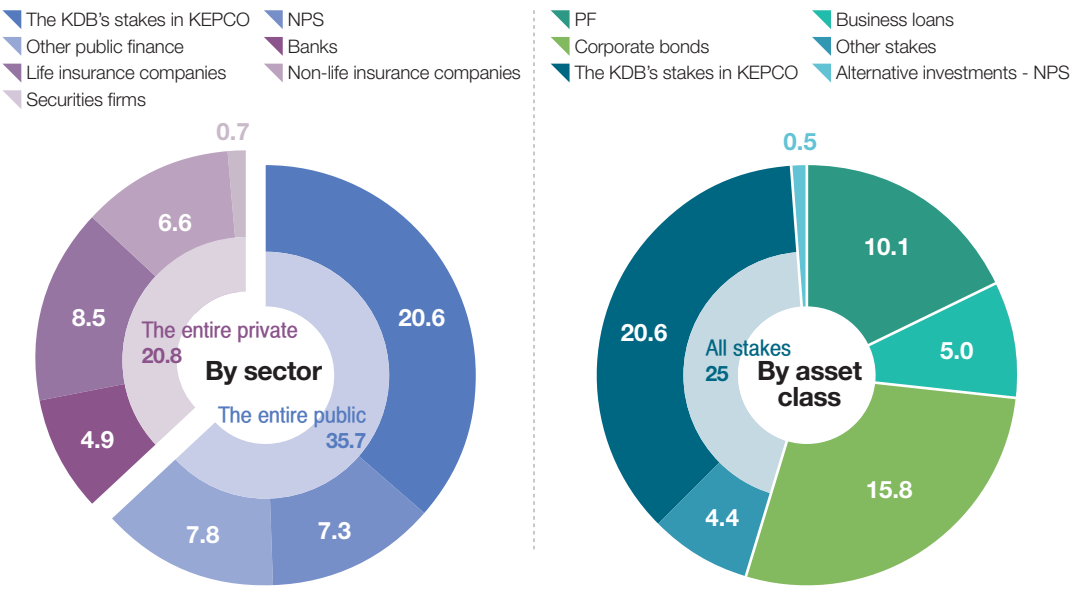
KEPCO's stakes accounted for a significant portion of the public financial institutions' coal assets. The KDB and the NPS owned KRW 20.6 trillion and KRW 838.4 billion in KEPCO, respectively, and the stakes in KEPCO accounts for 60% of the total publicly financed coal assets. Among public financial institutions, the KDB has the largest volume of coal asset (KRW 23.6 trillion). When excluding the KDB's stakes in KEPCO, which is held for the purpose of maintaining management rights over the state-owned company, the top five are the NPS (KRW 7.3 trillion), KDB (KRW 3 trillion), KEXIM (KRW 2.5 trillion), and Korea Post (KRW 2.2 trillion).

Among the private financial sectors, the insurance industry has the largest coal-related assets. In absolute terms, life insurance had the largest coal financing balance at KRW 8.5 trillion. In life insurance, Samsung Life (KRW 2.04 trillion), Kyobo Life (KRW 1.55 trillion), and Heungkuk Life (KRW 1.43 trillion) were the largest coal financiers, while in non-life insurance, DB Insurance (KRW 2.03 trillion), Samsung Fire (KRW 1.17 trillion), and Lotte Insurance (KRW 0.94 trillion) were the largest. There are nine private financial institutions in total that have increased their coal financing volume by more than 100 billion won year-on-year, including DB Insurance, Nonghyup Bank, and Kyobo Life Insurance.

1. Balance of coal-related investments in the NPS includes KRW 7.3 trillion.

Coal Financing Balance (as of the end of June 2022)

Unit: trillion won



Coal finance breakdown by asset class

Breaking down Korean coal finance by asset class, equity investments in coal-related companies accounted for the largest share of KRW 25 trillion (44% of the total), driven by the KDB's stakes in KEPCO (KRW 20.6 trillion). When excluding the KDB's stakes in KEPCO, the order goes as follows: business bonds (KRW 15.8 trillion), PF loans (KRW 10.1 trillion), corporate loans (KRW 5.0 trillion), and stock investments (KRW 4.4 trillion). The most notable of these is the increase in the volume of corporate bonds from coal-related companies. Of the total corporate bond balance, KEPCO and its subsidiaries account for KRW 14.5 trillion (92%), and the volume of KEPCO bonds has been growing rapidly in recent years. As KEPCO's deficit continues to grow due to rising energy prices, the company will continue to issue large-scale corporate bonds. Following the acquisition of KEPCO bonds, the volume of coal-related corporate bonds by Korean financial institutions is likely to remain high for the time being.

Proportion of coal assets by financial institution[1]

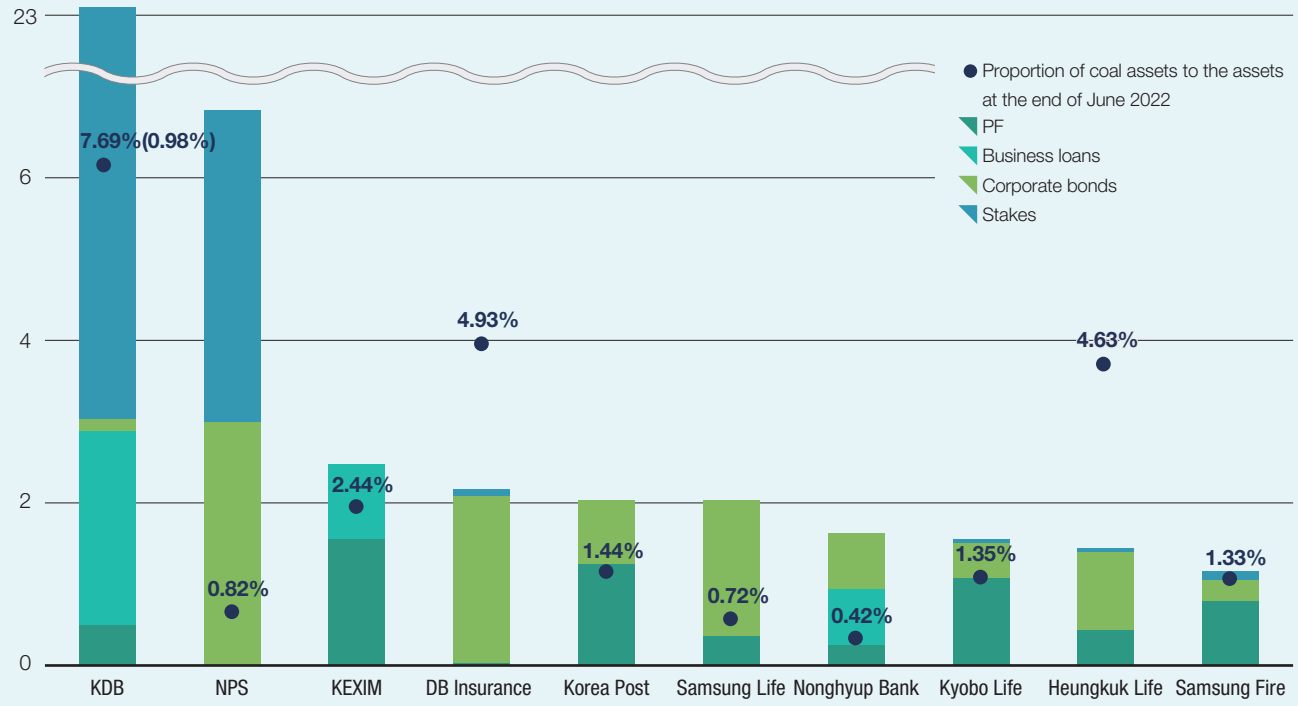
As important as the absolute volume of coal assets is the proportion of coal assets to a financial institution's total assets under management. This is because the risk of a KRW 10,000 investment by someone with KRW 100,000 cannot be treated the same as a KRW 10,000 investment by someone with KRW 1 million. It is true that the Russia-Ukraine war has caused a temporary spike in fossil fuel energy prices. However, from the mid- to long- term perspective, the general consensus is that fossil fuel energy assets will inevitably decline in value as regulations such as carbon pricing proliferate. Institutions with a higher proportion of high-carbon industries to assets will need a more aggressive climate risk management policy than those without.

The top 10 financial institutions in Korean coal finance hold KRW 45.4 trillion in coal assets, accounting for 80% of the total. Excluding the KDB's stakes in KEPCO, DB Insurance (4.93%) and Heungkuk Life (4.63%) had the highest proportion of coal assets to assets among 10 financial institutions. The two insurance companies also had more than double the share of coal assets compared to other insurance companies in 10 financial institutions.

1. The proportion of coal assets was calculated to the assets at the end of June 2022 as submitted by financial institutions
2. The KDB corresponds to the proportion in the parentheses when excluding the stakes in KEPCO.
3. For the KEXIM, assets as of the end of December 2021 were applied

The proportion and volume of coal assets to the assets of the top 10 financial institutions of coal finance[2,3]

Unit: KRW trillion



Proportion and volume of coal assets to the assets of top five financial institutions for coal finance by sector

	Name of the organization	Proportion to assets (as of the end of June 2022)	Coal asset volume (unit: KRW hundred million)
Public finance	KDB[1]	7.69% (0.98%)	236,391 (30,261)
	KEXIM[2]	2.44%	24,757
	Korea Post	1.44%	21,696
	NPS	0.82%	72,818
	IBK	0.01%	461
Banks	Nonghyup Bank	0.42%	16,301
	Hana Bank	0.23%	10,345
	Shinhan Bank	0.17%	7,825
	Kookmin Bank	0.13%	6,140
	Woori Bank	0.10%	4,338
Life insurance companies	Heungkuk Life	4.63%	14,298
	ABL Life	2.90%	5,743
	Shinhan Life	1.47%	9,261
	Kyobo Life	1.35%	15,512
	Samsung Life	0.72%	20,369
Non-life insurance companies	Lotte Insurance	5.06%	9,423
	DB Insurance	4.93%	20,321
	Hyundai Marine & Fire	1.67%	8,722
	Samsung Fire	1.25%	11,672
	KB Insurance	1.25%	5,164
Securities firms[3]	Meritz Securities	0.91%	4,917
	Korea Investment & Securities	0.29%	2,001

1. The KDB corresponds to the parentheses when excluding the stakes in KEPCO.
2. For the KEXIM, assets as of the end of December 2021 were applied
3. Two brokerage firms submitted only a portion of their assets, resulting in a weighting based on the assets in each firm's financial information (Meritz Securities: Korea Investment & Securities, as of December 31, 2021: As of the end of June 2022)

Status of new coal finance[1]

In the first half of 2022, new coal financing volume totaled KRW 5.4 trillion, which is similar to the volume of last year (KRW 5.5 trillion). The volume of new Korean coal investment has increased sharply since 2016, reaching at peak in 2018, and has remained at a high level ever since. This is likely due to ongoing withdrawals under loan commitment agreements entered into prior to the coal phase-out finance declaration. This report analyzes coal finance by year by including yearly support for existing commitments in new investments for that year. Thus, we hereby disclose that the new investments mentioned in the report are not directly related to violations of individual financial institutions' self-imposed coal phase-out financial criteria.

Breakdown of new coal plant construction PFs

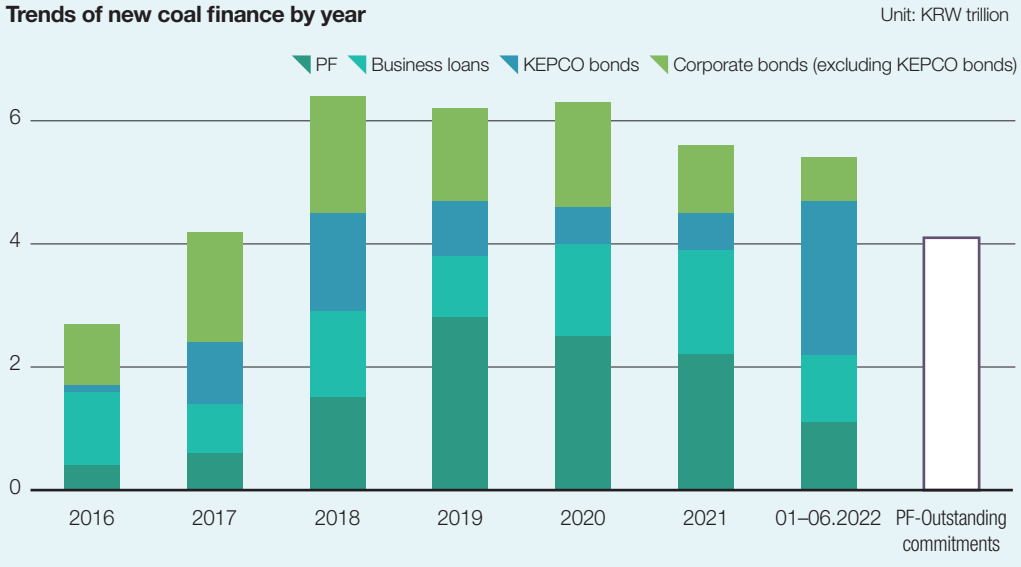
As PF financing for the construction of new coal power plants at home and abroad began in earnest around 2018, the overall scale of Korean coal financing has also increased significantly. The volume of PF has nearly quintupled from KRW 585 billion in 2017 to KRW 2.8 trillion in 2019.

Over the past decade, about KRW 12.5 trillion of the KRW 16.6 trillion in PF commitments by Korean financial institutions have been withdrawn, and the balance of PF loans is about KRW 10 trillion as of the end of June 2022.[2] Of the balance, KRW 7.9 trillion is for Korean projects and the remaining KRW 2.1 trillion is for overseas projects. Eighty-one percent (KRW 6.4 trillion) of the Korean PF balance is related to loans for three power plants that have recently been completed of construction or are under construction: the Goseonge Hai, Gangneung Anin, and Samcheok Thermal Power Plants. The Goseong Hai Thermal Power Plant, which started operations in 2021, has withdrawn most of its commitments. The Gangneung Anin and Samcheok Thermal Power Plants, which are under construction, have outstanding commitments of KRW 0.9 trillion and KRW 1.3 trillion, respectively. Among the PFs of the Samcheok Thermal Power Plant, the amount of outstanding commitments is higher than the amount of withdrawn commitments.

The Gangneung Anin and Samcheok Thermal Power Plants were confirmed for construction under the 6th Basic Plan of Long-Term Electricity Supply and Demand announced by the Lee Myung-bak administration in 2013. KEPCO promoted the construction of a new transmission line connecting the east coast of Gangwon Province to the capital region. However, due to delays in the construction of the transmission line due to changes in the transmission method and difficulties in selecting the route, it was announced that the completion date would be changed to 2026. As a result, the construction of the transmission line is expected to be delayed by up to four years beyond the scheduled completion date of the two power plants. Gangneung Eco Power and Samcheok Blue Power, which own the plants, are reportedly considering legal proceedings to compensate for lost power sales, but credit risk concerns are bound to increase as profitability declines.

1. The NPS submitted only PF loans for coal financing by year, so it is not possible to check the yearly status of other asset classes
2. The amount of PF loan repayment is about KRW 2.4 trillion

Trends of new coal finance by year



4.1

Trillion KRW

PF outstanding commitments (as of the end of June 2022)

Unlike in Korea, where PF commitments have been substantially withdrawn and the volume of new executions has been declining, new fund executions for overseas coal power plant construction have continued to increase up to recently. Of the KRW 4.2 trillion in overseas PF commitments, 61.7% have been completed of fun execution, leaving KRW 1.6 trillion still outstanding. Thus, the amount of fund execution for overseas coal plants is expected to continue to increase in the future.

The KEXIM stands at the center of PFs related to overseas coal plants. Among overseas coal plants, the KEXIM, the KDB, and private commercial banks have participated as PFs in the construction of four recently built or under construction plants—two in Indonesia (Cirebon 2, Jawa 9&10) and two in Vietnam (Nghi Son 2, Vung Ang 2). The KEXIM participated in the PF for the construction of all four power plants, and currently accounts for KRW 1.4 trillion of the total PF balance of KRW 1.7 trillion, with over KRW 1 trillion in outstanding commitments as well.

The economic feasibility of overseas coal plants has been raised as a persistent issue. In the case of the Jawa 9&10 Project in Indonesia, which involved both the KEXIM and the KDB, both the 2019 Preliminary Feasibility Survey (hereinafter, Pre-feasibility Survey) and the 2020 Re-evaluation assessed that loss is expected. The Vung Ang 2 Poject in Vietnam was also assessed in the Pre-feasibility Survey that a deficit is expected. Both projects exceeded the threshold of the overall grade reflecting not only profitability but also publicity and other factors and thus were approved to proceed. However, concerns about their economic feasibility persist as the international community continues to debate reducing coal power generation.

PF breakdown by new coal plant

As of the end of June 2022, unit: KRW hundred million

Country	Name of the power plant	Commitments	Loan balance	Outstanding commitments	PF-participating financial institution
Republic of Korea	Goseong Hai Thermal Power Plant	30,819	29,216	911	Samsung Life, Kyobo Life, and 16 others
	Gangneung Anin Thermal Power Plant	36,693	23,100	9,015	Kyobo Life, Kookmin Bank, and 18 others
	Samcheok Thermal Power Plant	24,932	11,552	13,380	Samsung Life, Kyobo Life, and 19 others
Indonesia	Cirebon 2 coal power plant	6,041	5,876	165	KEXIM, Kookmin Bank, Woori Bank
	Jawa 9&10 coal fired steam power plant	11,752	3,482	8,269	KEXIM, KDB, Hana Bank
Vietnam	Nghi Son 2 coal power plant	7,724	6,380	873	KEXIM, Nonghyup Bank
	Vung Ang 2 coal power plant	6,421	1,168	5,253	KEXIM
Other Korean coal plants		30,914	15,352	1,435	22 locations in total
Other overseas coal plants		10,217	4,147	1,596	8 locations in total

Issuance and impact of KEPCO bonds

Of the total new coal investment in the first half of 2022 (KRW 5.4 trillion), KEPCO bond investment accounted for 46% (KRW 2.5 trillion). All financial sectors have seen an increase in investments in KEPCO bonds. KEPCO has been issuing more corporate bonds to finance its operations as it continues to suffer operating losses due to soaring energy prices. The volume of KEPCO bond issuance was KRW 3.5 trillion in 2020 and KRW 10.4 trillion in 2021. And this year, the number increased to KRW 23.9 trillion by October.[1] The government is planning to increase KEPCO's corporate bond issuance limit through a law amendment, and unless KEPCO's deficit structure improves, it is expected that KEPCO will continue to issue bonds. The problem is that KEPCO's issuance of corporate bonds will not only disrupt the entire Korean capital market, which has been tightened after the Legoland incident but also adversely affect the mid- and long-term competitiveness of Korean financial institutions.

The majority of KEPCO bonds are issued in Korean won, and a significant portion of them are held by Korean financial institutions. With a credit rating of AAA, the same as government bonds, KEPCO bonds are ostensibly ultra-superior bonds. However, it should not be overlooked that climate change is changing the risk management system in finance. The Network for Greening the Financial System (NGFS), a group of 100 or more central banks and supervisory organizations from more than 80 countries around the world, has recommended that financial supervisory systems incorporate climate risk; many countries, including France and the U.K., have begun work on overhauling their financial supervisory systems based on the recommendations. Global private credit rating agencies such as S&P and Moody's have also begun to incorporate climate risk management level into their ratings of financial institutions. KEPCO, with its large share of fossil fuel-based electricity sales, is a highly climate-risked asset. As climate change becomes a reality, climate risk policies across social systems, including finance, are expected to be increasingly strengthened. It is important to note that Korean financial institutions' investments in KEPCO bonds could become more burdensome in the future if the proportion of climate risk is raised in the supervisory and rating systems of financial institutions.

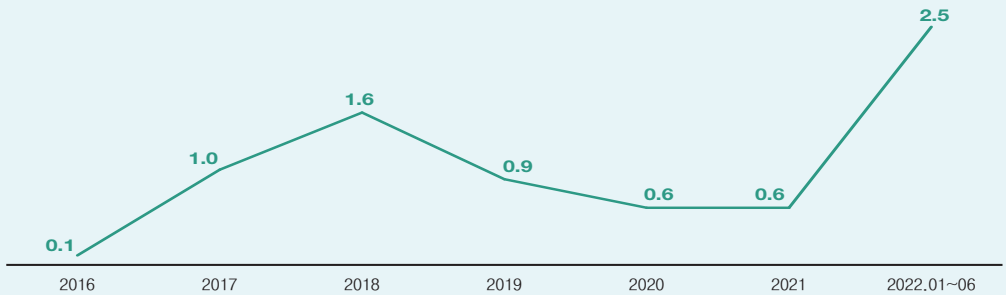
In addition, financial institutions should fully reflect social concerns about greenwashing by financial institutions, which has lately become an issue, in their KEPCO investment decision-making process. As of the end of June 2022, 17 Korean financial institutions have declared net-zero, including financial emissions. Regardless of the debate on how to regulate coal-related industries, the KEPCO bond investment is clearly a decision to significantly increase financial emissions. Therefore, it is necessary to amply consider each financial institution's net-zero implementation plan and social expectations before investing in KEPCO bonds.

KEPCO is an essential public enterprise for our society. And it is no secret that the recent corporate bonds issued by KEPCO are a temporary measure to cover deficits caused by soaring energy prices, not to build or operate coal plants. The problem is that without a better energy mix, these challenges will continue to be repeated, and KEPCO is already labeled a coal company by major foreign institutional investors. KEPCO's fossil fuel-dominated energy mix poses a significant risk to the competitiveness of not only KEPCO but the entire Korean financial and industrial sectors. An aggressive decarbonization policy is also necessary for the competitiveness of finance and industry.

1. Bond Information Center, Korean Financial Investment Association

Trends of KEPCO bond investment by year

Unit: KRW trillion



Fossil fuel finance of Korean financial institutions

Comprehensive analysis of natural gas & oil finance

According to survey responses collected by KoSIF, financial institutions' total investments by fossil fuel were KRW 49.2 trillion in coal (KRW 56.5 trillion when including National Pension's coal investments), KRW 30.2 trillion in natural gas, and KRW 22.3 trillion in oil as of June 2022. Of these, public and private financial institutions invested KRW 16.4 trillion and KRW 13.9 trillion in natural gas, respectively, and KRW 17.0 trillion and KRW 5.3 trillion in oil, respectively.

Natural gas financing loan (2012–June 2022) Cumulative total
(Unit: Trillion KRW)

Banks	12.3
Non-life insurance	1.5
Life insurance	5.0
Securities firms	2.0

Natural gas finance breakdown

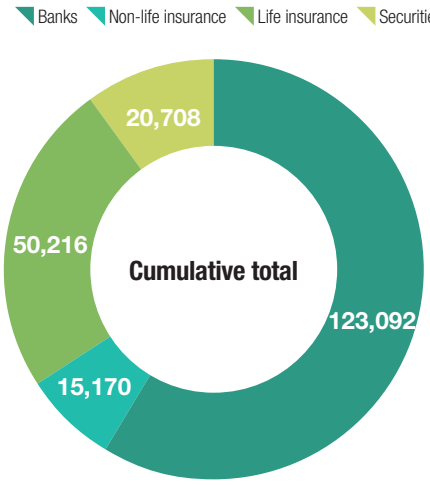
We found that financial institutions' natural gas financing consisted of loans, including business loans and PF, shipping finance, corporate bond investments, and stock investments. Given that the majority of this was financed through loans, including business loans and PF, and that investments in the remaining asset classes were small and varied across financial sectors and institutions, the analysis below focuses on loans only.

Investment status by private financial institutions' natural gas assets (As of June 2022, KRW hundred million)

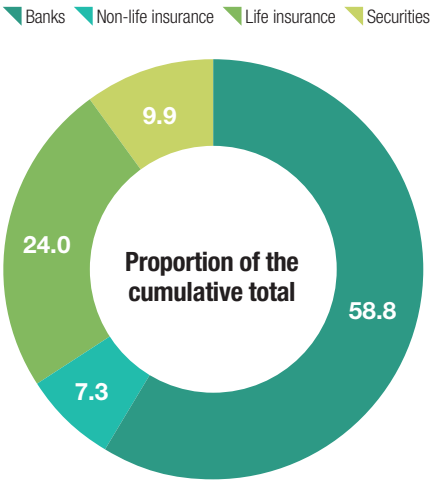
Loans				Shipping finance		Investment in corporate bonds						Equity investments	
PF		Business loans				Special purpose companies (SPCs)		Other commercial power plants		Special bonds for construction and operation purposes			
Korean	International	Korean	International	Korean	International	Korean	International	Korean	International	Korean	International	Korean	International
34,394	29,252	21,906	5,937	2,585	4,448	812	436	7,418	1,107	10,769	2,352	1,845	10,696

Natural gas financing loan (period: 2012–June 2022)

Unit: KRW hundred million



Unit: % of

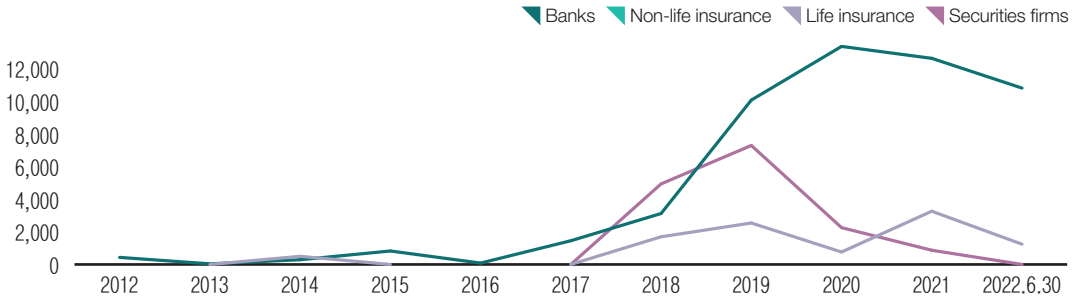


Comparison of the cumulative total of loans of private financial institutions

When comparing the cumulative total of natural gas financing loans from 2012 to June 2022 by financial sector for the private financial institutions participating in the survey, banks accounted for the largest proportion at 58.8% among private financial institutions. This is followed by life insurance (24%), securities firms (9.9%), and non-life insurance (7.3%).

Natural gas financing loan execution by year (foreign investment)

Unit: KRW hundred million

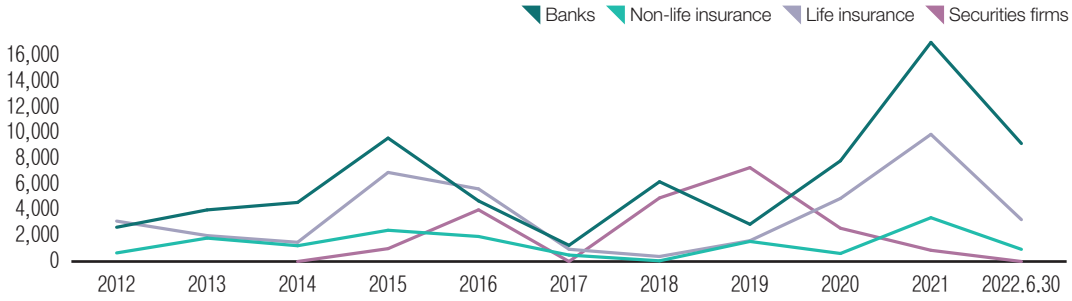


The graph presented shows the year-over-year trends of the amount executed for natural gas financial loan by private financial institutions.

First, in the overseas investment segment, not many loans were made until 2017, but since 2017, loans for natural gas finance from banks and securities firms have increased. Banks' natural gas financing loans have grown overwhelmingly since 2018, peaking in 2020 and then declining. A review of the institutional breakdown reveals that banks' PF lending for the construction of natural gas power plants in the U.S. was significant during this period. For securities firms, there has been a decline since 2019 and another dip in June 2022.

Natural gas financing loan execution by year (Korean investment)

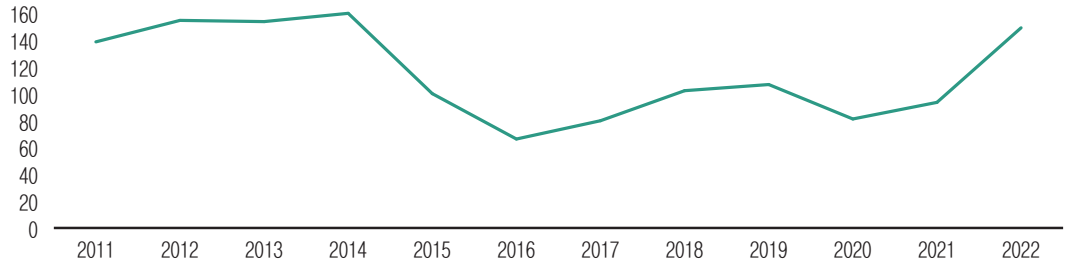
Unit: KRW hundred million



On the Korean investment side, we see a low point in 2017 across all financial sectors and an overall uptick, followed by a high point in 2021, and then a steep decline. The low point in loan investment execution in 2017 was due to lower global natural gas prices at the time of 2016 and 2017, which resulted in lower natural gas import prices.

Natural gas (LNG) import price index

Unit: in dollar



According to the natural gas import price index (in dollar) announced by the Bank of Korea, the index, which remained in the 150s from 2012 to 2014, showed an overall decline to 100 in 2015, 66.22 in 2016, and 79.85 in 2017.

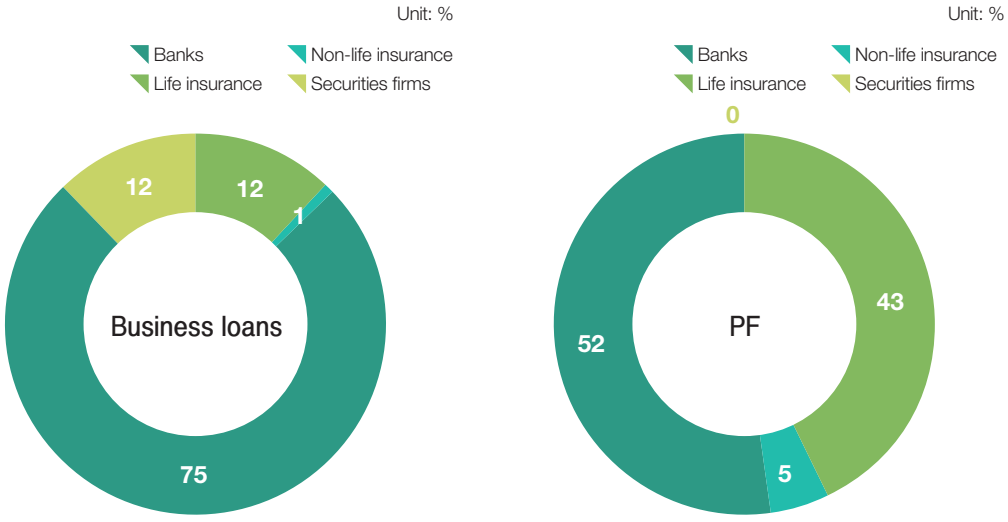
Korean investment explained by loans (business loans and PF), which accounted for the largest share of natural gas finance, may have been affected by the decline in the price of natural gas imports as the global price of natural gas fell, leading to a decrease in investment and market shift.

Source: The Bank of Korea Economic Statistics System's Natural gas (LNG) import price index (basic classification) in dollars: 2015=100

Comparison of loan balances of private financial institutions

For the purposes of this report, financial loan is divided into business loan and PF. When analyzing natural gas lending by private financial institutions alone, banks overwhelmingly dominated business loans, accounting for 75% of all private financial institutions as of June 2022. Life insurance and securities firms were next with an equal 12% share, followed by non-life insurance at 1% of the total. Banks again accounted for the majority of natural gas loan balances in the PF sector, at 52%, followed by life insurance at 43%.

Natural gas loan balances (as of June 30, 2022)



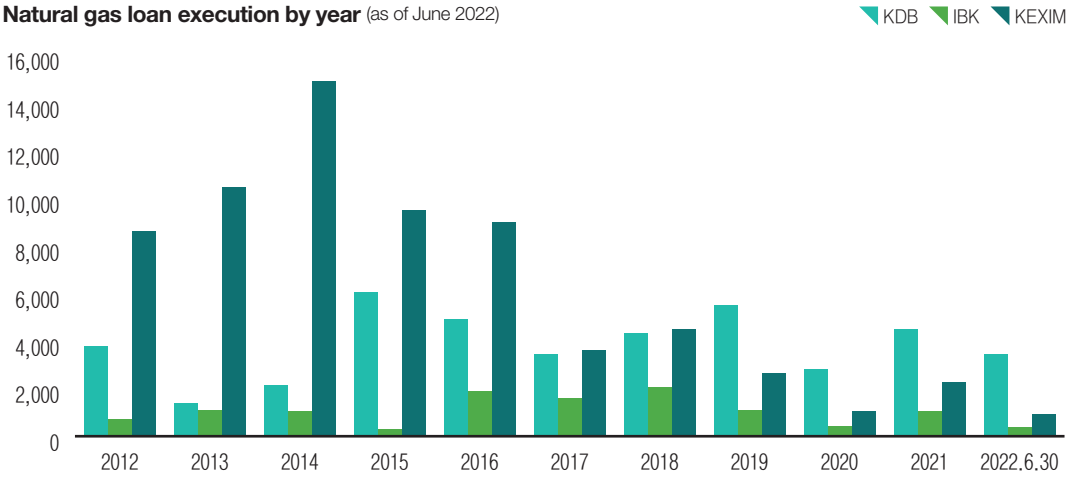
Comparison of natural gas financing loans from the KDB, Industrial Bank of Korea (IBK), and KEXIM among public financial institutions

Among public financial institutions, 76% of natural gas financing investments by the KDB, IBK, and KEXIM came from loans. As of June 2022, as shown in the table below, the KDB and the IBK have executed only loan financing, and the KEXIM was the only one that executed shipping finance.

Public natural gas loan balances (as of June 2022) Unit: KRW hundred million

	PF		Business loans		Shipping finance	
	Korean	International	Korean	International	Korean	International
KDB	3,590	14,981	1,854	220	0	0
IBK	601	2,054	645	428	0	0
KEXIM	0	27,666	0	8,238	30,296	34,300

Natural gas loan execution by year (as of June 2022)



The natural gas loan execution by year is shown in the graph presented. Similar to the private financial institutions, public financial institutions have also seen a decline in their totals since 2017. This report analyzed the status of natural gas finance by year, including support for existing commitments by year in new investments for that year.

Private sector oil loan balances (as of June 2022)

	PF		Business loans	
	Korean	International	Korean	International
Life insurance	0	775	200	0
Non-life insurance	0	0	0	0
Banks	431	3,427	16,627	1,776
Securities firms	0	0	0	893

Oil finance breakdown

Financial institutions' investment in oil finance is extremely small compared to coal and natural gas. The following table shows the status of oil finance lending by private financial institutions by balance as of June 2022. Similar to natural gas loans, banks are overwhelmingly dominant.

Balance of public sector oil loans (as of June 2022) Unit: KRW hundred million

	PF		Business loans	
	Korean	International	Korean	International
KDB	0	8,766	23,381	1,603
IBK	0	364	474	32
KEXIM	0	38,311	0	35,109

Public sector oil loan balances - Comparison by industry (as of June 2022) Unit: KRW hundred million

	KDB	IBK	KEXIM	Total
Mining	4,255	25	6,179	10,459
Power generation	0	685	13,163	13,848
Refinery	24,718	41	54,078	78,837
Ships (oil tankers, drilling ships)	0	0	0	0
Oil pipelines	2,171	1	0	2,172
Storage (terminal)	2,606	118	0	2,724

The following table shows the loan balances as of June 2022 of the KDB, IBK, and KEXIM, which accounted for the majority of oil investments among public financial institutions.

An industry-by-industry comparison of oil loan balances from the KDB, IBK, and KEXIM shows that most of the money was lent to the power generation and refinery sectors.

Total fossil fuel investments as a percentage of total assets for the top five financial institutions by sector

(as of June 30, 2022): KRW hundred million

Sector	Name of the organization	Total assets	Coal	Oil	Natural gas	Total fossil fuel investment	Ratio
Banks	Hana Bank	4,461,345	10,345	10,423	15,003	35,771	0.8%
	Nonghyup Bank	3,863,908	16,301	4,031	8,208	28,540	0.7%
	Woori Bank	4,266,849	4,338	8,528	15,699	28,565	0.7%
	Shinhan Bank	4,574,498	7,825	1,856	8,476	18,156	0.4%
	Kookmin Bank	4,877,631	6,140	2,127	10,531	18,798	0.4%
Life insurance	Heungkuk Life	308,834	14,298	525	4,420	19,243	6.2%
	DGB Life	76,166	33,945	300	0	3,695	4.9%
	ABL	197,977	5,743	200	639	6,583	3.3%
	Oriental Life Insurance	360,460	2,611	3,407	4,359	10,377	2.9%
	Shinhan Life	631,499	9,261	2,603	4,657	16,521	2.6%
Non-life insurance	Lotte Insurance	186,323	9,423	0	4,972	14,395	7.7%
	DB Insurance	412,482	20,321	0	0	20,321	4.9%
	Hyundai Marine & Fire	523,130	8,722	571	3,704	12,997	2.5%
	Korean Reinsurance	137,688	2,044	675	379	3,098	2.3%
	Samsung Fire	878,092	11,672	1,100	4,217	16,989	1.9%
Public finance	KDB	3,073,085	236,391	33,782	20,648	290,821	9.5%
	IBK	3,885,922	538	1,595	3,827	5,960	0.2%
	KEXIM		24,757	106,821	100,499	232,078	

When comparing the top five institutions by financial sector based on the balance of June 2022 for fossil fuel investments of Korean financial institutions, we can see the results as above. In the banking sector, Hana Bank had the highest ratio of total fossil fuel investments to total assets at 0.80%, while Heungkuk Life at 6.23% in life insurance and Lotte Insurance at 7.73% in non-life insurance had largest investments in fossil fuel.

Among public financial institutions, the KDB had the largest coal assets at KRW 23.6 trillion, largely due to its equity investment in KEPCO, which it holds to maintain management rights of the state-owned company. Based on the balance of June 2022, KEPCO's equity investment amounted to KRW 20.6 trillion.

Comparing the fossil fuel financial investments of the surveyed financial institutions, natural gas and oil investments by private Korean financial institutions are minimal compared to coal investments. As financial institutions reduce their investment in coal in line with the reduction of coal energy, it is expected that the future natural gas investment situation of Korean financial institutions will change depending on the price of natural gas, which is currently difficult to predict due to the volatility of the global natural gas market.

Management of climate risk in finance

Coal phase-out finance and net-zero

104

Korean financial institutions declaring coal phase-out finance (as of the end of June 2022)

It is not an exaggeration to say that the recent craze for environment, social, and governance (ESG) and climate finance in Korea has been sparked by financial institutions' declarations on coal phase-out finance. By the end of June 2022, a total of 104 Korean financial institutions have joined the coal phase-out financial declaration, led by private school and public officials pension funds in 2018. The coal phase-out trends from individual financial institutions have also led to government policy. The government has declared a moratorium on new publicly financed overseas coal power in 2021 and has published related guidelines.[1]

Scaling up coal phase-out finance

Financial institutions' active engagement in coal phase-out finance is driven by an awareness of the need to manage climate risk. This is because the proliferation of carbon pricing schemes, rising carbon prices, and reinforced regulations for high-carbon industries can increase a company's climate-related financial risk, which in turn can be transferred to the risk of financial institutions that invest in or lend to the company. Most coal phase-out declarations by Korean financial institutions are limited to halting new investments. While this is a great first step toward managing climate risk, ceasing new investments does not eliminate risk from existing assets. In order to properly manage risk, measures should also be taken for existing investment assets. Of the 104 Korean coal phase-out declaring financial institutions, only six have included, or plan to include, a phase-out and withdrawal of existing investments, and only five have begun discussions. AIA Life and DB Insurance responded that they include the phasing out or withdrawal of existing investments in the scope of coal phase-out finance, and simultaneously answered that they will cease new coal investments across all asset classes.

Moreover, we should also expand the scope of asset classes that are excluded from coal investments. Korean financial institutions' coal phase-out declarations have often been limited to asset classes that can be directly attributed to the purpose of coal-fired power plant construction, in line with public sentiment against the construction of new coal-fired power plants. PFs related to coal power plant construction, SPC bonds for the purpose of constructing and operating coal power plants, and other general corporate bonds for the purpose of power plant construction, etc. are common. However, from a risk management perspective, it may make sense to expand the scope in the future. This is because the future asset value of the coal industry as a whole, not just coal-fired power plants, is expected to decline as climate-related policies are strengthened.

Major international institutional investors have established exclusion or caution criteria for coal investments based on a company's proportion of coal-related revenue, facilities, and production, and are engaging or divesting coal companies to manage risk. Few Korean lenders have yet established the criteria for coal companies. Four financial institutions—AIA Life, Samsung Fire, Korea Investment & Securities, and Mirae Asset Securities—were found to have established coal divestment criteria based on the proportion of coal revenue, while the National Pension Service, one of the world's top three pension funds, has delayed finalizing its coal divestment criteria.[2]

1. Collaboration of related ministries (2021), "Guidelines for Public Financial Support for New Overseas Coal Power Generation"
2. Answers concerning the criteria for excluding coal investments other than coal revenue include Standard Industrial Classification Code (D35113, Thermal Power Industry), PFs related to coal power plant construction, and refusal to acquire corporate bonds of coal power special purpose companies (SPCs).
3. However, if the proportion of coal mining and electricity generation revenues are different, additional criteria were applied

Financial institutions planning to divest from existing coal

Divestment plan	Financial institutions			
Divestment in progress	• AIA Life	• DB Insurance	• Mirae Asset Securities	• Hi Investment & Securities
Establishing a divestment plan	• IBK	• Seoul Guarantee Insurance		
No divestment plans yet, but discussions have begun	• Kyobo Life • Hyundai Marine & Fire	• Gwangju Bank	• Samsung Fire	• •Shinhan Bank

Financial institutions that have established coal divestment criteria based on the proportion of coal revenue

Proportion of coal revenue	Financial institutions	
10% or higher proportion	• AIA Life	
30% or higher proportion	• Samsung Fire	• Korea Investment & Securities
50% or higher proportion	• Mirae Asset Securities [3]	

27

Declaration of net-zero (2050 carbon neutrality) Number of Korean financial institutions (as of the end of June 2022)

Net-zero declarations and financial emissions of financial institutions

As of October 2022, 593 financial institutions globally have made the net-zero declaration.[1] Meanwhile, a total of 27 Korean financial institutions have answered that they have declared to go net-zero. Science Based Targets initiative[SBTi] with more than 4,000 companies and financial institutions from around the world

is an initiative that requires financial institutions to consider their financial emissions when setting net-zero targets. is made to include GHG emissions from the asset portfolio. For example, let's assume a company with a total enterprise value of KRW 10 billion emits 100 tons of GHG. If financial institution A invests or loans KRW 1 billion to the company, the financial emissions of financial institution A become 10 tons.

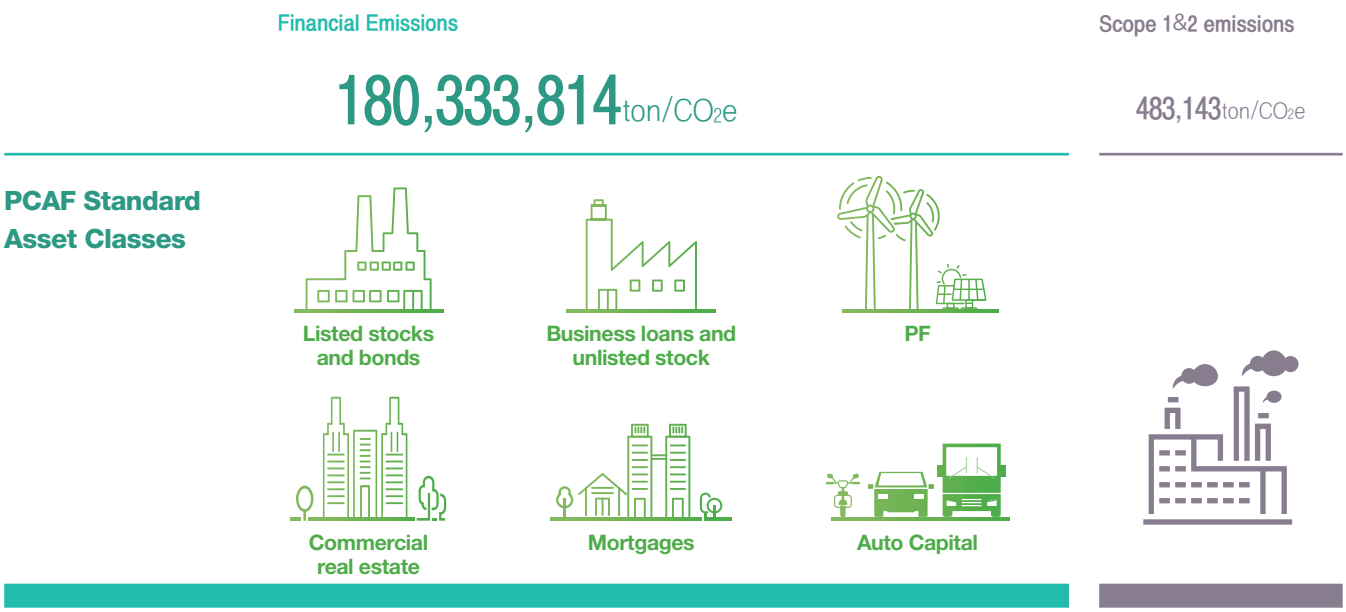
The Glasgow Financial Alliance for Net Zero[GFANZ], a coalition of financial institution's net-zero initiatives involving more than 550 financial institutions across the world, also requires financial emissions to be included in a financial institution's net-zero target. Financial emissions are also used by financial supervisory authorities as an indicator of identifying a financial institution's level of risk, as they provide a measure of the financial institution's exposure to climate risk. This is because the more investee companies are in high-carbon industries, the greater the financial emissions and the greater the climate risk.

A company's GHG emissions are categorized into Scope 1 of direct emissions from fuel use; Scope 2 of indirect emissions from the use of converted energy such as electricity; and Scope 3 of emissions from value chains such as supply chains and consumers, including financial emissions. In general, direct energy use in financial institutions is very low compared to manufacturing. This is because energy is only used to heat and cool a building or run a data center, etc. In contrast, GHG emissions from investment assets are very high, with financial emissions typically being hundreds of times higher than Scope 1 and 2 emissions. When a financial institution declares to go net-zero, it means that their asset portfolio becomes net-zero.

Of the 27 net-zero-declaring financial institutions in Korea, 23 have completed establishing their targets. In addition to financial institutions in the process of establishing targets, there were seven financial institutions planning to declare net-zero within two years. Six financial institutions claimed to have an established target but did not include financial emissions. Restricting net-zero declarations to Scopes 1 and 2 is not only meaningless but can be greenwashing. While financial institutions are not actually fulfilling the responsibilities they are required to, the lack of expertise in GHGs has

1. Race to Zero, https://racetozero.unfccc.int/join-the-race/whos-in/ (2022.11.22)
2. Each emission is the sum of the financial emissions and scope 1&2 submitted by responding organizations, either as an individual organization or as a group company, regardless of whether they have made a net-zero declaration and set a financial emissions target
3. The years of emissions estimation and the scope of financial emissions asset class vary per institution or group company

Comparison of financial institutions' financial emissions to Scopes 1 & 2 emissions[2,3]



For the majority of the general public, it is misled as an organization that is committed to the net-zero target. Moreover, it is also an abandonment of responsibility for risk management, which is what financial institutions are supposed to do. A financial institution's risk begins with its investment or loan assets. In the face of increasingly stringent climate change policies and rising carbon prices, not identifying the level of climate risk exposure of assets and not establishing response targets and implementation strategies are tantamount to failing to do what financial institutions are supposed to do: manage risk.

Thirteen financial institutions, including the IBK, Shinhan Bank, and Samsung Life Insurance, reported that they have completed estimating financial emissions and setting net-zero targets. Nonghyup Bank said it has estimated its group-level financial emissions and plans to set a net-zero target within the year. The KEXIM has declared itself net-zero, including its asset portfolio but has not yet set targets. The NPS and the KDB have not yet declared themselves net-zero. However, the KDB has recently estimated the financial emissions to identify the scale. The KDB responded that as a state-owned bank, it is difficult to declare net-zero right now due to the Korean industrial structure with many companies belonging to high-carbon industries. However, the KDB stated that it is putting more focus on supporting corporate finance to induce the transition to low-carbon industries. However, in light of the fact that improving the competitiveness of the national industry as a whole is the reason for the existence of the KDB, it seems more appropriate for the KDB to set a clear target of net-zero and to improve industrial competitiveness through the low-carbonization of Korean industry.

2030 Roadmap to reach the net-zero target

Net-zero by 2050 is a necessary but not sufficient condition to avert the catastrophe of climate change. To prevent the catastrophe of climate change, we not only need to achieve net-zero before 2050 but need to cut GHG emissions in half by 2030. This is because once GHGs are emitted, they remain in the atmosphere for at least a decade to tens of thousands of years and have a cumulative effect. The international community is calling for a roadmap for strengthening and implementing the 2030 targets, and the climate risk of financial institutions will inevitably be directly affected by these developments. A clear 2030 roadmap needs to be established and implemented not only to address the global challenge of combating climate change but also to manage financial risk.

As of the end of June 2022, Korean financial institutions' coal-related PF and corporate bond balances with dates of maturity after 2030 totaled KRW 9.5 trillion and KRW 4.7 trillion, respectively, for a total of KRW 14.2 trillion. In order to meet the 2030 targets, it is necessary to plan for the divestment of existing assets in high-carbon industries, including coal, from the asset portfolio.

Status of financial institutions with net-zero declarations and targets (as of the end of June 2022)

<table>
<tr><th colspan="4">Declared net-zero (27)</th><th rowspan="3">Plans to declare net-zero within 2 years (5)</th></tr>
<tr><th colspan="3">Completed target setting (23)</th><th rowspan="2">Incomplete target setting (4)</th></tr>
<tr><th colspan="2">Included financial emissions (17)</th><th>Unincluded (6)</th></tr>
<tr>
<td>• IBK
• Kookmin Bank
• Woori Bank
• KB Life
• KB Insurance
• Mirae Asset Securities</td>
<td>• Kyongnam Bank
• Busan Bank
• Hana Bank
• MetLife
• Seoul Guarantee Insurance
• Hi Investment & Securities</td>
<td>• Gwangju Bank
• Shinhan Bank
• AIA Life
• Samsung Life
• KB Securities</td>
<td>• KEXIM
• Yeosu Gwangyang Port Authority
• Korea Post
• Ulsan Port Authority
• DB Insurance
• Hana Securities</td>
<td>• Nonghyup Bank (to be established in 2022)
• Incheon Port Authority (to be established in 2022)
• Korean Institute of Maritime and Fisheries Technology (the establishing time is undecided)
• Hanwha (the establishing time is undecided)</td>
<td>• Busan Port Authority (2022)
• Samsung Fire (2022)
• Korean Reinsurance (within 2 years)
• Korea Fisheries Resources Agency (within 2 years)
• Heungkuk Life (within 2 years</td>
</tr>
</table>

Ten Years of renewables finance in Korea

Comparison of renewables with coal investment

Capital always flows to places with higher expected returns. And at the macro level, profitability is determined by social needs. This is because policies and technologies change based on societal needs. Countries, financial institutions, and companies that fail to read what society is asking for will ultimately lose their competitive edge and fall behind.

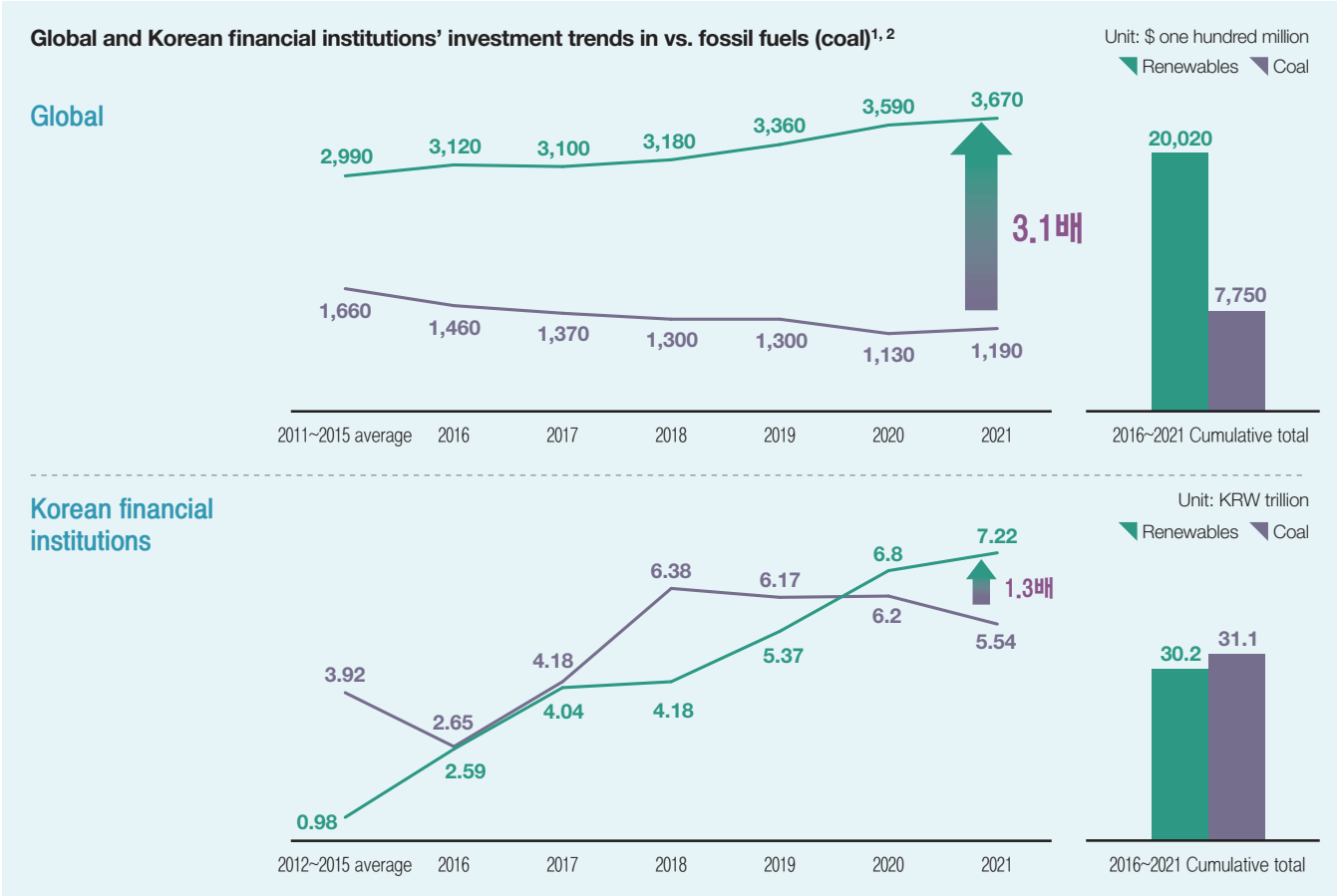
Comparison of global and Korean financial institutions' investment trend in renewables vs. fossil fuels (coal)

On the energy side, the flow of capital is clear. Capital is flowing from fossil fuels to renewables. According to the International Energy Agency (IEA), global investment in renewables is steadily increasing, while investment in fossil fuels is declining.[1] Also, the gap continues to grow. From 2011 to 2015, the average global investment in fossil fuels and renewables was $166 billion and $299 billion, respectively, with the volume of renewables investment 1.8 times greater than that of fossil fuels, and by 2021, the gap had widened to 3.1 times, to $119 billion and $367 billion, respectively. From 2016 to 2021, the cumulative amount of investment in renewables and fossil fuels differed by 2.6 times.

Korean capital movements, on the other hand, showed a clear divergence from global flows. Prior to 2016, Korean financial institutions had invested about four times as much capital in coal assets as in renewables.[2] While renewables investment has continued to grow, investment in coal assets has also grown unlike the global trends. And from 2016 to 2021, the cumulative investment in renewables and coal assets was KRW 30.2 trillion and KRW 31.1 trillion, respectively, with coal's cumulative investment being larger. This analysis is limited to investments in coal assets, not fossil fuels as a whole, so the difference is expected to be larger when expanded to fossil fuels as a whole.

1. Global source: IEA, Global investment in the power sector by technology, 2011–2021
2. However, the Export-Import Bank only started categorizing investments in renewables in 2016, and therefore did not submit pre-2016 renewables investments

Global and Korean financial institutions' investment trends in vs. fossil fuels (coal)[1, 2]



37.2

Trillion KRW

Korean financial institutions Volume of cumulative investment in renewables (2012–end of June 2022)

Comparison of cumulative investments in renewables vs. coal by sector[1]

When analyzing the cumulative amount of renewables and coal investments made by Korean financial institutions over the past decade by sector, life insurance was the only sector with more renewables investments than coal. Among private financial institutions, Shinhan Life has the largest cumulative investment in renewables. It has invested KRW 3.8 trillion over the past 10 years, accounting for about 10% of the cumulative investment volume in renewables by Korean financial institutions. Shinhan Life invests 2.1 times more in renewables than in coal, and the ratio of investment in renewables to coal is also found to be high.

Public finance investments in renewables were mostly centered on the KEXIM (KRW 5.6 trillion) and the KDB (KRW 3.1 trillion) (90% of the total public finance investment volume). Their absolute renewables investment volume ranked first and third among all financial institutions, accounting for 24% of total cumulative renewables investment volume. However, the ratio of renewables investment to coal was not high. The Export-Import Bank invested 1.2 times more in renewables than in coal, while the KDB invested about twice as much in coal as in renewables.

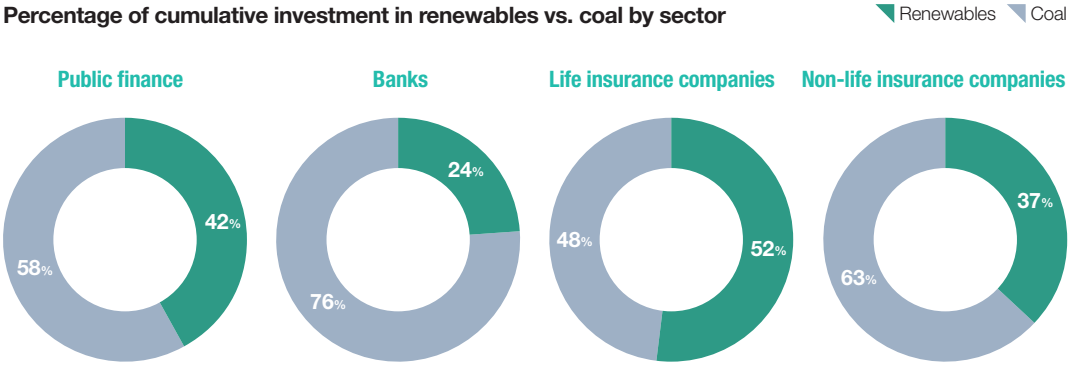
According to a report published by the Natural Resources Defense Council (NRDC),[2] the five G20 countries that invested the most public finance in overseas coal projects from 2013 to 2016 included Korea ($2 billion). This is more than four times the amount invested in renewables during the same period ($490 million). In Japan, coal investments were 3.3 times greater than renewables investments, while Germany's investment volumes were similar. The majority of public finance in the U.S. and France has been invested in renewables, and foreign policy financial institutions have invested more than four times as much in renewables as in coal.

In private finance, banks are the sector with the largest renewables and coal investment gap. Over the past decade, they have invested about 3.2 times more in coal than in renewables. Banks were also the largest private financial sector investor in coal. Among the five largest commercial banks, two, Woori Bank and Kookmin Bank, invested more in renewables than coal. In the case of Nonghyup Bank, the cumulative investment ratio of renewables and coal was 2% and 98%, respectively, with the latter being overwhelmingly high.

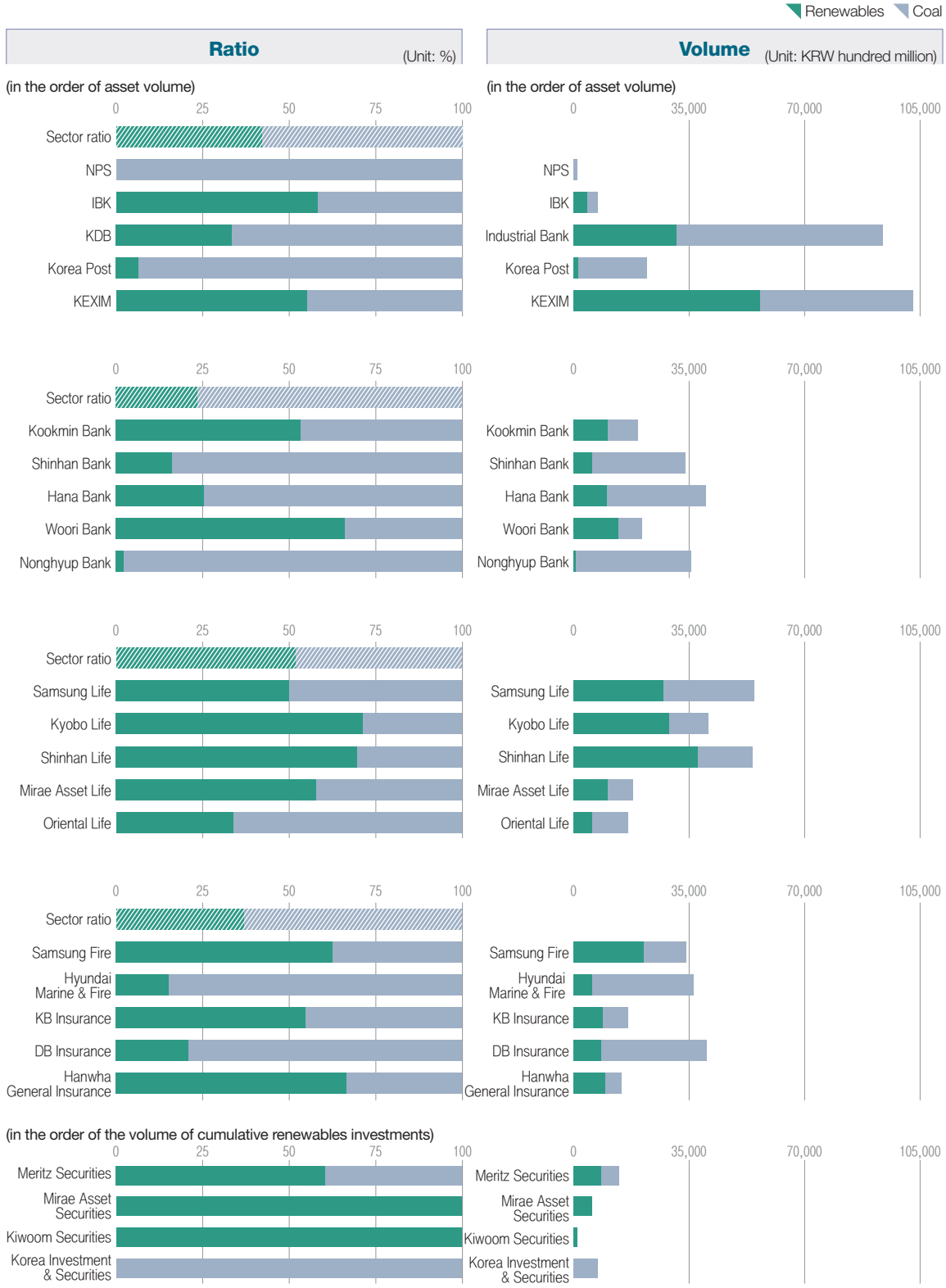
Life insurance was the largest private financial sector investor in renewables. At the same time, it was the only sector with a larger investment in renewables than coal. Shinhan Life, Kyobo Life, Mirae Asset Life, and ABL Life are the life insurance companies that have invested more in renewables than coal, with a cumulative investment of more than KRW one trillion in renewables. The largest cumulative investment in renewables among non-life insurance companies was Samsung Fire (KRW 2.1 trillion), which accounted for more than 30% of the total cumulative investment in renewables among non-life insurance companies (KRW 6.5 trillion), and invested about 1.5 times more in renewables than coal.

1. Coal corresponds to the total amount of Korean and foreign PFs, business loans, and the volume of corporate bonds; renewables corresponds to the amount of financial support already summed by financial institutions when submitting data
2. NRDC (2017), "Power Shift: Shifting G20 International Public Finance From Coal to renewables"

Percentage of cumulative investment in renewables vs. coal by sector



Asset volume by sector[1] Comparison of cumulative investments in renewables vs. coal by the top five financial institutions (2012 to the end of June 2022)



1. As of the end of June 2022, as of the end of December 2021 for the KEXIM
2. The NPS only submitted PFs for coal financing by year and did not respond for renewables financing. Korea Investment Corporation is included in the top five institutions in terms of assets but it is excluded due to answering that it does not invest in coal and renewables.
3. Securities firms are ranked by their cumulative investment in renewables. The sector's cumulative investment ratio is not calculated due to limited number of respondents

Conclusion

> Taking practical action is essential to respond to climate change risk

Fossil fuel finance is financially risky because it is very likely to become a stranded asset in an era of climate crisis. In response to the financial risks posed by climate change, financial institutions around the world are declaring to go coal phase-out and are heading toward the direction of reducing their fossil fuel investments. Since last year, financial institutions in Korea have been declaring to go coal phase-out and net-zero as well. Nevertheless, we still have a long way to go in the fossil fuel phase-out journey. The absolute volume of Korean coal finance has not declined, and the transition away from coal has been characterized by a reliance on natural gas as a transition energy.

The IPCC recommends that to limit global warming to 1.5 degrees Celsius or less, more than 80% of current coal power generation must be curtailed by 2030, and net-zero carbon emissions must be achieved by 2050. Twenty-three countries, including the U.K. and France, have already legislated or enacted net-zero carbon emissions by 2050, and several countries have already established or are in the process of establishing coal power generation phase-out roadmaps, with a focus on 2030. In April last year, Korea also became the 14th country to legislate a 2050 Carbon Neutral Vision, as the “Framework Act On Carbon Neutrality And Green Growth For Coping With Climate Crisis” was executed, confirming the 2030 national GHG reduction targetNDCas a 40% reduction from 2018 and establishing the National Basic Plan for Carbon Neutrality. However, in the process of realizing this, there are numerous fluctuations and disagreements in the current energy mix. According to the IEA, renewables will be the largest source of electricity generation in 2025, accounting for 35% of global electricity generation. Korea will need to reduce the use of fossil fuels and quickly transition to renewables, starting with the rational use of natural gas as a transition energy from coal.

To reduce fossil fuel finance, in addition to the government’s coal phase-out roadmap and the National Assembly’s Law on the Prohibition of Coal Financing and the Framework Act on Carbon Neutrality, the government should establish policies to move the financial system toward climate finance, green finance, and even sustainable finance. International financial organizations are now warning that the climate crisis could lead to a severe financial crisis and are working with governments to build an international climate-responsive finance system through global climate finance initiatives such as the Network for Greening the Financial System (NGFS), Task-force on Nature-related Financial Disclosure (TNFD), and Glasgow Financial Alliance for Net Zero (GFANZ). In line with this, the Korean government is also operating a task force to promote green finance and is demonstrating vigorous actions for climate finance such as announcing a revision of the climate risk management guidelines last year for the application of the K-Taxonomy to the financial sector.

Furthermore, for Korean financial institutions to actively participate in addressing climate risk, more policy efforts are needed such as the financial regulators actively considering climate risk in the prudential assessment of financial institutions, allowing capital to flow to green industries, and mandating climate disclosure in financial markets, such as the EU’sSustainable Finance Disclosure Regulation (SFDR), which is leading the way in climate finance. This will enable the transition of fossil fuel finance to a greener future. The transformation of high-carbon industries and energy markets, such as coal power, cannot be realized without aggressive asset adjustment and engagement policies by financial institutions. It is time for financial institutions to move beyond declarations and start taking action to address the very real risks of climate change.

2022 White Paper on Fossil Fuel Finance

Writers of the report: Namyoung Park, Inseon Choi, Byeori Shin, Minjoo Kim, and Taehan Kim
Design: Hwaso

Korea Sustainability Investing Forum (KoSIF) www.kosif.org

The Korea Sustainability Investing Forum is a non-profit corporation established in 2007 to contribute to the construction of a sustainable community through the invigoration of socially responsible investment (SRI). It conducts various activities such as SRI research and development, promotion and dissemination, policy development and legislative support. KoSIF has also organized and spearheaded the CDP Korea Committee to promote environmental responses by financial institutions and corporations in Korea. In addition, KoSIF contributes to enhancing sustainability by spreading global initiatives such as TCFD, PACF, SBTi, RE100, and EV100 to Korean financial institutions and companies.

YANG YI Won Young
Member of the National Assembly

Congresswoman YANG YI Won Young of the Democratic Party of Korea www.yangyi.kr

Congresswoman YANG YI Won Young is a proportional representative member of the 21st National Assembly and a member of the Trade, Industry, and Energy, SMEs, and StartUps Committee. She is also the principal research member of the National Assembly's Climate Crisis Green New Deal Study Group, focusing on 2050 carbon neutrality and energy transition. The parliamentary office of YANG YI Won Young collected data on the state of coal finance from public and private financial institutions and provided it to KoSIF, which is the basis for this report.

Korea Sustainability Investing Forum (KoSIF)

#707, Chunma B/D, 402, Hakdong-ro,
Gangnam-gu, Seoul, 06088, KOREA
Tel: +82 (0)2 738 1142
www.kosif.org kosif.@kosif.org

Member of the National Assembly
YANG YI Won Young

National Assembly Member's Office of YANG YI Won Young

#502, 1, Uisadang-daero, Yeongdeungpo-gu,
Seoul, 07233, KOREA
T. +82 (0)2 784 8834
www.yangyi.kr yangyi.assembly@gmail.com