

장기 국외훈련 결과 보고서

탄소중립 목표달성에 기여하는
금융부문의 녹색화 촉진방안

2024년 4월

기획재정부

김민진

국외훈련 개요

1. 훈련국 : 미국
2. 훈련기관(과정) : University of Southern California (MBA)
3. 훈련과정 : 장기일반과정(영어권)
4. 훈련기간 : 2022. 7. 7. ~ 2024. 5. 6. (22개월)

목차

1. Executive Summary
2. [CH. 1] Review Background : Urgency of Carbon Neutrality and Role of Sustainable Finance
3. [CH. 2] Definition of Sustainable Finance
4. [Ch.3] Current Global Trends in Sustainable Finance
5. [Ch.4] Institutional and Policy Status Related to Sustainable Finance
6. [Ch.5] Status of carbon emissions in Korea
7. [Ch. 6] Current Status of sustainable finance in Korea
8. [Ch. 7] Strategies for the Development of Sustainable Finance in Korea
9. Conclusion

◇ 참고 문헌

Executive Summary

Urgency of Carbon Neutrality and Role of Sustainable Finance

The global consensus recognizes the urgent need to address climate change, with carbon neutrality emerging as a pivotal goal. The enactment of the Paris Agreement and heightened global awareness, particularly amplified by the COVID-19 pandemic, have underscored the economic and social risks posed by climate change. Nations worldwide are setting ambitious carbon neutrality targets, necessitating significant investment in green sectors and the activation of sustainable finance. This form of finance is vital for directing investments into carbon-neutral-friendly companies and projects, thereby integrating environmental and social values into corporate strategies.

Definition and Evolution of Sustainable Finance

Sustainable finance, broadly defined by the European Commission, involves integrating environmental, social, and governance (ESG) considerations into financial decisions to foster long-term investments in sustainable economic activities and projects. However, the broad and somewhat ambiguous nature of its definition poses challenges, including market fragmentation and the risk of greenwashing. Recognizing these issues, international efforts, led by entities such as the EU, China, and South Korea, have focused on developing detailed taxonomies to guide sustainable investments, emphasizing the need for international coordination. Considering the complexity inherent in the definition of sustainable finance, this report will approach sustainable finance in as broad a category as possible. However, to enhance the effectiveness of the discussion, it will focus more on aspects related to responding to climate change.

Global Trends in Sustainable Finance

√ Climate Finance Growth

Climate finance, a crucial subset of sustainable finance, is designed to facilitate mitigation and adaptation actions that address climate change challenges. This form of finance draws from a diverse range of sources, including public, private, and alternative funding, all aimed at supporting climate-related projects and initiatives. In recent years, there has been a remarkable surge in climate finance, with the average annual flow reaching approximately USD 1.3 trillion. This significant increase is primarily due to heightened finance directed towards mitigation efforts, reflecting a global commitment to combating climate change.

However, the distribution of climate finance is notably uneven, with a considerable concentration in specific regions. China, the United States, Europe, Brazil, Japan, and India have collectively received 90% of these funds. Despite this concentration, significant disparities in the availability of climate finance remain, especially in countries characterized by high emissions and increased vulnerability to climate change effects.

√ Sustainable Investment Trends

The importance of establishing unified definitions and terms related to sustainable finance has been underscored by initiatives like the International Organization of Securities Commissions (IOSCO). Such efforts are crucial for maintaining consistency across the global asset management industry, facilitating clearer communication and understanding of sustainable investment practices.

Sustainable investing assets have experienced substantial growth, indicating a rising interest in investments that consider environmental, social, and governance (ESG) factors. However, this growth has varied across different

regions. Europe, for instance, has seen an increase in sustainable investments, but the pace of this growth has not kept up with the broader market. This discrepancy is often attributed to stricter disclosure regulations and a shift towards more cautious reporting by investment funds.

Additionally, changes in research methodologies have significantly impacted the measurement and comparison of sustainable investing assets relative to total managed assets in various regions. These methodological changes have introduced complexities in directly comparing current data with earlier reports, affecting the interpretation of sustainable investment trends over time.

√ Overall Sustainable Finance Flows

In the first half of 2023, the global issuance of sustainable finance products achieved a total of \$717 billion. This figure represents a 7% decrease when compared to the corresponding period in the previous year. Despite this downturn, the outlook for the issuance of sustainable finance products remains cautiously optimistic. This optimism is primarily driven by several factors, including the improvement of environmental, social, and governance (ESG) data disclosure and the implementation of supportive policies that encourage the development and utilization of clean energy solutions.

When examining regional trends, a noticeable variation in the volume of sustainable finance issuance becomes apparent. The Europe, Middle East, and Africa (EMEA) regions have demonstrated resilience, maintaining robust issuance volumes that reflect a strong commitment to sustainable finance. Conversely, the Americas have seen a decline in the issuance of sustainable finance products, a trend that highlights the region's challenges in this area. Similarly, the Asia Pacific region experienced a downturn in sustainable finance issuance volumes, which can largely be attributed to cautious sentiments prevailing in the global market.

International and Policy Landscape

It outlines key international norms and policies related to sustainable finance, including the United Nations Sustainable Development Goals (SDGs), the Paris Agreement, and initiatives like the Principles for Responsible Investment (PRI) and the Task Force on Climate-related Financial Disclosures (TCFD). These frameworks and guidelines play critical roles in enhancing corporate transparency and facilitating informed investment decisions based on climate-related risks and opportunities.

U.S Initiatives in Sustainable Finance

√ Inflation Reduction Act (IRA)

The Inflation Reduction Act (IRA) is a landmark legislative package that represents a significant commitment by the U.S. to address climate change and promote sustainable finance. With provisions aimed at reducing carbon emissions by about 40% by 2030, the IRA allocates substantial funds towards renewable energy, energy efficiency, and other climate initiatives. It introduces tax credits for clean electricity generation, carbon capture, and clean vehicles, alongside direct spending in agriculture, forestry conservation, energy loans, and industrial decarbonization. The IRA is notable for its comprehensive approach, blending tax incentives with direct investments to stimulate the transition to a green economy.

√ Principles for Net-zero Financing and Investment

The U.S. Department of the Treasury released "Principles for Net-Zero Financing & Investment" to guide financial institutions towards achieving net-zero greenhouse gas emissions. These principles emphasize the importance of addressing scope 3 financed and facilitated emissions, integrating environmental justice considerations, and promoting transparency

in net-zero efforts. This initiative reflects a concerted effort to align financial practices with global climate goals and enhance the accountability and credibility of financial institutions in combating climate change.

√ Climate-related Disclosure Rule (SEC)

The Securities and Exchange Commission (SEC) adopted new rules to enhance and standardize climate-related disclosures by public companies. These rules aim to provide investors with uniform, actionable information on how climate-related issues affect businesses. They cover a wide range of disclosures, including the identification and management of climate risks, direct and indirect greenhouse gas emissions, and the progress towards achieving climate-related targets. The SEC's rules mark a significant step towards improving transparency and consistency in climate-related reporting across the financial sector.

√ Principles for Climate-Related Financial Risk Management

The Federal Reserve Board, the Office of the Comptroller of the Currency (OCC), and the Federal Deposit Insurance Corporation (FDIC) introduced "Principles for Climate-Related Financial Risk Management for Large Financial Institutions." These principles offer a strategic framework for managing climate-related financial risks, highlighting the need for governance, risk management policies, and scenario analysis. This initiative underscores the regulatory focus on ensuring that large financial institutions are adequately prepared to address the financial risks posed by climate change.

√ State-Level Initiatives

California's landmark climate disclosure laws and New York's Climate Leadership and Community Protection Act (CLCPA) exemplify state-level

leadership in climate policy and sustainable finance. California requires public and private entities to report greenhouse gas emissions and adhere to TCFD recommendations, while New York has set ambitious targets for emission reductions, renewable energy, and environmental justice. These state initiatives play a critical role in driving the U.S. towards a more sustainable and equitable future.

Sustainable Finance in the European Union

√ European Union's Sustainable Finance Framework

The European Union (EU) has established a robust sustainable finance framework to integrate environmental, social, and governance (ESG) considerations into the financial sector. Launched in March 2018, the EU's Action Plan on Sustainable Finance seeks to reorient capital flows towards sustainable investments, manage financial risks from climate change, and enhance transparency. Key components of this strategy include the development of the EU Taxonomy, European Green Bond Standard, and the EU Sustainable Finance Disclosure Regulations (SFDR), aiming to promote sustainable investment, clarify investors' duties regarding sustainability, and increase market transparency.

√ EU Taxonomy

The EU Taxonomy serves as a critical tool for market transparency, providing a classification system for identifying sustainable economic activities. It aims to channel investments towards activities essential for the transition to a net-zero emissions economy by 2050, covering six environmental objectives. The taxonomy requires activities to contribute significantly to these objectives without causing harm to others and meet minimum social safeguards.

√ EU Sustainable Finance Disclosure Regulation (SFDR)

The SFDR aims to increase transparency in the financial market by requiring disclosures about ESG risks and opportunities from financial market participants and advisers. It seeks to mitigate greenwashing by establishing harmonized rules for sustainability disclosures, thus clarifying the sustainability impacts of investments.

√ EU Green Bond Standard

Introduced in November 2023, the European Green Bond Standard aims to provide a high-quality benchmark for green bonds, using the EU taxonomy's criteria to identify sustainable economic activities. It seeks to enhance market integrity and attract private investment by offering clear definitions and requirements for European Green Bonds.

Current Status of Carbon Emissions in Korea

√ Trends in Greenhouse Gas Concentration and Climate Change Status in South Korea

Korea has seen a steady increase in greenhouse gas concentrations, mirroring global trends. Specifically, concentrations of carbon dioxide have risen by 1.49 times, methane by 2.62 times, and nitrous oxide by 1.23 times, reaching new highs each year. The increase in carbon dioxide concentrations has accelerated recently, highlighting the urgent need for comprehensive emissions management to mitigate climate change impacts. Furthermore, Korea has experienced a significant rise in average annual temperatures and changes in seasonal lengths, with summers extending and winters shortening. These climatic shifts, along with intensified rainfall patterns and rising sea temperatures at a rate faster than the global average, underscore the critical environmental changes occurring in Korea.

√ Greenhouse Gas Emissions Status

In 2021, Korea's total national greenhouse gas emissions were reported at 676.6 million tons CO₂eq, indicating a complex scenario of both decreases and increases compared to previous years. The energy, industrial processes, and agriculture sectors saw increases in emissions, while the waste sector experienced a decrease. The report highlights specific sectoral shifts, such as decreases in petroleum refining emissions due to reduced operation rates and increases in emissions from the petrochemical sector and power generation. These fluctuations demonstrate the challenges and progress in managing greenhouse gas emissions within Korea's economy.

Current Status of Sustainable Finance in Korea

√ Statistics of Sustainable Finance in Korea

Korea's sustainable finance has seen substantial growth, with the size of ESG finance reaching 787 trillion KRW in 2021, a 29% increase from the previous year. The proportion of ESG finance relative to total managed assets stands at 12%, indicating a continuous upward trend. This expansion spans various aspects of ESG finance, including loans, investments, bond issuances, and financial products, showing Korea's commitment to integrating sustainability into its financial sector.

√ K-Taxonomy

The K-Taxonomy is a framework for classifying environmentally sustainable economic activities in Korea. Developed in response to global trends in sustainable finance, it aligns with initiatives like the EU Taxonomy, aiming to prevent greenwashing and facilitate green investments. The K-Taxonomy categorizes activities based on their

environmental benefits, emphasizing the principles of contributing to environmental objectives, not causing significant harm, and adhering to minimum safeguards.

√ ESG Information Disclosure

In 2021, the Korea Exchange established the "ESG Disclosure Guidance" to enhance corporate disclosure of sustainability information. However, the initial plan to apply mandatory ESG disclosure regulations from 2025 for large KOSPI-listed companies has been postponed to 2026, reflecting concerns over the burden on companies and aligning with international standards.

√ ESG Rating and Evaluation Industry

The ESG evaluation market in Korea is in its early stages but growing in interest and importance. Main ESG evaluation institutions in Korea are expanding their targets, but challenges such as transparency, conflicts of interest, and reliability in evaluation results have been identified. Recent surveys indicate a low level of trust in domestic ESG evaluation agencies among Korean companies.

√ Emission Trading System (ETS)

Launched in 2015, the Korea Emissions Trading Scheme (K-ETS) aims to reduce greenhouse gas emissions cost-effectively. Operating on a cap-and-trade principle, it incentivizes companies to adopt cleaner technologies. The K-ETS is in its third phase (2021-2025), indicating ongoing adjustments and enhancements to optimize its impact on emissions reduction.

Strategies for the Development of Sustainable Finance in Korea

√ Improvement of Fiscal Systems

An increase in the national budget dedicated to sustainable growth is necessary. The document suggests exploring the introduction of a carbon tax and expanding tax benefits to encourage corporate participation in climate change mitigation efforts.

√ Strengthening of ESG Information Disclosure

Despite postponement, the mandatory disclosure of sustainability reports from 2026 for large listed companies is emphasized. The development of Korean ESG disclosure standards, compatible with international standards, is underway to ensure effective implementation.

√ Enhancement of ESG Evaluation / Rating System

Improving the reliability of the ESG evaluation system through increased transparency and possibly government-established guidelines is highlighted. Legal and institutional frameworks for verifying the eligibility of evaluation agencies are considered necessary for enhancing market transparency and reliability.

√ Expand the Support for the SMEs

Comprehensive support for SMEs in carbon-neutral management is advocated, including establishing a voluntary carbon market, standardizing energy-saving measures, and enhancing SMEs' capabilities to measure greenhouse gas emissions directly.

√ Strengthening the Emission Trading System (ETS)

Policy support is needed for the emissions trading market to function effectively as a financial market that sets carbon prices. Expanding market participants and developing derivative products are suggested to enhance the market's attractiveness and functionality.

√ Enhancing International Cooperation to Facilitate Carbon Emission-Reduction Projects

Active participation in establishing the international carbon market is crucial. Policy and financial support for overseas carbon reduction projects are advocated to facilitate smooth project financing and encourage investment by South Korean financial institutions in these projects.

(CH. 1) Review Background : Urgency of Carbon Neutrality and Role of Sustainable Finance

With carbon neutrality emerging as a global new paradigm, a new economic order and market are being created. Since the full enactment of the Paris Agreement in 2016, following the UN Climate Summit in September 2019, 121 countries have joined the alliance to upgrade their climate goals. Moreover, the COVID-19 situation has heightened awareness of the severity of climate change, leading to a global increase in interest in sustainable growth and development. Global warming is no longer seen as a distant future possibility but as a reality, we are facing, and there is a growing awareness of the economic and social risks it poses.

In response, major countries around the world are setting carbon neutrality goals and pursuing various strategies to achieve them. To reach these carbon neutrality goals, a smooth inflow of funds into green sectors is essential; hence, the need for the greening of the financial sector through the activation of sustainable finance. Along with the quantitative expansion of sustainable finance, the role of finance in encouraging companies to adopt management strategies that consider environmental and social values is of great importance. To support the implementation of the global goal of carbon neutrality, the financial sector needs to expand investments in carbon-neutral-friendly companies and projects. Particularly, financial institutions need to play an active role in inducing companies to adopt climate-friendly management by integratively considering climate change and environmental risks and opportunities in their decision-making processes.

It is now crucial to make efforts to support sustainable economic growth that does not hinder the development of future generations. This includes expanding direct public financial support to carbon-neutral and eco-friendly sectors and devising strategies to promote sustainable finance that encourages private participation.

(CH. 2) Definition of Sustainable Finance

To define 'Sustainable Finance,' a consensus understanding of 'Sustainability' is first required. According to the United Nations Brundtland Commission, sustainability is defined as “meeting the needs of the present without compromising the ability of future generations to meet their own needs.”¹⁾ In other words, sustainability is the balanced progression of environmental, social, and economic elements to meet the needs of the present and future generations. Highlighted in the United Nations Sustainable Development Goals (SDGs), it emphasizes a harmony between social equity, economic efficiency, and environmental conservation. In summary, sustainability involves considering all three aspects: environmental, social, and economic, and signifies efforts to achieve sustainable development from a long-term perspective.

Based on this understanding of 'Sustainability,' we can consider the concept of Sustainable Finance. According to the European Commission, the definition of Sustainable Finance is as follows; Sustainable finance refers to the process of taking environmental, social and governance (ESG) considerations into account when making investment decisions in the financial sector, leading to more long-term investments in sustainable economic activities and projects.²⁾ Environmental factors encompass actions to mitigate and adapt to climate change, along with broader issues like biodiversity conservation, pollution prevention, and promoting a circular economy. Social factors pertain to addressing inequality and inclusivity, fostering positive labor relations, investing in human skills and community development, and upholding human rights. The governance of both public and private entities, which includes their management structures, relationships with employees, and executive compensation policies, is crucial in integrating social and environmental aspects into decision-

1) <https://www.un.org/en/academic-impact/sustainability>

2) https://finance.ec.europa.eu/sustainable-finance/overview-sustainable-finance_en

making processes.

The definition of sustainable finance, due to its broad and ambiguous nature, has the limitation of being open to subjective interpretation. This is a limitation inherent in the term "sustainability." Such ambiguity can lead to misuse in the market, resulting in abuses such as greenwashing. In addition, the multiplicity of definitions of "green" and "sustainable" investments is often cited as an important barrier to scaling up green and sustainable investment. Previous OECD analysis on green bonds notes that "The lack of universal rules and standardization is a shared and enduring source of concern cited by participants in the market. Convergence towards commonly accepted definitions will be essential to maximize the effectiveness, efficiency and integrity of the market." Differences in policies and standards relating to sustainable investments can result in market fragmentation.³⁾

Recognizing this problem, the international community has continued efforts to establish more detailed definitions, known as Taxonomies. The EU, in pursuit of a framework to promote sustainable finance, initiated this process in 2018, culminating in the release of the EU Taxonomy ("Regulation on the establishment of a framework to facilitate sustainable investment") in 2020. Prior to the EU, the People's Bank of China was the first in the world to announce a detailed classification system for sustainable finance, known as the Chinese Taxonomy, for giving the guidance of the issuance of green bonds. South Korea, too, has been utilizing guidelines for its own Green Classification System, established in December 2021.

These efforts by various countries have indeed made significant progress in expanding sustainable finance in each country. However, from a long-term perspective, it is important to consider that a crucial step in

3)

https://www.oecd-ilibrary.org/sites/134a2dbe-en/1/3/1/1/index.html?itemId=/content/publication/134a2dbe-en&_csp_=062998fb6eb20cf4e25d9a4ba3ba529e&itemIGO=oecd&itemContentType=book

expanding sustainable finance involves international coordination to define how the financial sector can recognize sustainable activities and investments.

Considering the complexity inherent in the definition of sustainable finance, this report will approach sustainable finance in as broad a category as possible. However, to enhance the effectiveness of the discussion, it will focus more on aspects related to responding to climate change.

(Ch.3) Current Global Trends in Sustainable Finance

3-1) Climate Finance

3-1-1) Definition of Climate Finance

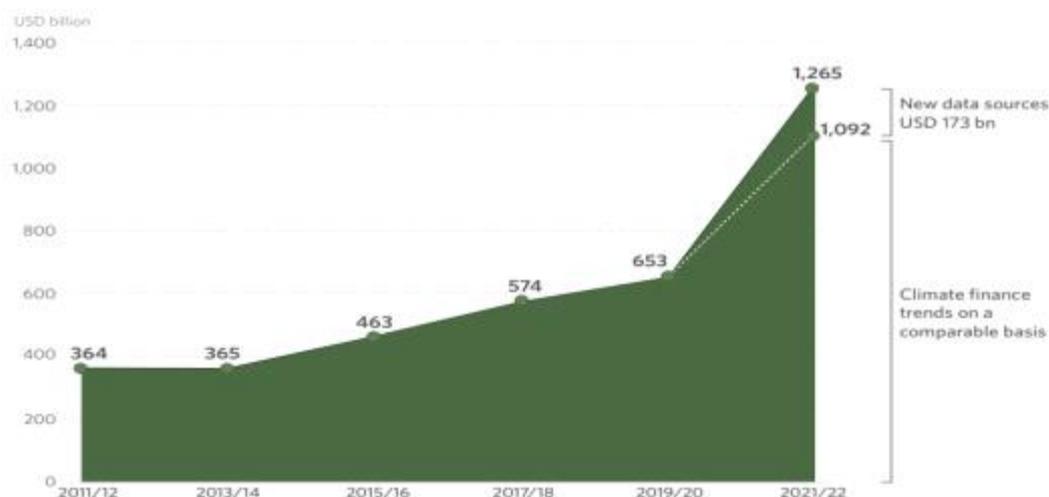
We will first examine the flow of climate finance, which can be considered a subcategory under the broad category of sustainable finance. Climate finance refers to local, national or transnational financing—drawn from public, private and alternative sources of financing—that seeks to support mitigation and adaptation actions that will address climate change according to the United Nations Framework Convention on Climate Change (UNFCCC)⁴⁾. As understood from the previous definition, climate finance is driven and discussed by the international community, centered around the UNFCCC, and is based on legally binding agreements. In this respect, compared to the social and governance aspects of sustainability, the classification system for climate finance is relatively clearer, and its related systems are well-established, making it easier to ensure accuracy and transparency in statistics. Additionally, unlike in the past where sustainability issues were primarily addressed from a social motivation, currently, environmental risks have become the most pressing issue. Therefore, exploring the sector of climate finance, which is a prominent

4) <https://unfccc.int/topics/introduction-to-climate-finance>

issue within the environmental aspect, is thought to be helpful in understanding the overall flow of sustainable finance.

3-1-2) Climate finance Flow⁵⁾

According to the Climate Policy Initiative (CPI), in 2021-2022, the average annual flow of climate finance surged to approximately USD 1.3 trillion, a near doubling from the levels seen in 2019-2020. This significant increase was largely driven by a marked increase in finance for mitigation efforts, which rose by USD 439 billion from 2019-2020. Additionally, the observed growth during 2021-2022, amounting to USD 173 billion annually, can be attributed to methodological enhancements and the introduction of new data sources, which expanded the scope of tracked flows compared to 2019-2020. Excluding these advancements in data collection and analysis, the annual climate finance flows in 2021-2022 would have been just under USD 1.1 trillion.

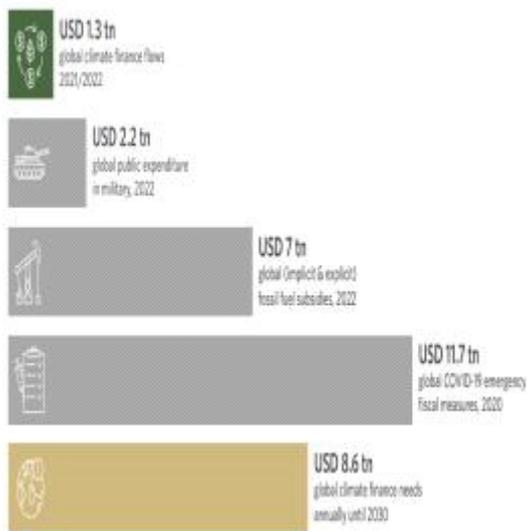


Note: Climate finance flows are reported as biennial averages to smooth out annual fluctuations in data and expressed in nominal USD. This means that annual figures do not account for the effects of inflation and exchange rate volatility over time.

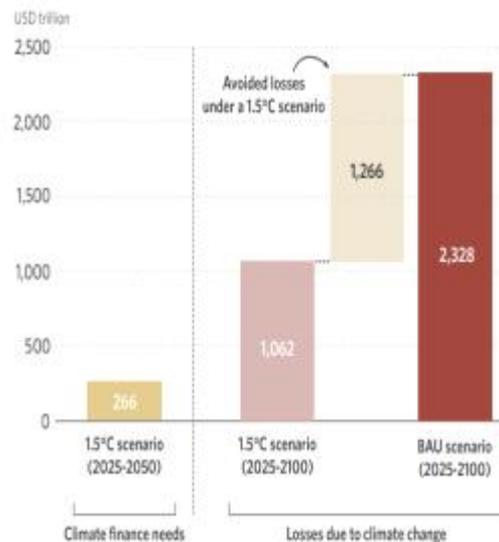
<Global climate finance in 2011-2022, biennial averages (by CPI)>

5) Global-Landscape-of-Climate-Finance-2023.pdf(climatepolicyinitiative.org)

Despite the growth and recent momentum on climate finance, current flows represent about only 1% of global GDP which means that further action is required.



<Climate Finance in context >



<Cumulative climate finance needs vs. losses under 1.5°C and BAU scenarios>

The expansion of global climate finance is primarily attributed to notable increases in clean energy investments in select regions. China, the United States, Europe, Brazil, Japan, and India were the recipients of 90% of these augmented funds. Despite this being a sign of progress, substantial shortfalls in climate finance persist in these areas. Additionally, countries with high emissions and vulnerability to climate change have seen limited advancement in addressing their climate finance needs.

- ✓ The distribution of climate finance is also imbalanced across various sectors, affecting both mitigation and adaptation efforts. Regarding mitigation finance, which amounted to 1.15 trillion in 2021-2022

- ✓ The majority of funding continues to flow into energy and transport, the sectors with the highest emissions and dominant private finance presence. Specifically, the energy sector received 44% of total mitigation finance, while transport accounted for 29%. Notably, the sale of electric vehicles (EVs) saw exponential growth in 2021-2022, particularly in China, Western Europe, and the United States.
- ✓ Agriculture and industry, despite being significant sources of emissions, garner considerably less financial support (less than 4% of total mitigation and dual benefits finance). According to the Intergovernmental Panel on Climate Change, these sectors have a combined mitigation potential of 20 GTCO₂ by 2030, surpassing that of the energy and transport sectors.
- ✓ Emerging technologies like battery storage and hydrogen are increasingly drawing private finance, driven by declining production costs, growing consumption, and supportive policies. However, their scale remains significantly below their potential.

Climate finance is predominantly concentrated in developed regions, with the majority coming from private sources.

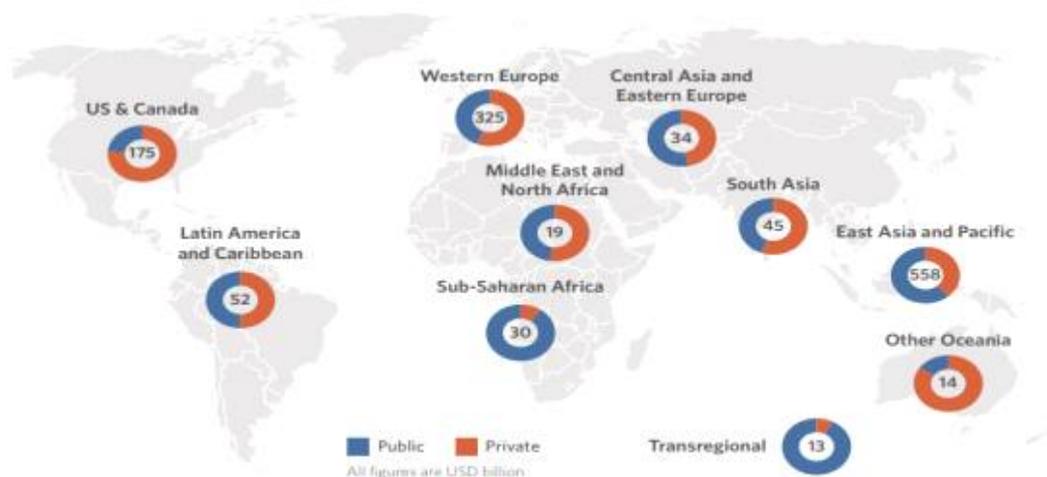
- ✓ East Asia, the Pacific, the US, Canada, and Western Europe collectively represent 84% of total climate finance, excelling in mobilizing domestic sources crucial for scaling up.
- ✓ China alone contributed more than half (51%) of all domestic climate finance globally, surpassing the combined total of other nations.
- ✓ International finance saw a 35% increase from 2019/2020, mainly due to higher commitments from developed countries. These economies contributed 84% of international finance, while emerging

markets and developing economies (EMDEs), including China, provided 13%. South-South climate finance made up less than 2% of total flows.

- ✓ However, climate finance falls short of the needs, especially in developing and low-income countries. Less than 3% (USD 30 billion) of the global total went to the least developed countries (LDCs), and 15% to EMDEs excluding China. The ten countries most affected by climate change between 2000 and 2019 received merely USD 23 billion, less than 2% of total climate finance.

Private finance is on the rise, but not at the necessary rate and scale.

- ✓ Private entities contributed 49% of total climate finance (USD 625 billion). Developed economies are more adept at mobilizing private finance than EMDEs.
- ✓ The most significant growth in the private sector was in household spending, accounting for 31% of all private finance.
- ✓ This surge, the highest in over a decade, was primarily driven by doubled EV sales from 2020 to 2021, backed by robust domestic fiscal policies promoting low-carbon technologies.
- ✓ Development finance institutions remain the primary providers of public finance, dispensing 57% of it. However, over 17% of public finance to LDCs is market-rate debt, exacerbating their already significant debt burdens. In this scenario, a renewed focus on strategically utilizing public funds and other concessional finance to mobilize more private capital is essential.



<Public vs. private climate finance by region> (by CPI)

3-2) Sustainable Investment Flow⁶⁾

In November 2021, the International Organization of Securities Commissions (IOSCO) emphasized the importance for the global investment sector to establish unified definitions and terms related to sustainable finance. This includes aspects of responsible investment approaches, aiming to maintain uniformity across the worldwide asset management industry. In reaction to this, key organizations like the CFA Institute, the Global Sustainable Investment Alliance (GSIA)⁷⁾, and the Principles for Responsible Investment (PRI) collaborated to standardize terminologies for various responsible investment concepts.

6) GSIA-Report-2022.pdf(gsi-alliance.org)

7) GSIA members are Eurosif (European Sustainable Investment Forum), UKSIF (UK Sustainable Investment and Finance Association), the US Sustainable Investment Forum (US SIF), Japan Sustainable Investment Forum (JSIF), the Responsible Investment Association Canada (RIA Canada), the Dutch Association of Sustainable Investors (VBDO) and the Responsible Investment Association Australasia (RIAA). Reference to 'global data' or 'regions' in this section refers to data from these regions unless otherwise specified. Eurosif, VBDO and UKSIF do not collect data directly, data for the European region has been sourced from the European Fund and Asset Management Association (EFAMA).

<Definition of sustainable investment terms>

Approach	Definition
Screening	Applying rules based on defined criteria that determine whether an investment is permissible.
ESG Integration	Ongoing consideration of ESG factors within an investment analysis and decision-making process with the aim to improve risk-adjusted returns.
Thematic Investing	Selecting assets to access specified trends
Stewardship	The use of investor rights and influence to protect and enhance overall long-term value for clients and beneficiaries, including the common economic, social, and environmental assets on which their interests depend.
Impact Investing	Investing with the intention to generate positive, measurable social and/or environmental impact alongside a financial return.

The Global Sustainability Investment-Alliance (GSIA) released a report providing an overview of sustainable investing, based on data from its regional and national member reports for the year of 2022. The trend analysis was performed without including U.S. data due to significant changes in the U.S. methodology and the region's substantial asset representation. This approach revealed a 20% rise in sustainable investments globally, from USD 18.2 to USD 21.9 trillion. However, incorporating U.S. data into this analysis would indicate a 14% global decrease.

Sustainable investing assets increased in most regions, including Europe, Australia, New Zealand, and Japan. In Europe, sustainable investments rose from USD 12 trillion in 2020 to USD 14 trillion in 2022, but this growth lagged behind the broader market. Europe has seen a consistent decline in assets classified as sustainable, approximately 5% annually. This trend may result from stricter disclosure regulations and a shift towards more cautious reporting, reflecting the evolving maturity of sustainable investing definitions and practices. In Canada, sustainable investing assets remained relatively unchanged, moving from USD 2.42 trillion in 2020 to USD 2.36 trillion in 2022, with a decrease in sustainable investing assets from 62% to 47%. In contrast, Japan witnessed robust growth, with sustainable investing assets increasing from USD 2.9 trillion in 2020 to USD 4.3

trillion in 2022, representing an increase from 24% to 34% of the market. The Australian and New Zealand market grew from USD 906 billion in 2020 to USD 1.22 trillion in 2022. Despite a methodology change in 2020 leading to a decline from 63% to 38%, 2022 saw a moderate recovery to 43%. The U.S. market experienced a significant drop in sustainable investments from USD 17.1 trillion to USD 8.4 trillion, attributed to the previously mentioned change in methodology.

REGION	2016	2018	2020	2022
Europe	12,040	14,075	12,017	14,054
Canada	1,086	1,699	2,423	2,358
Australia & New Zealand	516	734	906	1,220
Japan	474	2,180	2,874	4,289
Sub-total (USD Billions)	14,115	18,688	18,220	21,921
% change		32%	-3%	20%
United States	8,723	11,995	17,081	8,400
Total (USD Billions)	22,838	30,683	35,301	30,321
% change		34%	15%	n/a

Note: 2022 not applicable due to a change in methodology



<Snapshot of global sustainable investing assets 2016-2022 (USD billions)>

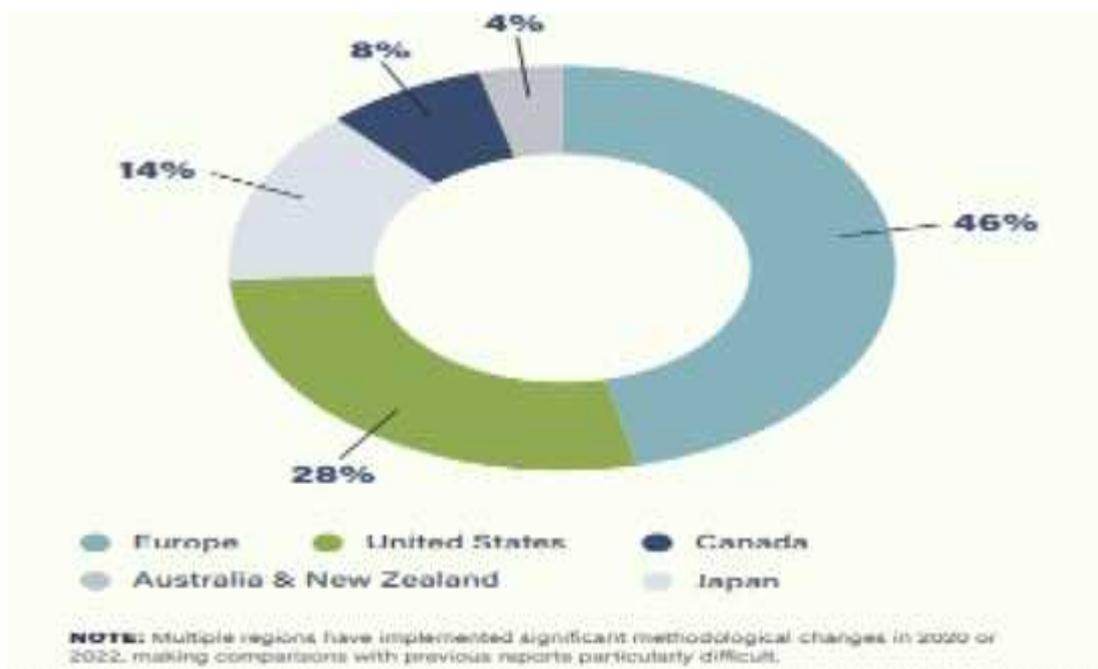


<Proportion of sustainable investing assets relative to total managed assets, 2014-2022>

In Japan, the share of sustainable investing in total managed assets saw a substantial increase from 24% to 34%. However, in the United States and Canada, there was a decrease in the proportion of sustainable investing assets relative to the total for the years 2020 to 2022. This trend can be attributed to major changes in research methodologies in these regions, complicating direct comparisons with earlier reports. Europe's drop from 42% to 38% might be a result of stricter regulatory requirements leading to more conservative approaches in fund labeling and reporting, following the implementation of various measures under the Sustainable Finance Action Plan. Conversely, the Australia and New Zealand markets witnessed

a slight rise in their share of sustainable investing, moving from 38% to 43%, after experiencing a significant decrease in 2020 due to a change in methodology.

During the 2020 to 2022 period, the United States and Europe continued to dominate the sustainable investing assets market, reflective of their larger market sizes. Europe's share of global sustainable investing assets grew from 34% to 46%, influenced by the growth of its market and the shift in U.S. methodology. There is an emerging trend in the distribution of global sustainable investing assets, with Japan's share climbing from 8% to 14% and Australia and New Zealand's from 3% to 8%. On the other hand, Canada's share decreased from 7% to 4%, and the United States saw a reduction from 48% to 28% during the same time frame.



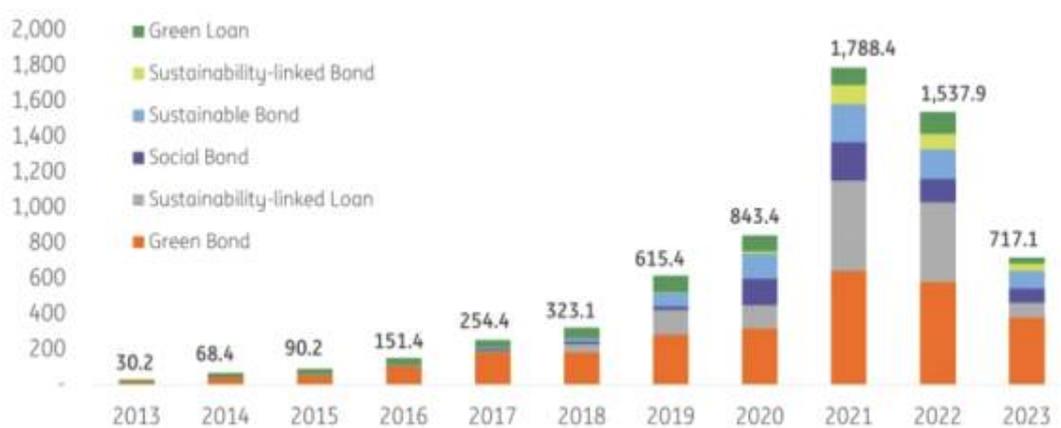
<Proportion of global sustainable investing assets by region>

3-3) Overall Sustainable Finance Flow⁸⁾

In the first half of 2023, the issuance of global sustainable finance products reached a total of \$717 billion. Despite a 7% decrease compared

8) Bigswingsin2023,butglobalsustainablefinanceremainsinrudehealth|Article|INGThink

to the same period last year, this figure is still higher than the latter half of 2022, and the total for 2023 could potentially surpass that of 2022. This cautiously optimistic outlook is influenced by several factors. Improved disclosure of ESG data could lead to a more favorable environment for issuing such financial products. Policies like the US Inflation Reduction Act, aimed at boosting clean energy, could further drive sustainability initiatives. The increasing frequency of extreme weather events might prompt issuers to fund long-term climate change mitigation efforts. Additionally, ongoing government actions are likely to enhance the issuance of sovereign ESG debt.



<Global Issuance of sustainable finance products volume in \$bn>

* The 2023 number is from Jan-June

The EMEA region is showing resilience, while the Americas are encountering challenges.

There are noticeable regional variations in volume growth. Europe, the Middle East, and Africa (EMEA) have displayed strong resilience, with issuance volumes in the first half of 2023 bouncing back to levels seen in early 2022 and late 2021. This rebound is primarily fueled by the evolving sustainable finance policy landscape in Europe.

On the other hand, the Americas saw a 21% decline in issuance during the first half of 2023 compared to the latter half of 2022, continuing a downward trend that began in late 2021. Contributing to this decline, albeit not conclusively, has been the influence of anti-ESG sentiments, creating a landscape of disruption and uncertainty, leading to increased scrutiny in issuing sustainable finance products.

However, the United States finds a silver lining in the Inflation Reduction Act (IRA). With a budget of \$370 billion for energy security and climate change initiatives, the IRA is revitalizing the clean energy sector. Tax credits provided by the IRA are expected to bolster not just established technologies like wind, solar, electric vehicles, and nuclear, but also nascent ones like hydrogen and CCS. Additionally, substantial direct funding is available through government grants (approximately \$82 billion) and loans (\$40 billion), playing a critical role in preparing these technologies for private investment and broader adoption.

The Asia Pacific (APAC) region also witnessed a decline in the first half of 2023 compared to the previous half-year. This downturn may be attributed to the overall cautious global market, but there is potential for APAC to rebound in the latter half of 2023. Green products, driven by the need for decarbonization and government backing for clean energy, are anticipated to be key growth drivers in the APAC market.

Green bonds have emerged as key growth drivers in the market.

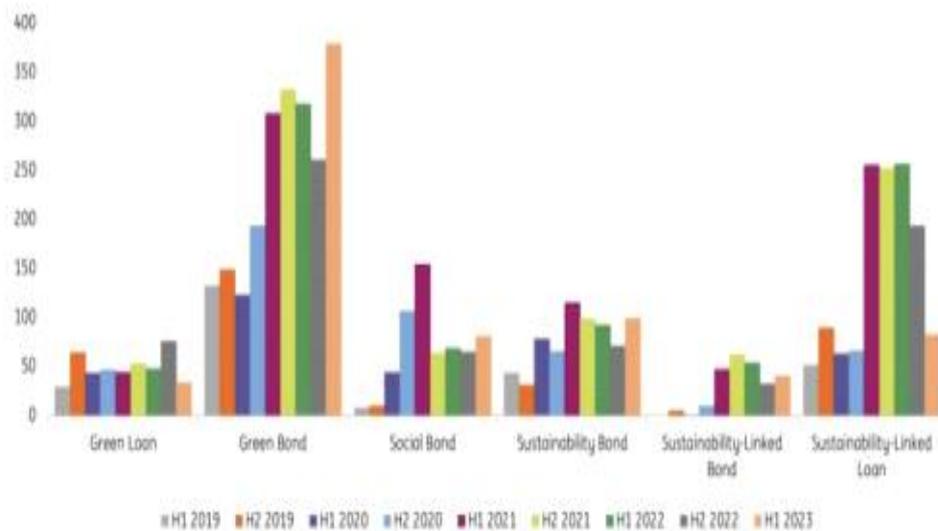
The use of proceed bonds (UoP bonds), which include green, social, and sustainability bonds, has shown remarkable growth in the first half of 2023. Particularly, green bond issuance during this period surpassed

previous records set in the latter half of 2021. There's an increasing focus on avoiding greenwashing, and UoP bonds are becoming popular as the funds are directly linked to specific green or social projects within an issuer's sustainable finance framework. Green bonds, in particular, are receiving an additional push due to robust policy support for energy transition technologies across various regions.

However, there's a growing caution around sustainability-linked products, especially sustainability-linked loans (SLLs). The issuance of SLLs in the first half of 2023 saw a 57% decrease from the latter half of 2022, partly due to fewer large-scale SLL deals. Compared to 11 large SLL deals in 2022, only one similar deal occurred in the first half of 2023. The decline in APAC is notable, led by China and Australia, with a significant drop in SLL deals.

Additionally, there has been a trend towards smaller SLL issuance volumes globally, and the average size of companies issuing SLLs is also decreasing. In the Americas, for instance, the average revenue of corporate SLL issuers fell to \$2.5 billion and \$3 billion in the latter half of 2022 and the first half of 2023, respectively, from an average of \$4.9 billion in the previous year. This suggests that SLLs are becoming more common among smaller companies following their initial adoption by larger corporates.

Another observation is the increasing product loyalty, with repeat issuances of both SLLs and UoP bonds growing over the past few years. This might be driven by concerns over negative perceptions if issuers revert to conventional financing. UoP bond deals are almost entirely by repeat issuers, while SLLs predominantly involve new issuers. For many, SLLs serve as an introductory step into sustainable finance as they develop their ESG capex plans to sizes suitable for UoP issuances.



(Ch.4) Institutional and Policy Status Related to Sustainable Finance

4-1) International Norms

4-1-1) United Nations Sustainable Development Goals (SDGs)

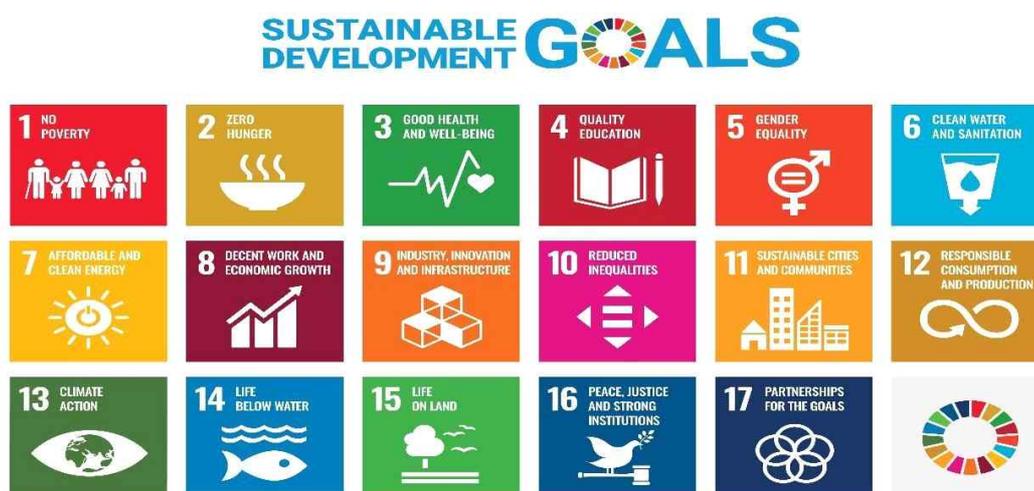
The 2030 Agenda for Sustainable Development, established by all United Nations Member States in 2015, offers a global framework for achieving peace and prosperity for both people and the planet into the future. Central to this agenda are the 17 Sustainable Development Goals (SDGs) and 169 targets, which serve as a critical call to action for countries at all levels of development to engage in a worldwide partnership. These goals are designed to address a broad range of issues, including poverty, health, education, inequality, economic growth, climate change, and the preservation of our oceans and forests, emphasizing the interconnectedness of social, economic, and environmental sustainability.⁹⁾

This Agenda represents a comprehensive plan aimed at enhancing the well-being of people, the health of our planet, and the prosperity of all. It is also dedicated to reinforcing global peace within a broader context of freedom. Acknowledging the eradication of poverty in all its forms, including its most severe expression, extreme poverty, as the paramount

9) <https://sdgs.un.org/goals>

global challenge, this plan underscores sustainable development as an essential goal. It envisions a world where every country and all stakeholders, through a collaborative partnership, commit to implementing this strategy. Our collective resolve is to liberate humanity from the constraints of poverty and deprivation and to ensure the preservation and security of our planet for future generations. We are committed to initiating bold and transformative measures urgently required to steer the world towards a sustainable and resilient future. As we commence this united journey, our promise is to ensure that no individual is overlooked.

10)



*<https://www.un.org/sustainabledevelopment/news/communications-material/>

4-1-2) Paris Agreement ¹¹⁾

The Paris Agreement stands as a pivotal legally binding treaty on climate change, endorsed by 196 parties during the UN Climate Change Conference (COP21) in Paris, France, on December 12, 2015, and came into effect on November 4, 2016. Its primary aim is to limit the rise in global average temperature to significantly below 2°C above pre-industrial

10) <https://sdgs.un.org/2030agenda>

11) <https://unfccc.int/process-and-meetings/the-paris-agreement>

levels, while also endeavoring to cap the temperature increase to 1.5°C above those levels.

Recent discussions among global leaders have underscored the critical necessity of capping global warming to 1.5°C by this century's end. This urgency is driven by findings from the UN's Intergovernmental Panel on Climate Change, which warns that surpassing the 1.5°C threshold could trigger much more devastating impacts of climate change, such as increased occurrences of droughts, heatwaves, and heavy rainfall.

Achieving this target requires that greenhouse gas emissions reach their peak no later than 2025 and are reduced by 43% by the year 2030. The Paris Agreement marks a significant milestone in the global effort to address climate change, representing the first instance where a binding accord has unified countries worldwide in the fight against climate change and its ramifications.

The execution of the Paris Agreement necessitates a transformation in both economic and social paradigms, anchored in the finest science currently available. The Agreement is designed to operate through a mechanism of five-year cycles of progressively more ambitious efforts to combat climate change, known as a process of "ratcheting up" actions by countries. Starting from 2020, nations have begun to submit their national plans for climate action, referred to as nationally determined contributions (NDCs). Each NDC is expected to display a greater level of ambition than its predecessor, aiming for continuous improvement in climate efforts.

In light of the urgent need to keep global warming within 1.5°C, the decision from COP27 calls on countries to reassess and enhance their 2030 targets in their NDCs to ensure they are in line with the temperature objectives of the Paris Agreement by the end of 2023, while considering the varied circumstances unique to each nation.

<NDCs of major countries>¹²⁾

Country	NDCs (2030 Target)
United States	To achieve an economy-wide target of reducing its net greenhouse gas emissions by 50-52 percent below 2005 levels (6635 million tonnes CO ₂ e)in2030.
United Kingdom of Great Britain and Northern Ireland	UK commits to reducing economy-wide greenhouse gas emissions by at least 68% by 2030, compared to 1990 levels
EU	Economy-wide net domesticl reduction of at least 55% in greenhouse gas emissions by 2030 compared to 1990.
Japan	Japan aims to reduce its greenhouse gas emissions by 46 percent in fiscal year 2030 from its fiscal year 2013 level.
Korea	The updated and enhanced target is to reduce total national GHG emissions by 40% from the 2018 level, which is 727.6 MtCO ₂ eq, by 2030.

4-1-3) Principles for Responsible Investment (PRI)¹³⁾

The Principles for Responsible Investment were formulated by a global consortium of institutional investors, acknowledging the growing importance of environmental, social, and corporate governance factors in investment decisions. The PRI initiative was launched in 2006 with the support of the United Nations and aims to understand the implications of sustainability for investors and support signatories in incorporating these issues into their investment and ownership decisions. The PRI serves as a framework for investors who are committed to applying these principles to enhance returns and better manage risks. By adhering to the PRI, organizations commit to a set of six investment principles designed to provide a roadmap for responsible investment

Principle 1	We will incorporate ESG issues into investment analysis and decision-making processes.
Principle 2	We will be active owners and incorporate ESG issues into our ownership policies and practices.
Principle 3	We will seek appropriate disclosure on ESG issues by the entities in which we invest.

12) <https://unfccc.int/NDCREG>

13) <https://www.unpri.org/about-us/what-are-the-principles-for-responsible-investment>

Principle 4	We will promote acceptance and implementation of the Principles within the investment industry.
Principle 5	We will work together to enhance our effectiveness in implementing the Principles.
Principle 6	We will each report on our activities and progress towards implementing the Principles.

4-1-4) Task Force on Climate-related Financial Disclosure (TCFD) ¹⁴⁾

The Financial Stability Board (FSB) established the Task Force on Climate-related Financial Disclosures (TCFD) to formulate guidelines on the information companies should reveal to help investors, lenders, and insurers accurately evaluate and price climate-related risks. In 2017, the TCFD issued its recommendations for climate-related financial disclosures, aimed at enhancing corporate transparency and facilitating smarter capital distribution.

These recommendations are organized into four key areas that reflect fundamental aspects of corporate operations: governance, strategy, risk management, and metrics and targets. These areas are interconnected and further elaborated through 11 specific disclosures, providing a detailed framework to assist investors and others in understanding how companies approach and manage climate-related risks and opportunities.

After releasing its recommendations, the FSB directed the Task Force to encourage the uptake of the TCFD framework. This included offering additional guidance, promoting educational initiatives, reviewing the state of climate-related financial disclosures for consistency with the TCFD guidelines, and producing annual progress reports up until 2023. Following the completion of its 2023 Status Report and at the FSB's request, the TCFD has concluded its mission and has been dissolved.

14) <https://www.fsb-tcfd.org/about/>

<Recommendations of TCFD>

Recommendations and Supporting Recommended Disclosures			
Governance	Strategy	Risk Management	Metrics and Targets
Disclose the organization's governance around climate-related risks and opportunities.	Disclose the actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning where such information is material.	Disclose how the organization identifies, assesses, and manages climate-related risks.	Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material.
Recommended Disclosures	Recommended Disclosures	Recommended Disclosures	Recommended Disclosures
a) Describe the board's oversight of climate-related risks and opportunities.	a) Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term.	a) Describe the organization's processes for identifying and assessing climate-related risks.	a) Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process.
b) Describe management's role in assessing and managing climate-related risks and opportunities.	b) Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning.	b) Describe the organization's processes for managing climate-related risks.	b) Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.
	c) Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.	c) Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management.	c) Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.

*Source: Final Report: Recommendations of the Task Force on Climate-related Financial Disclosure

4-1-5) Equator Principles¹⁵⁾

The Equator Principles (EPs) aim to provide a standardized framework for financial institutions to assess and address environmental and social risks in project financing. These principles guide Equator Principles Financial Institutions (EPFIs) in integrating environmental and social risk management practices within their internal policies, procedures, and standards to ensure compliance with the Equator Principles. While primarily focused on project finance, EPFIs have the flexibility to apply the Equator Principles to other financial products at their discretion, beyond their original scope.

The Equator Principles are subject to periodic updates to incorporate the practical experiences of EPFIs, input from various stakeholders, and to adapt to the changing landscape and best practices in the field. The fourth version of the Equator Principles (EP4) became effective for all EPFIs on October 1, 2020, after a delayed implementation due to the global

15) <https://equator-principles.com/about-the-equator-principles/>

Covid-19 pandemic.

<Key features and advancement of EP 4>

Broader Scope of Applicability	EP4 extends its applicability beyond project finance to include project-related corporate loans and bridge loans, thereby broadening the range of financial products under its purview.
Enhanced Social Responsibility and Human Rights Considerations	It places a stronger emphasis on respecting human rights and the interests of Indigenous Peoples, requiring more rigorous due diligence processes and informed consultation.
Climate Change Assessment	EP4 introduces specific requirements for climate change assessment, including the need for climate-related risk evaluations for certain projects, aligning with the growing global focus on sustainability and climate change mitigation.
Strengthened Stakeholder Engagement Requirements	The principles now demand more robust engagement with stakeholders, including more detailed and structured consultation processes with affected communities.
Increased Transparency and Accountability	There is a greater emphasis on transparency and accountability, with requirements for more detailed public reporting by borrowers on how projects comply with the Equator Principles.
Alignment with International Standards	EP4 continues to align with other international standards, such as the International Finance Corporation's Performance Standards on Environmental and Social Sustainability and the World Bank Group's Environmental, Health, and Safety Guidelines.

It's also noteworthy that the EP Association was dissolved in 2024. From this point forward, any mentions of the EP Association should be interpreted as references to the collective body of Signatories to the Equator Principles, starting from 2024.

4-1-6) Green Bond Principles (GBP)¹⁶⁾

The Green Bond Principles (GBP) are designed to assist issuers in raising funds for projects that contribute to environmental sustainability and support the transition to a net-zero emissions economy. The principles encourage issuers to offer clear environmental benefits alongside financial returns, enhancing the attractiveness of Green Bonds. To foster greater transparency, the GBP advocate for detailed reporting on how the proceeds from Green Bonds are utilized, aiming to link investments directly to environmental projects and provide insights into their potential impact.

According to the “Green Bond Principles Voluntary Process Guidelines for Issuing Green Bonds June 2021” Green Bonds are “any type of bond instrument where the proceeds or an equivalent amount will be exclusively applied to finance or re-finance, in part or in full, new and/or existing eligible Green Projects and which are aligned with the four core components of the GBP.”

<Four core components of the GBP>

Component	Explanation
Use of Proceeds	This component emphasizes that the funds raised from Green Bond issuances should be exclusively used for projects that have clear environmental benefits, such as renewable energy, pollution prevention, sustainable water management, and climate change adaptation projects, among others.
Process for Project Evaluation and Selection	Issuers are encouraged to disclose their environmental sustainability objectives, along with the criteria and process for project selection. This ensures that the projects funded by the Green Bond align with the issuer's overarching environmental goals.
Management of Proceeds	The GBP recommend tracking the proceeds of a Green Bond in a transparent manner, often through a separate account or by using a tracking method to ensure that the funds are allocated to the intended green projects.
Reporting	Regular reporting on the use of proceeds is crucial for maintaining transparency. Issuers are advised to report at

16)

<https://www.icmagroup.org/sustainable-finance/the-principles-guidelines-and-handbooks/green-bond-principles-gbp/>

	least annually on how funds have been used and the environmental impacts of the projects financed, providing investors with the information needed to assess the environmental benefits of their investments
--	--

As of June 2021, the GBP serve as voluntary guidelines that encourage transparency, disclosure, and integrity in the Green Bond market. These guidelines help define the process for Green Bond issuance, offering clarity to issuers and a framework for investors, banks, underwriters, and others to evaluate the environmental credentials of Green Bonds.

The principles stress the importance of transparency, accuracy, and integrity in the information disclosed by issuers, outlining essential components and recommendations for reporting to stakeholders. In an update in June 2022, Appendix 1 of the GBP introduced distinctions between different types of Green Bonds, such as “Standard Green Use of Proceeds Bonds” and “Secured Green Bonds,” providing additional guidance on green covered bonds, securitisations, and other secured financial instruments. This enhancement aims to refine the classification and support of green financing structures.

<Types of Green Bonds>

Standard Green Use of Proceeds Bond	An unsecured debt obligation with full recourse-to-the-issuer only and aligned with the GBP.
Green Revenue Bond	A non-recourse-to-the-issuer debt obligation aligned with the GBP in which the credit exposure in the bond is to the pledged cash flows of the revenue streams, fees, taxes etc., and whose use of proceeds go to related or unrelated Green Project(s).
Green Project Bond	A project bond for a single or multiple Green Project(s) for which the investor has direct exposure to the risk of the project(s) with or without potential recourse to the issuer, and that is aligned with the GBP
Secured Green Bond	A secured bond where the net proceeds will be exclusively applied to finance or refinance either: <ul style="list-style-type: none"> i) The Green Project(s) securing the specific bond only (a “Secured Green Collateral Bond”); or 1. ii. The Green Project(s) of the issuer, originator or sponsor, where such Green Projects may or may not be securing the specific bond in

	<p>whole or in part (a “Secured Green Standard Bond”). A Secured Green Standard Bond may be a specific class or tranche of a larger transaction.</p>
--	--

* Source: Green Bond Principles Voluntary Process Guidelines for Issuing Green Bonds
June 2021

4-1-7) Standards for sustainable information disclosure

a. GRI Standards¹⁷⁾

The GRI Standards are a set of globally recognized guidelines provided by the Global Reporting Initiative (GRI) for sustainability reporting. These standards offer a common language for organizations to report on their economic, environmental, and social impacts in a consistent, transparent, and comparable manner. The GRI Standards are modular and interrelated, designed to be used as a set to prepare a sustainability report focused on material issues.

The framework comprises three universal standards (GRI 101: Foundation, GRI 102: General Disclosures, and GRI 103: Management Approach) that apply to every organization, along with topic-specific standards covering a wide range of economic, environmental, and social issues. Organizations can select from these topic-specific standards to report on their impacts in a manner that reflects their material sustainability issues.

The purpose of the GRI Standards is to enable organizations to understand and communicate their impacts on sustainability issues,

17) <https://www.globalreporting.org/standards/>

thereby promoting economic, environmental, and social sustainability. They aim to help organizations make more sustainable decisions and contribute to the achievement of global sustainability goals.

<Structure of GRI>

Universal Standard	GRI 101: Foundation	This standard lays the groundwork for the GRI Standards system. It establishes the principles and concepts for reporting, including the reporting principles for defining report content and report quality. It also includes guidance on how to use the GRI Standards.
	GRI 102: General Disclosures	This standard covers the foundational, general information about an organization, such as its organizational profile, governance structure, stakeholder engagement practices, and overarching approach to sustainability.
	GRI 103: Management Approach	It provides guidance on how to report on the organization's approach to managing material topics, including how policies, mechanisms, and outcomes relate to each sustainability issue.
The Sector Standard*	Group 1: Basic Material and needs	1) Oil and gas, 2) Coal, 3) Agriculture, aquaculture, and fishing, 4) Mining, 5) Food and beverages, 6) Textiles and apparel, 7) Banking, 8) Insurance, 9) Capital markets, 10) Utilities, 11) Renewable Energy, 12) Forestry, 13) Metal processing
	Group 2: Industrial	1) Construction materials 2) Aerospace and defense, 3) Automotive, 4) Construction, 5) Construction, 6) Chemicals, 7) Machinery and Equipment, 8) Pharmaceuticals, 9) Electronics
	Group 3: Transport, Infrastructure and tourism	1) Media and communication, 2) Software, 3) Real estate, 4) Transportation infrastructure, 5) Shipping, 6) Trucking, 7) Airlines, 8) Trading, distribution, and logistics, 9) Packaging, 10) Hotels
	Group 4: Other services and light manufacturing	1) Educational services, 2) Household durables, 3) Managed health care, 4) Medical equipment and services, 5) Retail, 6) Security services and correctional facilities, 7) Restaurants, 8) Commercial services, 9) Non-profit organizations

The topic Standard	These are divided into three series, reflecting economic (200 series), environmental (300 series), and social (400 series) topics. Each standard within these series focuses on a specific issue, such as energy use, water management, labor practices, human rights, and many others, providing specific disclosures and metrics for reporting.
--------------------	---

*According to the “GRI Sector Program – List of prioritized sectors Revision 3 Approved by the GSSB on 19 October 2021”, in February 2019, the Global Sustainability Standards Board (GSSB) initiated the GRI Sector Program with the goal of enhancing the clarity and uniformity of sustainability reports. This program aims to create specific GRI Sector Standards for 40 to 45 sectors identified as having significant sustainability impacts. The initial draft of the GSSB Work Program for 2020-2022 outlined a plan to focus on 40 sectors, organized into four priority groups. Following feedback from stakeholders and insights gained from initial pilot projects, the GSSB, in October 2020, approved an updated list of sectors that would be addressed by the Sector Program, reflecting adjustments in sector scope and nomenclature based on research and stakeholder feedback. Although the majority of sectors remained the same, some experienced modifications in their names and descriptions, along with a few corrections. This updated sector list is poised to inform the forthcoming consultation phase for the draft GSSB Work Program for 2023-2025.

b. SASB Standards¹⁸⁾

SASB Standards are designed to help organizations disclose information on sustainability-related risks and opportunities that are likely to impact their financial performance, including cash flows, financing access, or capital costs, across various time frames.

These standards pinpoint the sustainability issues that are most pertinent to investors' decisions across 77 industries, developed through a robust and transparent process that involved: 1) Conducting research based on evidence;

2) Engaging a diverse group of stakeholders including companies, investors, and experts; 3) Gaining approval from the independent SASB Standards Board.

18) <https://sasb.org/standards/>

Investors worldwide value SASB Standards for enabling companies to provide consistent and comparable sustainability disclosures. The development of these standards is based on evidence-based research, inclusive participation from a broad range of stakeholders including companies, investors, and subject matter experts, and oversight from the independent SASB Standards Board.

In August 2022, the oversight of SASB Standards transitioned to the International Sustainability Standards Board (ISSB) of the IFRS Foundation. The ISSB has pledged to uphold, refine, and further develop the SASB Standards, urging both preparers and investors to continue utilizing them.

<Key features of SASB Standards>

Feature	Explanation
Industry-Specific	<p>SASB Standards are unique in that they are tailored to specific industries—77 in total. This means that the sustainability issues considered material for a software company will differ from those for a mining company, reflecting the distinct operational, environmental, and social challenges and opportunities each sector faces.</p> <p>Also, by focusing on industry-specific issues, the standards ensure that the reported information is directly relevant to investors and other stakeholders interested in how sustainability impacts financial performance.</p>
Evidence-based Development	<p>The creation of each standard is grounded in extensive research to identify the ESG issues most relevant to financial performance in each industry.</p>
Focus on Materiality	<p>The core of SASB's approach is the focus on materiality—ensuring that the disclosed information is of real significance to investors' decision-making processes regarding a company's long-term value.</p>
Enhancing Market Efficiency	<p>By providing a consistent and comparable way of reporting sustainability information, the SASB Standards aim to improve the efficiency of capital markets. Investors can more easily compare companies within an industry and make informed decisions based on sustainability performance.</p>

Furthermore, the SASB Standards are integral to the implementation of the first two IFRS Sustainability Disclosure Standards: IFRS S1, which outlines general requirements for sustainability-related disclosures, and IFRS S2, which focuses on climate-related disclosures. In December 2023, the ISSB revised the non-climate-related content in the SASB Standards in connection with the International Applicability of SASB Standards project

c. ISSB ¹⁹20)

On November 3, 2021, during the COP26 summit in Glasgow, the Trustees of the IFRS Foundation announced the creation of the International Sustainability Standards Board (ISSB) in response to widespread demand from the market. The ISSB's mission is to develop standards that establish a comprehensive, high-quality global baseline for sustainability disclosures, specifically tailored to the information needs of investors and financial markets. The ISSB has outlined four primary goals: 1) To create a set of standards that forms a global baseline for sustainability disclosures. 2) To fulfill the information requirements of investors. 3) To empower companies to deliver extensive sustainability information to global capital markets.

4) To ensure that these global standards can work alongside jurisdiction-specific disclosures and those targeting a wider range of stakeholders, enhancing interoperability.

The ISSB is focused on producing standards that are both practical for companies and valuable for investors, emphasizing: 1) Efficiency

19) <https://www.ifrs.org/groups/international-sustainability-standards-board/>

20) <https://www.ifrs.org/issued-standards/ifrs-sustainability-standards-navigator/>

in reporting, enabling companies to communicate essential information to investors worldwide without unnecessary burden. 2) Decision-usefulness of the information provided, ensuring it supports investor decision-making and promotes cross-border investment by enhancing comparability. 3) The avoidance of redundant reporting for companies, as the ISSB's standards serve as a foundation that jurisdictional requirements can supplement, thus streamlining reporting processes and reinforcing the global baseline's efficiency and comparability.

In June 2023, the ISSB finalized its first two standards: 1) IFRS S1 General Requirements for Disclosure of Sustainability-related Financial Information. 2) IFRS S2 Climate-related Disclosures.

These developments mark significant progress in standardizing sustainability reporting, offering clear, actionable guidelines for companies aiming to meet investor demands for sustainability information across the globe.

✓IFRS S1: The foundational concepts of IFRS S1 align with those of the IFRS financial reporting framework, with the substitution of 'financial information' for 'sustainability-related financial information.' The purpose of IFRS S1, "General Requirements for Disclosure of Sustainability-related Financial Information," is to mandate that an entity provides disclosures about its sustainability-related risks and opportunities. This information is intended to be valuable to the primary users of general-purpose financial reports, aiding in decisions about allocating resources to the entity. This standard obliges an entity to disclose details regarding all sustainability-related risks and opportunities that are

likely to influence the entity's cash flows, its ability to secure financing, or the cost of its capital, whether in the short, medium, or long term.

✓ The core content of the disclosures closely aligns with the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD). An entity is expected to provide details on the following, unless specified otherwise by an IFRS Sustainability Disclosure Standard for particular scenarios:

- 1) Governance: Disclose the governance mechanisms, controls, and procedures used to oversee and manage sustainability-related risks and opportunities, as detailed in paragraphs 26 to 27 of the standard.
- 2) Strategy: Describe the strategic approach to managing sustainability-related risks and opportunities, elaborated in paragraphs 28 to 42.
- 3) Risk Management: Explain the processes for identifying, assessing, prioritizing, and tracking sustainability-related risks and opportunities, as outlined in paragraphs 43 to 44.
- 4) Metrics and Targets: Report on the entity's performance concerning sustainability-related risks and opportunities, which includes the entity's progress towards any set or legally required targets, as specified in paragraphs 45 to 53.

In addition to these, the standards mandate that an entity should refer to and assess the relevance of the disclosure topics found within the SASB Standards. There might be instances where an entity determines that the disclosure topics in the SASB Standards do not apply to its specific circumstances.

✓ IFRS S2: The purpose of the IFRS S2 Climate-related

Disclosures standard is to mandate that entities provide disclosures about climate-related risks and opportunities. These disclosures are aimed at assisting the primary users of general-purpose financial reports in making decisions about resource allocation to the entity.

The standard requires disclosures to be structured around the same core categories as those outlined by the Task Force on Climate-related Financial Disclosures (TCFD) and IFRS S1, which include Governance, Strategy, Risk Management, Metrics and Targets. Entities must disclose significant climate-related risks and opportunities that could impact their financial position, performance, and cash flows during the reporting period, as well as any expected future impacts.

Furthermore, entities are required to employ climate-related scenario analysis to evaluate the irresilience to different climate-related conditions.

The standard details several metrics and targets that must be reported, including Scope 1, 2, and 3 greenhouse gas emissions, the application of any internal carbon pricing, and any targets related to climate issues.

It is specified that only those disclosures that are financially material need to be provided, ensuring that the information is pertinent to the financial report's users' decision-making processes.

4-2) United States

4-2-1) Biden's IRA²¹⁾

21) Economic Implications of the Climate Provisions of the Inflation Reduction Act (Brookings Papers on Economic Activity, Spring 2023: 77-157)

The Inflation Reduction Act (IRA) is a legislative package passed by the U.S. Congress and signed into law by President Joe Biden. Although the name suggests a focus on inflation, the law covers a broad array of policies, primarily targeting climate change, energy production, and healthcare. The IRA includes substantial financial commitments to reduce the United States' carbon emissions by roughly 40% by 2030*, in line with the country's climate goals. It allocates funds to accelerate the shift to renewable energy sources such as solar and wind power. This is partly achieved through tax credits for companies investing in renewable energy projects and for consumers installing renewable energy systems. The legislation also promotes energy efficiency across various sectors, including manufacturing, transportation, and residential housing, by offering tax incentives for energy-efficient appliances, electric vehicles, and the retrofitting of buildings. It encourages the development and use of clean energy technologies, including advanced nuclear power, carbon capture and storage, and green hydrogen production, through direct investment and tax incentives.

* According to Bristline, Blanford, and others in 2023, with the implementation of the Inflation Reduction Act, the United States is poised to lower its greenhouse gas emissions by 33 to 40 percent from 2005 levels by the year 2030. This reduction is 8 to 17 percentage points more substantial than what would be expected without the provisions of the IRA. Consequently, this progress narrows the distance to meet the country's commitment under the Paris Agreement, which is to reduce its overall greenhouse gas emissions by 50 percent within the same timeframe. (Brookings Paper)

Recognizing the disproportionate impact of climate change on marginalized communities, the IRA includes funding directed towards environmental justice initiatives. This includes grants and programs aimed at mitigating pollution and improving resilience to climate impacts in vulnerable communities. There are also investments in conservation and climate resilience, with funds allocated to forest restoration, wildfire management, and the development of climate-resilient infrastructure.

The IRA makes adjustments to the tax code, including a minimum tax on corporations and closing loopholes, which is intended to fund the climate and energy initiatives without increasing the deficit. This includes ensuring that the burden of adjustment is equitable, with a focus on not increasing taxes for families earning less than \$400,000 per year.

Below, we will examine the financial support mechanisms under the IRA, distinguishing between tax credits and direct expenditures, to see how much support is provided by each.

a. Tax Credits

The Congressional Budget Office (CBO), incorporating data from the Joint Committee on Taxation (JCT), projects that more than two-thirds of the budgetary impact stemming from the climate-related elements of the IRA, amounting to \$271 billion, will come in the form of tax credits. These credits are designed to promote clean electricity generation, investments in clean energy, and the purchase of new and used electric vehicles, as well as to encourage individual investments in energy efficiency. The rest of the costs, totaling \$121 billion out of the overall \$392 billion, will be allocated to direct spending on forestry and agriculture initiatives, energy-related loans and other financial investments, among other expenditures.

a-1) Production and Investment Tax Credits

Approximately one-third of the projected expenses for the climate-related measures in the IRA is attributed to the production and investment tax credits that are directed towards clean electricity generation and energy storage. The Production Tax Credit (PTC) is

given based on the amount of electricity produced over the first decade from eligible low-emission sources. In contrast, the Investment Tax Credit (ITC) is calculated as a portion of the investment expense. Facilities that generate electricity and meet the eligibility criteria have the option to select either the PTC or the ITC. The value of each credit can differ depending on various factors such as the facility's location, the technology used, eligibility for additional bonus credits, and the anticipated costs of capital.

a-2) Production Tax Credit for Carbon Capture and Sequestration

The Inflation Reduction Act also enhances the tax credit established in 2008 for projects that capture carbon dioxide, as outlined in section 45Q of the U.S. Internal Revenue Code. Under the IRA, facilities that exceed a specified size and meet certain labor standards can now qualify for a tax credit of \$85 per metric ton of CO₂ stored, or \$60 per metric ton for CO₂ that is utilized. This incentive is available to industrial or power generation facilities that capture CO₂ as part of their process, as well as to direct air capture facilities designed exclusively for capturing and storing carbon, which are eligible for a tax credit of \$180 per ton for the CO₂ they capture and store.

a-3) Nuclear Power Production Tax Credit

The Inflation Reduction Act introduces a production tax credit available until 2032 for existing nuclear power plants that comply with specified labor and wage standards. This credit offers a maximum of \$15 per megawatt-hour. However, the actual amount of the subsidy is contingent on the plant's revenue from electricity sales and whether it already benefits from other federal or state

programs that offer credits for zero-emission energy production. For instance, the Infrastructure Investment and Jobs Act, which was enacted in November 2021, established a \$6 billion grant program to financially support nuclear power plants that continue to operate.

a-4) Clean Fuels

The Inflation Reduction Act further extends and broadens credits for clean transportation and sustainable industrial fuels. Similar to the Production Tax Credit (PTC) and Investment Tax Credit (ITC), the Act prolongs specific tax credits for biodiesel, renewable diesel, and other alternative fuels initially, before transitioning to a technology-neutral credit. Starting in 2025 and continuing until the end of 2027, this technology-neutral credit will be set at \$1 per gallon, provided labor standards are met, with potential increases based on the fuel's emissions reduction performance. The Congressional Budget Office (CBO) anticipates the most significant spending in this area will be on a new credit for clean hydrogen (outlined in section 45V of the IRA), applicable to transportation, industrial uses, and power generation. The value of these hydrogen subsidies will vary according to the production process's emissions intensity.

Additionally, the IRA introduces a tax credit for sustainable aviation fuels, offering \$1.75 per gallon when labor conditions are satisfied. However, the CBO, agreeing with external analyses, predicts a relatively modest uptake for this incentive (as discussed by Bistline, Blanford, et al., 2023). Unlike the PTC for the power sector, these tax credits are available for all qualifying fuels produced within the year, regardless of whether they are produced by new or existing facilities.

a-5) Clean Energy and Efficiency incentives for Individuals

The Congressional Budget Office (CBO) projects that individual taxpayers will claim nearly \$40 billion in tax credits for investments in clean energy and energy efficiency. These credits are available for personal investments in various types of equipment, such as residential solar panels, battery storage systems, solar water heaters, small wind energy systems, and energy-efficient upgrades like insulation, windows, doors, electric heat pumps, as well as home energy audits and electrical panel enhancements necessary for further efficiency improvements. The value of these rebates may differ based on the projected energy savings, the type of building, and the income level of the household. While there are set limits for how much can be claimed for certain investments (for instance, \$150 for a home energy audit and \$2,000 for installing a heat pump) and a cap on the total annual credits an individual can receive, there's no overall cap on the aggregate amount of credits that can be claimed. Unlike the previously mentioned credits targeting commercial activities, these incentives do not include additional bonuses for employing specific types of labor.

a-6) Clean Vehicles

The Inflation Reduction Act offers tax credits of up to \$7,500 for individuals purchasing a new electric or hydrogen fuel cell vehicle, contingent upon fulfilling several criteria. These conditions stipulate that the vehicle must be assembled in North America, a certain percentage of the critical minerals and battery components used in the vehicle must originate from North America or a country that has a free-trade agreement with the United States (with this requirement becoming more stringent after 2024), and both the

vehicle's manufacturer's suggested retail price (MSRP) and the buyer's income must not exceed predetermined thresholds. The total credit is divided equally between the battery components and critical minerals criteria, with \$3,750 allocated for each.

In March 2023, the Treasury Department clarified through guidance that companies leasing vehicles to customers could claim the commercial clean vehicle credits, offering \$7,500 without the strict conditions related to battery sourcing or limitations based on MSRP or income levels. Additionally, the commercial clean vehicle tax credits are structured to provide up to \$7,500 for vehicles weighing less than 14,000 pounds and up to \$40,000 for heavier vehicles, or 30 percent of the purchase price or the additional cost over an internal combustion engine vehicle, whichever is less.

The IRA also introduces a \$4,000 credit (or 30 percent of the vehicle's price, whichever is lower) for the purchase of used electric vehicles, provided the vehicle is over two years old, the purchaser's income falls within specific guidelines, and the sale price is under \$25,000. These income and sale price limits are significantly more restrictive than those applied to new electric vehicles.

Furthermore, the IRA continues to offer tax credits to individual taxpayers for up to 30 percent or \$1,000 towards the installation of home charging stations, without income restrictions. Businesses installing electric vehicle chargers are eligible for a 30 percent tax credit, which can go up to \$100,000, provided they meet certain labor standards.

a-7) Clean Energy Manufacturing

The Inflation Reduction Act broadens and extends tax incentives for the renovation or new development of specific types of energy manufacturing plants, including those that produce energy storage systems or electrolyzers. The legislation introduces a 30 percent tax credit with a limit of \$10 billion, applicable to various clean energy technologies. Additionally, it offers an unlimited credit for each unit produced for certain wind, battery, and solar components—such as \$12 per square meter for photovoltaic wafers or \$3 per kilogram for solar-grade polysilicon. While the Congressional Budget Office (CBO) predicts that most tax-related spending will result from the unlimited credit provision, analysis from Credit Suisse suggests that the value of the manufacturing credits could significantly exceed the combined projections of the CBO and the Joint Committee on Taxation (JCT) (as reported by Jiang and others in 2022).

<Fiscal Score of the Climate-Related Provisions of the IRA by Major Category>

(Fiscal Score (\$ billions))

a. Tax Credits	
a-1) Investment and production tax credits for clean electricity generation and storage	131
a-2) Production tax credit for carbon capture and sequestration	3
a-3) Nuclear power production tax credit	30
a-4) Clean fuels	19
a-5) Clean energy and efficiency incentives for individuals	37
a-6) Clean vehicles	14
a-7) Clean energy manufacturing	37
Subtotal	271
2. Direct Expense	
b-1) Agricultural and forestry conservation and Sequestration projects	21
b-2) Energy Loans	17
b-3) Energy Efficiency	11
b-4) Industrial Decarbonization	5
b-5) Other	66
Subtotal	121
Total	392

b. Direct Expenditures

b-1) Agricultural and Forestry Conservation and Sequestration Projects

The Inflation Reduction Act allocates over \$20 billion towards conservation programs in agriculture and forestry. A significant portion of the funding for agriculture is channeled through pre-existing conservation programs, which the IRA substantially augments. For example, the act designates \$8.45 billion to the Environmental Quality Incentives Program (EQIP) to support practices that enhance soil carbon sequestration or reduce greenhouse gas emissions. The investment in forestry aims to support projects that reduce hazardous fuels, manage vegetation, conduct surveys of ancient forests, and implement other conservation initiatives.

b-2) Energy Loans

The Inflation Reduction Act boosts the lending capacity of the U.S. Department of Energy's Loan Programs Office by approximately \$100 billion. It also establishes a new initiative, the Energy Infrastructure Reinvestment Program, designed to hasten the upgrading and replacement of high-emission energy infrastructure. Additionally, the IRA augments financial support for a variety of pre-existing programs aimed at motivating farmers and rural property owners to adopt renewable energy systems. Furthermore, the legislation allocates nearly \$10 billion to promote investments by rural electric cooperatives in renewable energy sources and other low-carbon energy solutions.

b-3) Energy Efficiency

The Inflation Reduction Act incorporates more than \$10 billion in direct spending for energy efficiency initiatives. This includes funding for a novel program under the Department of Energy, which provides grants to state energy offices for the creation of comprehensive home energy efficiency retrofit programs. Additionally, the Act boosts the allocation for energy efficiency projects within an existing affordable housing program operated by the Department of Housing and Urban Development.

b-4) Industrial Decarbonization

The legislation establishes a new initiative within the Department of Energy aimed at assisting emissions-intensive industrial facilities. This initiative supports the completion of demonstration and deployment projects focused on emissions reduction. Prior estimates, before the implementation of the Inflation Reduction Act, indicated that the industrial sector would account for more than a quarter of the emissions by 2030. However, the IRA dedicates only \$5 billion specifically for emission reduction efforts in this sector. Various models have pointed out that clean hydrogen and carbon capture and storage (CCS) technologies could play significant roles in mitigating industrial emissions. Therefore, the actual financial support for the industrial sector, considering these technologies, may exceed \$5 billion, albeit still being substantially less than the funding allocated to the electric power and transportation sectors, as outlined by Bistline, Blanford, et al., in 2023.

b-5) Other

Significant allocations within the "Other" section of table 1 feature \$27 billion allocated to the Environmental Protection Agency (EPA) for the operation of the Greenhouse Gas Reduction Fund. This fund is set to distribute competitive grants, primarily focusing on clean energy initiatives that aid low-income and disadvantaged communities. This initiative is often referred to as the U.S. government's "green bank," largely because a significant portion of the funds will support nonprofit organizations that offer financial or technical help for local clean energy projects. Additionally, the Inflation Reduction Act introduces a Methane Emissions Reduction Program, which imposes a fee on methane emissions from certain sources. The charge starts at \$900 per metric ton of methane and rises to \$1,500 after two years. This fee corresponds to approximately \$36 and \$60 per metric ton of CO₂ equivalent, though the exact figure varies based on the methane's CO₂ equivalence (as reported by the Congressional Research Service in 2022b). This fee will be waived for states that implement EPA regulations.

4-2-2) Principles for Net-zero Financing and Investment (Department of Treasury)²²⁾

The U.S. Department of the Treasury's "Principles for Net-Zero Financing & Investment", released in September 2023, outlines a comprehensive approach for financial institutions committed to achieving net-zero greenhouse gas emissions. It emphasizes the significance of these commitments in mitigating climate-related risks and unlocking economic opportunities within the clean energy economy. The principles aim to ensure consistency and credibility in financial institutions' net-zero

22) <https://home.treasury.gov/system/files/136/NetZeroPrinciples.pdf>

strategies, focusing largely on scope 3 financed and facilitated emissions, which are typically the largest for these institutions*. The document draws on existing work by private sector and non-governmental organizations and reflects insights from extensive stakeholder engagement. It provides guidance on developing and executing net-zero transition plans, establishing credible metrics and targets, and assessing and aligning financial practices with the global aim to limit temperature increase to 1.5°C. Additionally, it addresses the integration of environmental justice and the impact of financial activities on communities and the environment. These voluntary principles are designed to support financial institutions in navigating the transition to a net-zero economy, promoting transparency, and enhancing stakeholder engagement in their net-zero efforts.

* Based on a review of the G20 Sustainable Finance Working Group's 2022 recommendations on Improving the Credibility of Private Sector Financial Institution Commitments, see G20 SFWG, 2022 G20 Sustainable Finance Report (2022), 41-53, <https://g20sfgw.org/wp-content/uploads/2022/10/2022-G20-Sustainable-Finance-Report-2.pdf>.

Summary of the Principles for Net-Zero Financing & Investment

PRINCIPLE 1: A financial institution's net-zero commitment (commitment) is a declaration of intent to work toward the reduction of greenhouse gas emissions. Treasury recommends that commitments be in line with limiting the increase in the global average temperature to 1.5°C. To be credible, this declaration should be accompanied or followed by the development and execution of a net-zero transition plan.

PRINCIPLE 2: Financial institutions should consider transition finance, managed phaseout, and climate solutions practices when deciding how to realize their commitments.

PRINCIPLE 3: Financial institutions should establish credible metrics and targets and endeavor, over time, for all relevant financing, investment, and advisory services to have associated metrics and targets.

PRINCIPLE 4: Financial institutions should assess client and portfolio company alignment to their (i.e., financial institutions') targets and to limiting the increase in the global average temperature to 1.5°C.

PRINCIPLE 5: Financial institutions should align engagement practices — with clients, portfolio companies, and other stakeholders — to their commitments.

PRINCIPLE 6: Financial institutions should develop and execute an implementation strategy that integrates the goals of their commitments into relevant aspects of their businesses and operating procedures.

PRINCIPLE 7: Financial institutions should establish robust governance processes to provide oversight of the implementation of their commitments.

PRINCIPLE 8: Financial institutions should, in the context of activities associated with their net-zero transition plans, account for environmental justice and environmental impacts, where applicable.

PRINCIPLE 9: Financial institutions should be transparent about their commitments and progress towards them.

* Source: <https://home.treasury.gov/system/files/136/NetZeroPrinciples.pdf>

The principles set forth by the U.S. Department of the Treasury for net-zero financing and investment have significant implications for financial institutions. Though these are voluntary principles, they serve as a comprehensive framework for aligning financial practices with global climate goals, specifically the target to limit global warming to 1.5°C. These principles encourage institutions to integrate climate risk assessments, set science-based emission reduction targets, and transparently report their progress. By adopting these guidelines, financial institutions commit to

supporting the transition to a low-carbon economy, ensuring environmental justice, and promoting sustainable growth. The principles aim to foster a unified approach across the financial sector, enhancing accountability and credibility in the industry's efforts to combat climate change.

4-2-3) Climate-related Disclosure Rule (SEC) ^{23),24)}

Since the 1970s, the SEC has aimed to provide investors with detailed information about environmental risks faced by public companies. Notably, they offered related guidance in 2010. However, investor concerns regarding the potential impact of climate change on individual businesses have significantly escalated.

Investors increasingly demand comprehensive information on how climate-related risks affect companies, seeking data to inform their investment decisions. Additionally, they emphasize the need for consistent, comparable, and reliable information about how companies address these risks in their operations, strategies, and financial plans.

Responding to these needs, the SEC proposed new rules to enhance and standardize climate-related disclosures in March 2022. While many companies voluntarily provide such information, current practices often lack uniformity and consistency. The proposed rules aim to streamline and improve disclosure processes, ultimately benefiting both investors and issuers. The SEC's proposed rule mandates that both domestic and foreign registrants include detailed climate-related information within their registration statements and periodic reports, such as Form 10-K.

The Commission considered over 24,000 comments, including more than 4,500 unique letters, in response to the proposal released in March 2022, and adopted rules on March 6, 2024, to enhance and standardize

23) <https://www.sec.gov/files/33-11042-fact-sheet.pdf>

24) <https://www.sec.gov/news/press-release/2024-31>

climate-related disclosures by public companies and in public offerings. The contents of the adopted rules are as follows.:

- Climate-related risks that have had or are reasonably likely to have a material impact on the registrant's business strategy, results of operations, or financial condition;
- ✓ The actual and potential material impacts of any identified climate-related risks on the registrant's strategy, business model, and outlook;
- ✓ If, as part of its strategy, a registrant has undertaken activities to mitigate or adapt to a material climate-related risk, a quantitative and qualitative description of material expenditures incurred and material impacts on financial estimates and assumptions that directly result from such mitigation or adaptation activities;
- ✓ Specified disclosures regarding a registrant's activities, if any, to mitigate or adapt to a material climate-related risk including the use, if any, of transition plans, scenario analysis, or internal carbon prices;
- ✓ Any oversight by the board of directors of climate-related risks and any role by management in assessing and managing the registrant's material climate-related risks;
- ✓ Any processes the registrant has for identifying, assessing, and managing material climate-related risks and, if the registrant is managing those risks, whether and how any such processes are integrated into the registrant's overall risk management system or processes;
- ✓ Information about a registrant's climate-related targets or goals, if any, that have materially affected or are reasonably likely to materially affect the registrant's business, results of operations, or financial condition. Disclosures would include material

expenditures and material impacts on financial estimates and assumptions as a direct result of the target or goal or actions taken to make progress toward meeting such target or goal;

- ✓ For large accelerated filers (LAFs) and accelerated filers (AFs) that are not otherwise exempted, information about material Scope 1 emissions and/or Scope 2 emissions;
- ✓ For those required to disclose Scope 1 and/or Scope 2 emissions, an assurance report at the limited assurance level, which, for an LAF, following an additional transition period, will be at the reasonable assurance level;
- ✓ The capitalized costs, expenditures expensed, charges, and losses incurred as a result of severe weather events and other natural conditions, such as hurricanes, tornadoes, flooding, drought, wildfires, extreme temperatures, and sea level rise, subject to applicable one percent and de minimis disclosure thresholds, disclosed in a note to the financial statements;
- ✓ The capitalized costs, expenditures expensed, and losses related to carbon offsets and renewable energy credits or certificates (RECs) if used as a material component of a registrant's plans to achieve its disclosed climate-related targets or goals, disclosed in a note to the financial statements; and
- ✓ If the estimates and assumptions a registrant uses to produce the financial statements were materially impacted by risks and uncertainties associated with severe weather events and other natural conditions or any disclosed climate-related targets or transition plans, a qualitative description of how the development of such estimates and assumptions was impacted, disclosed in a note to the financial statements.

*source: <https://www.sec.gov/news/press-release/2024-31>

The rule aligns with existing disclosure frameworks like those from the Task Force on Climate-Related Financial Disclosures (TCFD) and the Greenhouse Gas Protocol, aiming to provide investors with uniform, actionable information on how climate-related issues affect businesses. It covers the identification, assessment, and management of climate risks; the use of scenario analysis and internal carbon pricing; the impact of climate events on financials; direct and indirect GHG emissions; and the progress towards achieving climate-related targets, including the role of carbon offsets and renewable energy certificates (RECs).

The initial phase-in periods and Accommodations for the proposed Disclosures is as below table:

<Table: Disclosure Compliance Date and Assurance Date by Registrant Type>

Registrant Type	Disclosure and financial statement effect	GHG Emissions and related assurance		
		Disclosures, other than GHG emissions	Scope 1 and scope 2 GHG emissions	Limited assurance
Large Accelerated Filer	FYB 2025	FYB 2026	FYB 2029	FYB 2033
Accelerated Filers	FYB 2026	FYB 2028	FYB 2031	Not applicable
SRCs, EGCs, and non-accelerated filers	FYB 2027	Not applicable	Not applicable	Not applicable

*source:https://viewpoint.pwc.com/dt/us/en/pwc/in_briefs/2024/2024-in-brief/ib202402.html#:~:text=On%20March%206%2C%202024%2C%20the%20SEC%20adopted%20new%20rules%20that,of%20operations%2C%20or%20financial%20condition.

There are some key differences between the SEC's proposed climate disclosure rule from March 2022 and the final version adopted in March 2024.

	Proposal	Final version
Scope of Emissions Disclosure	Companies would have had to disclose both Scope 1,2 and Scope 3	Only Scope 1 and 2 are required. Scope 3 emissions, which can be complex and challenging to track, are not mandated.
Financial Statement Disclosures	More extensive disclosures were required, including the impact of climate change on asset values and liabilities.	Companies must disclose the financial effects of severe weather events and how carbon offsets or renewable energy credits are used. The focus is on material impacts.
Implementation timeline	The original proposal would have had a shorter timeframe for implementation.	Companies have more time to comply with the final rules, with a phased-in approach for assurance requirements.

Overall, the final rules represent a scaled-back version of the initial proposal. While they still require significant new disclosures on climate risks and emissions, they address concerns raised by businesses about the feasibility and cost of implementing the broader proposal.

4-2-4) Principles for Climate-Related Financial Risk Management for Large Financial Institutions²⁵⁾

The "Principles for Climate-Related Financial Risk Management for Large Financial Institutions" is a document released by the Federal Reserve

²⁵⁾ <https://www.federalreserve.gov/supervisionreg/srletters/SR2309a1.pdf>

Board, the Office of the Comptroller of the Currency (OCC), and the Federal Deposit Insurance Corporation (FDIC) in October 2023. It's not a regulation, but rather a set of voluntary guidelines aimed at large financial institutions (with over \$100 billion in total consolidated assets) to help them manage climate-related financial risks. This principle also does not specify specific metrics or reporting requirements.

According to the principles, financial institutions face significant risks from climate change, including both physical and transition risks. Physical risks involve damage from extreme weather events like hurricanes and floods, as well as long-term shifts such as rising temperatures and sea levels. Transition risks arise from the economic adjustments needed to move towards a low-carbon economy, affecting regulations, technologies, and market preferences. Together, these climate-related financial risks impact the stability and operations of financial institutions, necessitating robust risk management strategies to mitigate potential losses and adapt to changing environmental conditions.

The principles offer a strategic framework for managing climate-related financial risks within the parameters of existing regulatory guidance. They aim to assist financial institutions in focusing on critical areas of climate risk management. Designed for both directors and management, these principles guide the integration of climate-related financial risks into existing risk management infrastructures, ensuring alignment with safe and sound banking practices. Additionally, they serve to clarify and augment the existing standards and advice regarding the responsibilities of boards and management in risk oversight.

This document outlines six key general principles for managing these physical and transition risks.

< Six General Principles >

Principle	Recommendation
Governance	Emphasizes the need for board and management oversight on climate-related risks and their integration into business strategies and risk management frameworks.
Policies, Procedures, and Limits	Recommends establishing clear guidelines to manage climate risks in alignment with the institution's risk appetite.
Strategic Planning	Advises considering climate risks when setting business strategies and monitoring their impact on the institution's financial health and operations.
Risk Management	Highlights the importance of identifying, assessing, monitoring, and controlling climate-related risks within the institution's risk management practices.
Data, Risk Measurement, and Reporting	Stresses the need for accurate data collection and reporting to support decision-making and risk assessment related to climate change.
Scenario Analysis	Encourages the use of scenario analysis to evaluate the potential impacts of climate-related risks and to assess the resilience of the institution's business model.

4-2-5) State legislation and bills related to climate change and sustainability

a. California's landmark climate disclosure laws²⁶⁾

California is recognized for its progressive stance on climate change and sustainability, with a wide range of laws and bills aimed at reducing carbon emissions, promoting renewable energy, and enhancing environmental protections.

On October 7, 2023, California Governor Gavin Newsom enacted two significant climate-disclosure legislations, marking a pioneering step in the United States towards mandatory climate-related reporting. These laws mandate both public and private entities operating in California, and surpassing specified revenue thresholds, to openly report their greenhouse gas emissions—encompassing

²⁶⁾

https://www.ey.com/en_us/assurance/accountinglink/technical-line-a-closer-look-at-californias-recently-enacted-climate-disclosure-laws

Scope 1, Scope 2, and Scope 3, as per the Greenhouse Gas Protocol guidelines. Additionally, these entities must adhere to the disclosure recommendations set by the Task Force on Climate-related Financial Disclosures (TCFD).

Diverging from the SEC's proposed disclosure rules from March 2022, California's regulations extend beyond publicly listed companies to include private firms. The California Climate Corporate Data Accountability Act (SB-253) targets entities generating over \$1 billion in annual revenue and engaging in business within the state. Concurrently, the California Greenhouse Gases: Climate-Related Financial Risk Law (SB-261) focuses on entities with annual revenues exceeding \$500 million. These groundbreaking laws are anticipated to influence a vast number of organizations, encompassing U.S.-based subsidiaries of international corporations, thereby positioning California as the inaugural state in the U.S. to implement such extensive climate disclosure requirements.

<Effective year by regulation>

Year	Description
2026	Entities with annual revenues exceeding \$500 million are required to submit their first biennial climate risk report by January 1.
2026	Entities with annual revenues exceeding \$1 billion need to disclose, including a limited assurance on Scope 1 and Scope 2 GHG emissions for the year 2025.
2027	Entities with annual revenues exceeding \$1 billion must disclose their Scope 3 GHG emissions for the year 2026 within 180 days following the reporting of Scope 1 and Scope 2 GHG emissions in 2027.
2030	Entities with annual revenues exceeding \$1 billion are required to provide a reasonable assurance on Scope 1 and Scope 2 GHG emissions, including a limited assurance on Scope 3 GHG emissions where possible.

b. California's Scoping Plan (2022)²⁷⁾

The California Air Resources Board (CARB) has unveiled an update to its climate strategy in November 2022, marking a global precedent with its comprehensive approach to significantly reduce pollution and hasten the shift towards clean energy. This initiative, which aligns with Governor Gavin Newsom's ambitious climate objectives, proposes new benchmarks for renewable energy, eco-friendly buildings, carbon capture, and sustainable transportation fuels. This plan, integral to Newsom's California Climate Commitment, aims for a 100% clean energy grid and carbon neutrality by 2045, promoting carbon reduction techniques, safeguarding residents from oil drilling impacts, and allocating \$54 billion towards a sustainable, oil-independent future for California.

The revised Scoping Plan by CARB outlines strategies to realize carbon neutrality by 2045, detailing various environmental targets. It outlines key steps for a 71% reduction in air pollution, a 85% reduction in greenhouse gas emissions by 2045, with an interim target of a 48% reduction by 2030. This 2030 vision goes beyond the overall aim to reduce emissions to 40% beneath 1990 figures. Furthermore, it anticipates decreasing fossil fuel use to a tenth of current levels, aiming for a 94% reduction in oil demand and 86% in all fossil fuel use. The blueprint aims to create 4 million new positions and save Californians \$200 billion in health-care spending owing to lower air pollution.

The proposal also aims to significantly enhance clean energy development and climate resilience by setting ambitious targets. These include constructing at least 20GW of offshore wind capacity by 2045, establishing 3million climate-friendly homes by 2030 and

27)

<https://www.gov.ca.gov/2022/11/16/california-releases-worlds-first-plan-to-achieve-net-zero-carbon-pollution/>

reaching 7million by 2035, and deploying 6 million heat pumps by 2030. Additionally, it sets carbon removal goals of capturing 20 million metric tons of CO2 equivalent by 2030, increasing to 100million by 2045. For aviation, it seeks a 20% shift to non-combustion methods by 2045, with the rest of the demand met by sustainable fuels. It also aims to reduce per capita light-duty vehicle miles traveled to 25% below 1990 levels by 2030, and 30% by 2045.

While it's too early to conclusively say if the 2022 Scoping Plan will be effective, it represents a significant step forward in California's fight against climate change. Its success will depend on effective implementation, addressing ongoing challenges, and ensuring a just transition for all. Evaluating its true impact will require monitoring progress towards targets, assessing its contribution to emission reductions, and considering its economic and social consequences.

c. New York's Climate Leadership and Community Protection Act(2019)

The Climate Leadership and Community Protection Act (CLCPA) in New York, signed into law in 2019, is one of the most ambitious climate laws in the United States. It sets forth rigorous targets for reducing greenhouse gas emissions and transitioning New York to a green economy, aiming to address climate change comprehensively while prioritizing social equity and economic growth.

Key objectives and provisions of the CLCPA include:

- ✓ **Emission Reduction Goals:** The act mandates New York to reduce greenhouse gas emissions to 40% below 1990 levels by 2030 and to achieve an 85% reduction by 2050, with the remaining 15% of emissions to be offset, leading the state towards net-zero emissions across all sectors of the economy.
- ✓ **Renewable Energy Targets:** It commits the state to obtaining 70% of its electricity from renewable sources by 2030 and 100% carbon-free electricity by 2040.
- ✓ **Offshore Wind and Solar Energy:** The CLCPA includes specific targets for offshore wind energy development (9,000 megawatts by 2035) and solar energy (6,000 megawatts by 2025).
- ✓ **Energy Efficiency:** The act calls for significant improvements in energy efficiency in buildings and aims to reduce on-site energy consumption.
- ✓ **Environmental Justice:** A cornerstone of the CLCPA is its focus on environmental justice and ensuring that at least 35%, with a goal of 40%, of the benefits of clean energy investments are directed to disadvantaged communities.
- ✓ **Green Economy:** The act envisions creating green jobs and stimulating economic growth through investments in renewable energy, energy efficiency, and other climate initiatives.
- ✓ **Implementation and Oversight:** The CLCPA established the Climate Action Council, comprised of various stakeholders, to develop a detailed Scoping Plan outlining recommendations for achieving these targets. This plan

serves as a roadmap for transitioning New York to a green economy.

- ✓ Sector-Specific Strategies: The act outlines strategies across different sectors including transportation, buildings, industry, and electricity generation to achieve its goals.

The CLCPA represents a comprehensive approach to tackling climate change, focusing not only on reducing greenhouse gas emissions but also on building a resilient, equitable, and sustainable future for all New Yorkers.

Various agencies and stakeholders are working on developing and implementing regulations and programs to achieve the CLCPA's goals. New York has seen significant growth in renewable energy, but reaching the ambitious targets requires continued efforts.

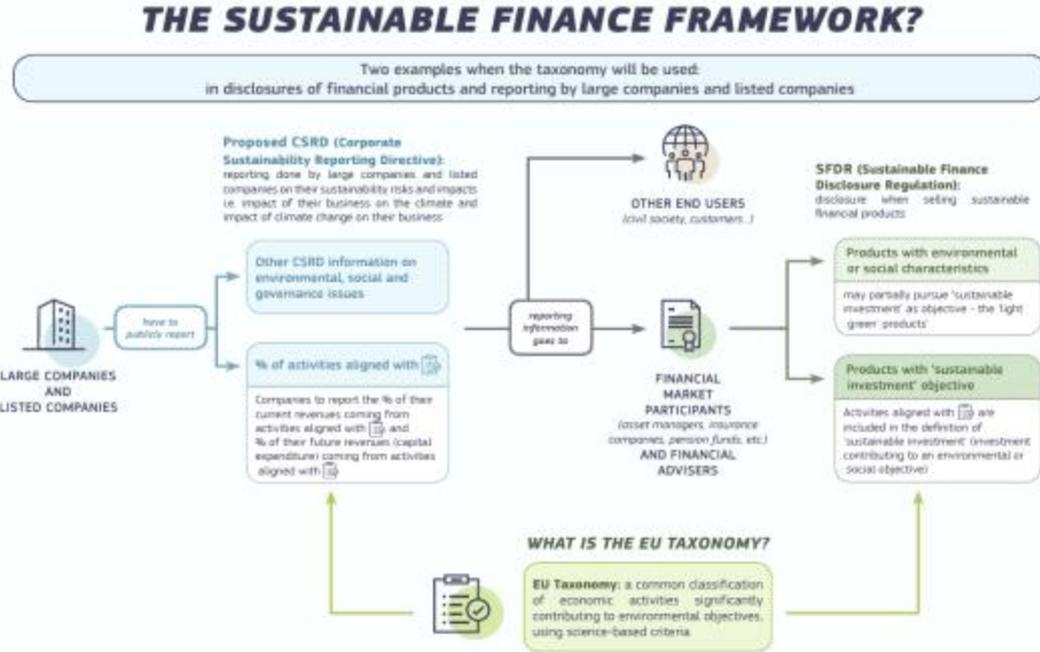
4-3) European Union (EU)

4-3-1) EU Action Plan on Sustainable Finance

The EU's Action Plan on Sustainable Finance is a comprehensive strategy launched by the European Commission to integrate environmental, social, and governance (ESG) considerations into the financial sector. Announced in March 2018, the plan aims to reorient capital flows towards sustainable investment, manage financial risks stemming from climate change, environmental degradation, and social issues, and foster transparency and long-termism in financial and economic activity. The action plan also aims to promote sustainable investment by clarifying institutional investors' and asset managers' duties regarding sustainability.

Under this Action Plan, the development of the voluntary tools, such as EU Taxonomy, European Green Bond standard and the EU Sustainable

Finance Disclosure Regulations are required.



*Source: Factsheet: How does the EU Taxonomy fit within the sustainable finance framework?

<EU Action Plan: Financing Sustainable Growth>

Action 1: Establishing an EU classification system for sustainable activities
Action 2: Creating standards and labels for green financial products
Action 3: Fostering investment in sustainable projects
Action 4: Incorporating sustainability when providing financial advice
Action 5: Developing sustainability benchmarks
Action 6: Better integrating sustainability in ratings and market research
Action 7: Clarifying institutional investors' and asset managers' duties
Action 8: Incorporating sustainability in prudential requirements
Action 9: Strengthening sustainability disclosure and accounting rule-making
Action 10: Fostering sustainable corporate governance and attenuating short-termism in capital markets

*Source: EU Action Plan: Financing Sustainable Growth (2018)

4-3-2) EU Taxonomy²⁸⁾

The EU Taxonomy stands as a pivotal element within the EU's framework for sustainable finance and serves as a crucial tool for market transparency. It plays a key role in channeling investments towards those economic activities that are essential for achieving the transition envisioned by the European Green Deal. As a classification system, the taxonomy establishes criteria for identifying economic activities that support a trajectory towards net-zero emissions by 2050, alongside pursuing wider environmental objectives beyond just climate concerns.

The EU Taxonomy provides a list of environmentally sustainable activities by setting out detailed criteria for what constitutes a sustainable economic activity. This includes activities that contribute significantly to at least one of six environmental objectives*, without significantly harming any of the others. For an economic activity to be considered environmentally sustainable, it must meet specific technical screening criteria related to the contribution to one or more of the environmental objectives and do no significant harm (DNSH) to any other environmental objectives. The activity must also meet minimum social safeguards.

*1) Climate change mitigation, 2) Climate change adaptation, 3) Sustainable use and protection of water and marine resources, 4) Transition to a circular economy, 5) Pollution prevention and control, 6) Protection and restoration of biodiversity and ecosystems

The EU Taxonomy acts as a clarity-enhancing instrument through a structured categorization, which conveys the EU's climate and environmental targets into concrete standards applicable to distinct economic ventures aimed at private investment. It doesn't serve as an obligatory catalog of economic activities for investor engagement, nor does

28)

https://finance.ec.europa.eu/sustainable-finance/tools-and-standards/eu-taxonomy-sustainable-activities_en

it impose compulsory directives for public investment initiatives.

The EU Taxonomy also introduces disclosure requirements for financial market participants and large companies. These entities are required to disclose the extent of their activities that are aligned with the taxonomy starting in 2024, thereby promoting transparency and informing investors' decisions based on sustainability considerations.

The taxonomy is regularly updated to reflect scientific advancements and evolving definitions of sustainability. For example, in March 2022, a delegated Act has been established to specify technical screening criteria for certain gas and nuclear activities, categorizing them as transitional measures.²⁹⁾²⁹⁾ This aims to support the shift from more detrimental energy sources, such as coal, towards a future predominantly powered by renewable energies. However, this classification comes with stringent conditions. The first two environmental objectives – climate change mitigation and adaptation – are currently operational, while others are under development.



* Source:

https://finance.ec.europa.eu/document/download/fbb0ae0d-3615-4c7d-b71e-edd5288c3027_en?filename=230613-sustainable-finance-factsheet_en_0.pdf

* EU Climate Transition Benchmark Regulation was replaced by the EU Taxonomy Regulation in 2020

4-3-3) EU Sustainable Finance Disclosure Regulation (SFDR) ³⁰⁾

The EU Sustainable Finance Disclosure Regulation (SFDR), formally known as Regulation (EU) 2019/2088, is a key piece of the European Union's sustainable finance framework. Its primary goal is to increase transparency in the financial market by requiring financial market participants and financial advisers to disclose environmental, social, and governance (ESG) risks and opportunities in their investment processes and decision-making. It seeks to mitigate greenwashing by setting harmonized rules for financial market participants and advisers on disclosing their sustainability practices and ambitions, both overall and at the product level. It distinguishes between sustainability risks (ESG events impacting investment value) and adverse impacts on sustainability factors (negative externalities on ESG conditions), clarifying the potential positive sustainability impacts of investing. The regulation applies to a wide range of entities within the EU financial services sector, including investment firms, asset managers, pension funds, and insurance companies. It requires disclosures at both the entity and financial product levels, including how sustainability risks are integrated and how remuneration policies align with these risks. It categorizes sustainable financial products based on their environmental or social characteristics, and their ambition to positively impact the environment and society, detailing disclosure requirements for each. It also mandates pre-contractual and periodic disclosures about how financial products address sustainability risks and their effects on investment profitability. Based on this regulation, entities must also disclose whether they consider the adverse impacts of their investment

30) <https://eur-lex.europa.eu/legal-content/EN/LSU/?uri=CELEX:32019R2088>

decisions on sustainability factors. If they do not consider such impacts, they must explain why.

In terms of Implementation and Oversight, the European supervisory authorities are tasked with drafting regulatory and implementing technical standards related to disclosures, to be submitted to the European Commission. Member States are responsible for ensuring compliance, with the possibility to extend regulation to certain pension products and microinsurance intermediaries.

4-3-4) EU Green Bond Standard ³¹⁾

Green bonds are crucial for funding the infrastructure necessary for transitioning to a low-carbon economy. The EU is introducing the European Green Bond Standard, adopted in November 2023, to serve as a definitive benchmark for green bonds.

This voluntary Standard uses the EU taxonomy's precise criteria to identify environmentally sustainable economic activities. It promises transparency that aligns with the highest market standards and mandates European-level oversight for companies undergoing evaluations before and after issuance. The European Securities and Markets Authority (ESMA) will oversee these independent evaluators.

EU Green Bond Standard aims to strengthen the market integrity. By providing clear definitions and requirements for European Green Bonds, it contributes to preventing greenwashing and ensuring investor confidence. In addition, this standard facilitates green investment. By enhancing the credibility and attractiveness of green bonds, it can attract more private investment towards environmentally sustainable projects.

Key features of this standard are as below table:

31)

https://finance.ec.europa.eu/sustainable-finance/tools-and-standards/european-green-bond-standard-supporting-transition_en

Key feature	Description
European Green Bond label	Establishes specific criteria for bond issuance to qualify as a European Green Bond, focusing on the project's alignment with EU environmental objectives and compliance with detailed technical standards.
External review	Requires independent verification by an external reviewer to ensure adherence to European Green Bond criteria.
Disclosure templates	Offers optional, harmonized templates for disclosing sustainability information in both green and sustainability-linked bonds, addressing environmental, social, and governance (ESG) factors.
Reporting	Mandates issuers of European Green Bonds to report annually on the use of proceeds and the environmental impact of financed projects.

The specific technical standards for European Green Bonds are still under development and expected by June 30, 2024.

(Ch.5) Status of carbon emissions in Korea

5-1) Trends in Greenhouse Gas Concentration and Climate Change Status in South Korea ³²⁾

The concentration of greenhouse gases globally has been steadily increasing compared to pre-industrial levels. Specifically, the concentration of carbon dioxide has increased by 1.49 times, methane by 2.62 times, and nitrous oxide by 1.23 times, reaching new highs each year. South Korea is no exception, with greenhouse gas concentrations in the atmosphere accelerating at a similar rate. For carbon dioxide, the average annual increase was 2.22 ppm in the past (2001-2010), but has recently (2011-2020) accelerated to an average annual increase of 2.7 ppm. Methane concentrations, which had stabilized between 2000 and 2006, began to rise again after 2010.

32) 탄소중립.녹색성장 국가전략 및 제 1차 국가 기본계획

<Comparison of global and Korea's concentration and growth rates of GHG in 2021>

	World Meteorological Organization (WMO)			Korea (Anmyeon-do)		
	CO ₂ (ppm)	CH ₄ (ppb)	N ₂ O(ppb)	CO ₂ (ppm)	CH ₄ (ppb)	N ₂ O(ppb)
2021(average)	415.7	1902	334.5	423.1	2005	336.1
Annual increase rate	2.5	18	1.3	2.7	22	1.1
10-year increase rate	2.5	9.2	1.0	2.7	10	1.2

*Source: 탄소중립·녹색성장 국가전략 및 제1차 국가 기본계획

Over the last 30 years (1991-2020), the average annual temperature in South Korea has risen by 1.6°C compared to the past (1912-1940), with a consistent increase of +0.2°C every decade. There have been significant changes in the length of seasons, with summer extending by 20 days and winter shortening by 22 days. The onset of spring and summer has moved earlier by 17 and 11 days, respectively. Additionally, over the last 30 years compared to the past, the annual rainfall has increased by 135.4mm, while the number of rainy days has decreased by 21.2 days, indicating an intensification of rainfall. Meanwhile, over the past 54 years (1968-2021), the surrounding sea temperature of the Korean peninsula has risen by an average of 0.025°C per year, which is 2.5 times faster than the global average increase (0.01°C/year) during the same period. The average sea level has risen by 3.01mm per year over the last 33 years (1989-2021), totaling a 9.9cm increase. The rate of sea-level rise has accelerated by more than 10% in the 2010s (4.27mm/year) compared to the 1990s (3.80mm/year).

5-2) Greenhouse Gas Emissions Status

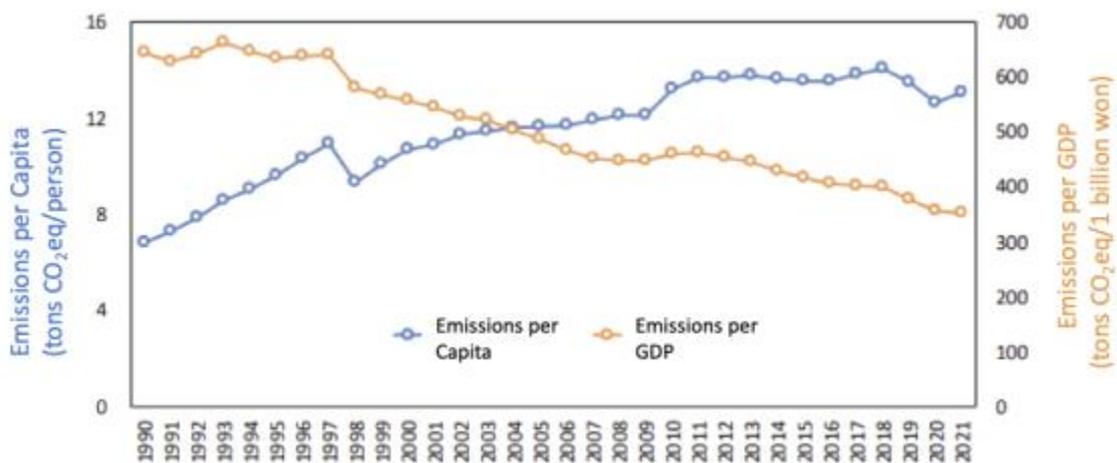
5-2-1) Emissions by Sector³³⁾

33)

<https://www.gir.go.kr/home/board/read.do?pagerOffset=0&maxPageItems=10&maxIndexPage>

In 2021, the total national greenhouse gas emissions of South Korea amounted to 676.6 million tons CO₂eq, which is a 6.7% decrease compared to 2018, yet a 3.4% increase compared to the previous year. The emissions per GDP stood at 352.7 tons per 10 billion KRW, showing a 0.9% decrease compared to the previous year, while the emissions per capita increased by 3.6% to 13.1 tons per person.

*Annual Greenhouse Gas Emissions (unit: million tons): ('90)292.1 → ('00)502.7 → ('10)655.1 → ('18)725.0 → ('19)699.2 → ('20)654.4 → ('21)676.6



Compared to the previous year, the energy sector saw a 3.5% increase, the industrial processes sector a 5.9% increase, and the agriculture sector a 1.1% increase, while the waste sector experienced a 3.5% decrease. Specifically, the petroleum refining sector recorded a 1.2 million tons (7.6%) decrease due to a 1.5 percentage point reduction in the operation rate due to regular maintenance. The waste incineration sector saw a 0.3 million tons (4.1%) decrease in emissions due to a reduction in the amount of waste incinerated at business sites. Conversely, emissions from the petrochemical sector increased by 7.3 million tons (15.4%) compared to the previous year due to facility expansion and increased consumption

s=10&searchKey=&searchValue=&menuId=36&boardId=62&boardMasterId=2&boardCategoryId = (2023년 국가온실가스 인벤토리 (1990~2021년))

of naphtha and basic oil production. Additionally, a rise in power generation led to a 5.6 million tons (2.6%) increase in emissions from the public electricity and heat production sector. Moreover, a gradual return to normalcy following COVID-19 measures, which led to an increase in vehicle movement (7.3% increase in vehicle mileage), resulted in a 2.4 million tons (2.6%) increase in emissions from the road transport sector.

<Trend of National Greenhouse Gas Emissions by Sector (1990~2021)>

*Organized according to IPCC guidelines into 5 main categories, 20 subcategories, and over 90 items

(Unit: million tons of CO2 equivalent)									
Category	1990	2000	2010	2018	2019	2020	2021	YoY compared to 2018	YoY compared to 2020
Energy	240.3	411.6	564.7	630.7	609.6	568.1	587.7	-6.8%	3.5%
A. Fuel Combustion	235.2	408.9	560.9	626.3	605.4	563.9	583.2	-6.9%	3.4%
1. Energy Industries	48.4	136.1	254.8	286.4	266.2	237.0	241.1	-15.8%	1.7%
2. Manufacturing Industries and Constructions	76.6	130.6	162.9	188.0	187.6	181.7	194.3	3.3%	7.0%
3. Transport	35.5	69.9	84.4	96.2	99.0	94.2	96.9	0.8%	2.9%
4. Others (Fuel Consumption for Residential, Commercial, Institutional Purpose)	74.6	69.8	55.8	52.5	49.6	48.0	47.9	-8.8%	-0.2%
5. Unspecified	0.2	2.4	2.9	3.1	2.9	2.9	2.9	-6.3%	0.4%
B. Fugitive Emissions from Fuels	5.1	2.7	3.8	4.4	4.2	4.2	4.5	2.7%	8.1%
1. Solid Fuels	4.8	1.2	0.6	0.3	0.3	0.3	0.3	-25.2%	-11.9%
2. Oil and Natural Gas	0.3	1.5	3.2	4.1	3.9	3.9	4.3	5.0%	9.6%
Industrial Processes	20.4	50.9	53.0	55.8	52.2	48.5	51.4	-7.9%	5.9%
1. Mineral Industry	18.8	29.7	31.7	35.0	35.1	32.3	33.5	-4.4%	3.5%
2. Chemical Industry	0.4	7.5	0.7	1.0	0.9	0.9	1.0	5.6%	11.8%
3. Metal Industry	0.1	0.1	0.3	0.2	0.2	0.1	0.2	-27.2%	33.0%
4. Production of Halocarbons and SF6	1.0	3.2	0.0001	-	-	-	-	-	-
5. Consumption of Halocarbons and SF6	0.2	10.3	20.4	19.6	15.9	15.1	16.7	-14.5%	10.5%
Agriculture	21.0	21.4	22.1	21.1	21.0	21.2	21.4	1.3%	1.1%
1. Enteric Fermentation	3.0	3.4	4.3	4.5	4.6	4.7	4.9	9.8%	3.5%
2. Manure Management	2.8	3.9	4.8	4.9	4.9	5.2	5.4	9.0%	4.2%
3. Rice Cultivation	10.5	8.9	7.8	6.3	5.9	5.6	5.4	-13.1%	-3.8%
4. Agricultural Soils	4.6	5.2	5.2	5.5	5.5	5.6	5.7	4.0%	1.4%
5. Burning of Crop Residues	0.03	0.02	0.02	0.01	0.02	0.01	0.01	-23.2%	-14.3%
Waste	10.4	18.9	15.4	17.4	16.5	16.7	16.1	-7.5%	-3.5%
1. Waste Landfilled	7.5	9.5	7.8	7.8	7.7	7.7	7.5	-3.9%	-2.6%
2. Wastewater Treatment	1.5	1.6	1.7	1.7	1.5	1.6	1.4	-16.6%	-8.4%
3. Waste Incineration	1.4	7.6	5.6	7.1	6.4	6.6	6.3	-10.5%	-4.1%
4. Others	0.0	0.1	0.3	0.8	0.8	0.8	0.8	2.6%	2.9%
Total Emission (Exclude LULUCF)	292.1	502.7	655.1	725.0	699.2	654.4	676.6	-6.7%	3.4%
(Reference) LULUCF emission or removals	-37.9	-60.1	-56.1	-40.3	-37.7	-37.9	-37.8	-6.4%	-0.3%
1. Forest Land	-38.2	-61.4	-58.8	-42.7	-40.3	-40.5	-40.4	-5.4%	-0.3%
2. Cropland	0.4	2.2	3.3	2.7	2.8	2.8	3.0	9.4%	6.2%
3. Grassland	-0.6	-0.7	-0.2	-0.04	-0.02	-0.02	-0.01	-81.0%	-56.9%
4. Wetlands	0.3	0.3	0.3	0.3	0.3	0.3	0.3	1.5%	-0.9%
5. Others	0.2	-0.5	-0.6	-0.7	-0.5	-0.5	-0.7	2.6%	39.5%
Net Emission (Include LULUCF)	254.2	442.6	599.0	684.7	661.5	616.6	638.9	-6.7%	3.6%

5-2-2) Emissions by Company Size in the Industrial Sector ³⁴⁾

Based on 2018 data, the greenhouse gas emissions from SMEs (small and medium-sized enterprises, defined as companies with fewer than 300 employees, estimated) accounted for 31% or 108 million tons, which is approximately 15% of the total national emissions (728 million tons).

(Unit: 1 Million tons CO₂eq, %)

National Total (A)	Excluding Industrial Sector (A-B, Estimate)	Industrial Sector (B)					
		Total	Less than 300			300 or more	
			Total	~10	10~99		100~299
727.6 (100.0)	377.8 (51.9)	349.8 (48.1)	108.4 (14.9)	22.4 (3.1)	47.6 (6.5)	38.4 (5.3)	241.4 (33.2)

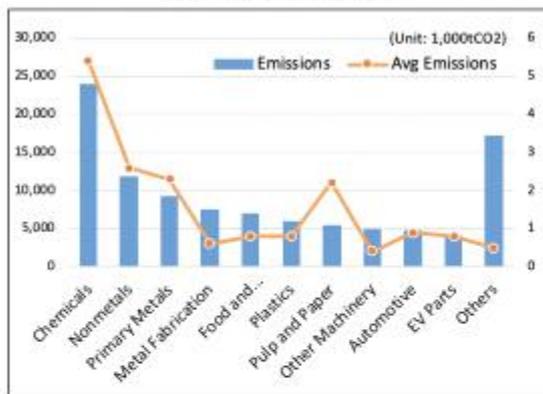
* (National Total) 2020 National Greenhouse Gas Inventory Report (Based on 2018, Ministry of Environment)

(IndustrialSector) 2019 Industrial Sector Energy Use and Greenhouse Gas Emissions Statistics (Basedon2018,MinistryofIndustry)

While the top 5 emitting sectors in large and medium-sized enterprises (with 300 or more employees) account for 94% of emissions, the top 10 sectors in SMEs account for 83% of emissions. This indicates that SMEs have a relatively lower concentration in the top-emitting sectors and a more diverse composition of these sectors. This diversity can be attributed to differences in sector composition, such as the inclusion of metal processing and other foundational industries in SMEs, unlike in large and medium-sized enterprises.

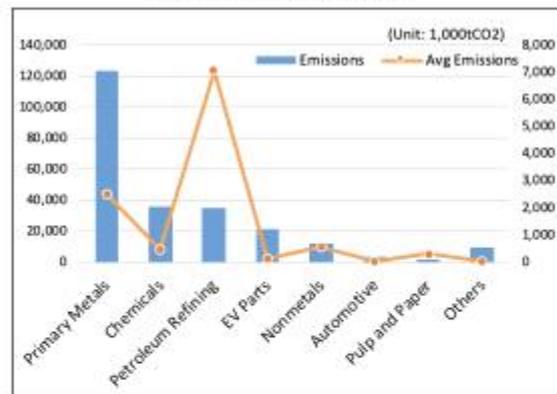
34) 중소벤처기업 탄소중립 대응 지원방안 (2021.12월) by 중소벤처기업부

Small and Medium-sized Enterprises (SMEs) Emissions (under 300 employees)



Industry	Emissions (1,000t)	(Ratio,%)	Number of Companies	Avg Emissions
Chemicals	23,961	(23.5)	4,438	5.4
Nonmetals	11,842	(11.6)	4,512	2.6
Primary Metals	9,260	(9.1)	3,959	2.3
Metal Fabrication	7,555	(7.4)	12,132	0.6
Food and Beverage	7,025	(6.9)	9,316	0.8
Plastics	5,972	(5.9)	7,644	0.8
Pulp and Paper	5,409	(5.3)	2,471	2.2
Other Machinery	4,901	(4.8)	12,169	0.4
Automotive	4,829	(4.7)	5,603	0.9
EV Parts	4,126	(4.0)	4,880	0.8
Others	17,142	(16.8)	34,898	0.5
Total	102,020	(100.0)	102,022	1.0

Large and Mid-sized Enterprises Emissions (300 or more employees)



Industry	Emissions (1,000t)	(Ratio,%)	Number of Companies	Avg Emissions
Primary Metals	123,373	(50.5)	49	2,517.8
Chemicals	36,132	(14.8)	72	501.8
Petroleum Refining	35,324	(14.4)	5	7,064.7
EV Parts	21,861	(8.9)	141	155.0
Nonmetals	12,623	(5.2)	21	601.1
Automotive	3,390	(1.4)	109	31.1
Pulp and Paper	2,356	(1.0)	7	336.5
Others	9,463	(3.9)	399	23.7
Total	244,521	(100.0)	803	304.5

*Analysis from the Ministry of Industry, Korea Energy Agency “2020 Industrial Sector Energy Use and Greenhouse Gas Emissions Statistics”

Furthermore, the number of companies within the top-emitting sectors is less than 150 for large and medium-sized companies, whereas it exceeds 2,000 for SMEs, making management challenging. Additionally, the average emissions per company in SMEs are only 0.3% of those in large and medium-sized companies, indicating that carbon reduction efficiency is relatively low in SMEs. (SMEs (fewer than 300 employees): 1.0 thousand tons vs. large and medium-sized enterprises (300 or more employees): 304.5 thousand tons)

5-2-3) Emissions by Region³⁵⁾

According to the national greenhouse gas statistics published in 2023, in 2021, based on the metropolitan local government standard, the Chungcheongnam-do region emitted 20.29% of the total national greenhouse gas emissions. The main reason Chungcheongnam-do emits the most greenhouse gases among the metropolitan local governments is due to the large number of coal-fired power plants located in the region. There are 30 out of the 60 national coal-fired power plants in Chungnam, contributing to the highest level of greenhouse gas emissions in the country. As of 2020, Chungcheongnam-do's greenhouse gas emissions accounted for about 20.7% of the national emissions, amounting to 144 million tCO₂eq (tons of CO₂ equivalent), with 62.6% of these emissions originating from the production of electricity and heat. Furthermore, coal-fired power accounts for 82.4% of the power generation within the province, with more than half of the generated electricity being supplied to the metropolitan area and other regions. Following Chungcheongnam-do, Jeollanam-do accounts for 14.3% of the emissions, attributed to high-energy consuming and carbon-emitting industries such as steel and petrochemicals. Gyeonggi-do is estimated to account for 12.3% of the national greenhouse gas emissions, likely due to industrial activities and transportation contributions, given its large industrial complexes and densely populated areas.

On the other hand, it has been observed that Seoul, the largest city, has a relatively low greenhouse gas emission (3.54%). It is presumed that the industrial and transportation sectors have had a significant impact on this level of emissions. Seoul's economy is heavily oriented towards service industries and technology, rather than heavy industry or manufacturing which are more carbon-intensive. The city's economic structure includes a

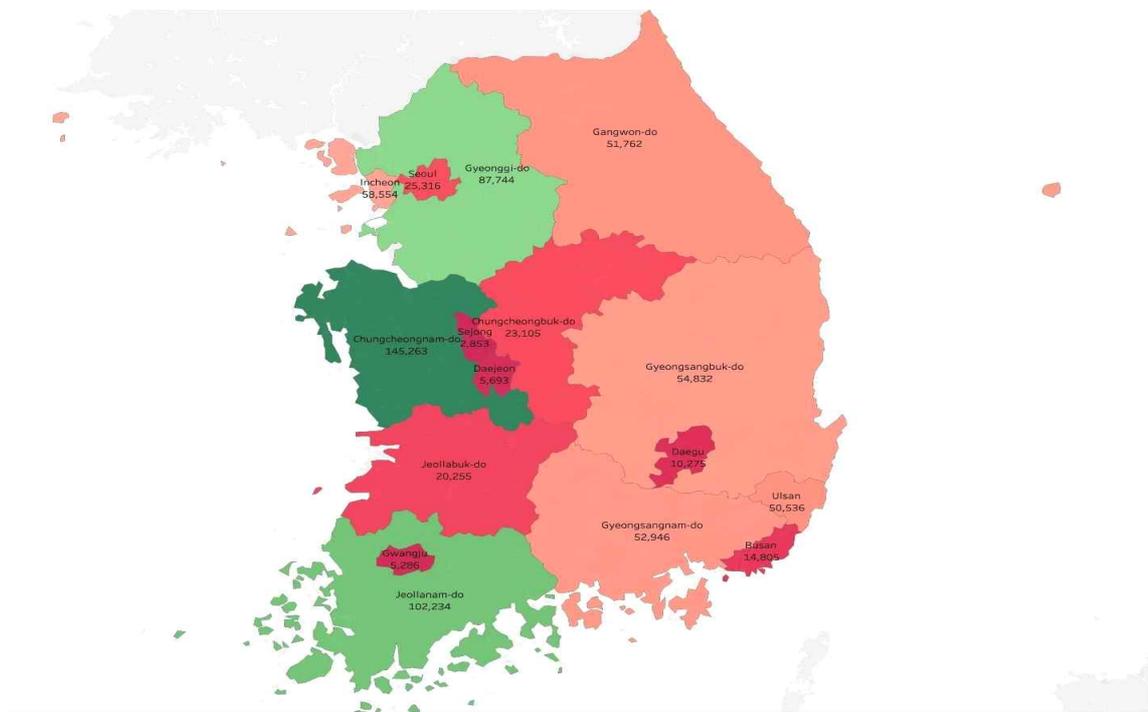
35)

[https://www.gir.go.kr/home/board/read.do?pagerOffset=0&maxPageItems=10&maxIndexPages=10&searchKey=&searchValue=&menuId=36&boardId=61&boardMasterId=2&boardCategoryId=\(2023년 국가온실가스 통계 \(1990~2021년 산정결과\)\)](https://www.gir.go.kr/home/board/read.do?pagerOffset=0&maxPageItems=10&maxIndexPages=10&searchKey=&searchValue=&menuId=36&boardId=61&boardMasterId=2&boardCategoryId=(2023년 국가온실가스 통계 (1990~2021년 산정결과)))

significant share of digital businesses, finance, and services that inherently produce fewer direct greenhouse gas emissions compared to industrial regions focused on manufacturing, heavy industry, or energy production. In addition, Seoul has a well-developed and highly utilized public transportation network, including subways, buses, and a growing infrastructure for bicycles and electric vehicles. The convenience, efficiency, and affordability of public transport in Seoul encourage its use over personal vehicles, thereby reducing traffic congestion and vehicle emissions.

<Emissions by Region and Year (Based on VKT)>

Region	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	ratio
Seoul	28515.4228	29213.3787	29770.39199	29684.2236	28010.6583	28475.2191	28445.21457	27627.29008	26387.37395	25901.7047	25298.00101	25316.39672	3.54%
Busan	17,980.73	17,371.40	17,273.63	17,745.86	16,340.00	14,546.96	15,714.81	14,735.24	15,680.16	15,363.11	14,528.88	14,804.76	2.07%
Daegu	10,043.41	9,625.36	9,128.63	8,981.51	8,840.08	9,955.88	10,165.57	10,108.91	10,067.41	10,077.32	9,461.65	10,274.97	1.44%
Incheon	55,326.51	58,925.23	62,109.98	63,299.75	65,096.10	65,945.19	65,045.82	63,535.66	64,448.16	61,874.93	58,675.54	58,554.35	8.18%
Gwangju	5,362.06	5,239.64	5,098.95	5,515.69	5,361.12	5,159.74	5,338.74	5,344.12	5,258.54	5,295.38	5,210.46	5,285.91	0.74%
Daejeon	5,788.45	5,538.27	5,813.34	5,780.45	5,741.28	5,716.89	6,065.19	5,951.10	6,376.61	5,952.16	5,552.22	5,692.83	0.80%
Ulsan	39,883.96	43,061.14	46,917.09	47,488.25	41,277.46	37,573.94	46,547.72	45,911.79	48,834.38	46,736.19	47,197.82	50,535.56	7.06%
Sejong	409.42	390.56	419.65	961.74	1,874.43	2,191.54	2,345.35	2,492.52	2,844.50	2,342.33	2,727.35	2,853.24	0.40%
Gyeonggi	63,295.42	63,550.46	66,428.86	66,991.79	66,324.12	71,978.59	77,358.96	78,724.81	86,147.39	85,595.82	82,193.66	87,744.26	12.25%
Gangwon	43,361.84	45,365.24	45,560.55	45,494.13	44,940.11	44,339.60	45,875.06	53,967.66	60,935.80	61,107.65	49,146.77	51,762.26	7.23%
Chungbuk	21,359.83	22,673.04	23,455.61	24,254.27	24,133.58	24,545.37	26,470.56	26,213.86	24,771.96	26,762.39	22,773.16	23,104.65	3.23%
Chungnam	165,521.38	168,443.71	165,808.20	174,952.20	151,805.08	145,479.79	152,465.57	162,660.69	160,961.46	155,528.26	145,651.57	145,263.07	20.39%
Jeonbuk	16,588.08	18,201.14	18,832.07	19,370.31	18,366.57	17,809.69	21,934.89	20,617.26	20,848.42	20,631.05	19,507.07	20,254.52	2.83%
Jeonnam	83,746.04	82,946.51	83,614.18	85,704.72	84,631.23	87,747.77	96,196.92	102,317.38	103,272.92	106,329.64	98,257.66	102,233.60	14.28%
Gyeongnam	49,658.11	50,596.40	49,782.40	52,907.09	54,918.43	45,544.54	54,232.35	54,116.43	53,586.72	54,612.74	51,982.18	54,831.52	7.66%
Gyeongbuk	75,293.95	76,862.52	76,895.94	75,770.30	72,337.26	71,741.00	71,674.72	67,655.97	64,736.43	59,495.49	46,094.87	52,946.25	7.39%
Jeju	4,647.36	4,510.80	4,482.97	4,799.25	4,093.28	4,082.25	4,069.77	4,419.37	4,643.24	4,627.45	4,303.12	4,536.11	0.63%



(Ch. 6) Current Status of sustainable finance in Korea

6-1) Statistics of Sustainable Finance in Korea ³⁶⁾

According to the Korea Sustainability Investment Fund (KoSIF), South Korea's sustainable finance landscape has seen significant growth, with the size of ESG finance reaching 787 trillion KRW in 2021, marking a 29% increase from the previous year. The proportion of ESG finance relative to the total managed assets of all responding institutions stands at 12%, showing a continuous upward trend. This proportion has steadily increased from 5% in 2017, to 6% in 2018, 7% in 2019, and 10% in 2020. This expansion covers various aspects of ESG finance, including loans, investments, bond issuance, and financial products. Despite the potential for double-counting in the case of financial products and bond issuances, the majority of financial institutions report the scale of these two types in their sustainability management reports. Therefore, they have been included in the classification of ESG finance types. Among these, loans accounted for 340 trillion KRW, investments for 272 trillion KRW, bond issuance (based on the 2021 issuance amount) for 98 trillion KRW, and financial products for 77 trillion KRW. All ESG finance types saw over 15% growth from 2020, with private sector ESG finance showing a higher increase (42%) compared to public sector finance (16%). The public finance sector, represented by institutions like the Korea Housing Finance Corporation and the National Pension Service, accounted for 60% of public ESG finance, while the banking sector dominated private finance, making up 70% of it. Additionally, 66 institutions have plans to apply the Korean Green Classification System, highlighting a commitment to align with global sustainability standards and practice.

36) <https://kosif.org/?vid=57>

<Scales of ESG Finance by Finance sectors>

(Unit: 1 trillion won)

	Total ESG Finance Volume		ESG Loans		ESG Investment		ESG Financial products		ESG Bonds	
	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021
Public Finance	355	411	172	184	118	156	4	6	61	65
Private Finance	254	361	114	156	79	116	52	70	9	18
Bank	192	253	103	140	44	64	39	43	6	7
Life Insurance	26	40	8	11	17	27	0.4	0.3	-	1
Property & Casualty Insurance	20	33	2	3	8	13	10	16	-	0.1
Securities	9	21	1	2	6	8	2	10	-	1
Asset Management	3	4	-	-	3	4	-	0.0002	-	-
Other Financial Services	3	9	-	-	-	-	-	-	3	9
Corporates	2	15	-	-	-	-	-	-	2	15
Total	611	787	286	340	197	272	56	77	71	98

The ESG finance scale of the top 5 private financial groups has been estimated at 263.5 trillion KRW, accounting for 33% of the total ESG finance. Although the amount grew by 32% compared to the previous year, the proportion remained the same as the previous year. Within these top 5 financial groups, the share of banks is over 80%, indicating that the size and growth rate of banks significantly influences the financial groups' performance.

< ESG Finance Volume of the Five Major Financial Groups >

(Unit: 1 trillion won)

Financial Group	Total ESG Finance Volume		ESG Loans		ESG Investment		ESG Financial products		ESG Bonds	
	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021
NH Nonghyup Financial Group	96	114	45	48	23	28	28	37	1	1
Woori Financial Group	47	59	35	48	6	10	4	1	1	1
Shinhan Financial Group	10	39	3	27	6	9	0.4	1	0.4	1
KB Financial Group	31	34	9	13	11	14	6	2	4	2
Hana Financial Group	16.5	17.1	10	5	7	11	0.2	0.4	-	0.2

6-2) K-Taxonomy ³⁷⁾

The K-Taxonomy is South Korea's framework for classifying economic activities that are considered environmentally sustainable. This taxonomy is part of Korea's broader efforts to support the transition to a low-carbon and green economy by promoting investments in sustainable projects and technologies. The K-Taxonomy was developed in response to the growing global emphasis on sustainable finance and the need to direct capital towards green investments to combat climate change and environmental degradation. It aligns with international efforts, such as the European Union's Taxonomy for Sustainable Activities, to standardize what qualifies as "sustainable" to prevent greenwashing and to facilitate cross-border green investments.

The K-Taxonomy defines and categorizes economic activities based on their environmental benefits across several domains, including climate change mitigation, adaptation, and other environmental objectives such as pollution prevention, biodiversity conservation, and circular economy. For an economic activity to be classified as environmentally sustainable, it must adhere to the following three principles:

① Contribute to an environmental objective: Must contribute to the achievement of at least one of the six environmental objectives (SC; Substantial contribution)

* The six environmental objectives: Reduction of greenhouse gases, adaptation to climate change, sustainable preservation of water, transition to a circular economy, prevention and management of pollution, and conservation of biodiversity.

37) 한국형 녹색분류체계 가이드라인

- ② Cause no significant harm: Must not cause significant harm to any other environmental objective in the process of achieving an environmental goal (DNSH; Do No Significant Harm).
- ③ Comply with minimum safeguards: Must not violate relevant laws regarding human rights, labor, safety, anti-corruption, and destruction of cultural heritage (MS; Minimum Safeguards).

The Korean Green Taxonomy is composed of detailed economic activities that contribute to environmental objectives. It consists of the 'Green Sector,' which includes economic activities contributing to carbon neutrality and environmental improvement, and the 'Transition Sector,' which encompasses economic activities necessary as intermediate steps toward transitioning to carbon neutrality.

The 'Green Sector' is divided into objectives such as the reduction of greenhouse gases, adaptation to climate change, sustainable conservation of water, transition to a circular economy, pollution prevention and management, and conservation of biodiversity, comprising a total of 67 green economic activities. For example, it includes activities that significantly contribute to the reduction of greenhouse gases, such as the production of renewable energy, hydrogen and ammonia manufacturing, and the manufacturing of zero-emission vehicles, railway vehicles, construction machinery, agricultural machinery, ships, and aircraft.

The 'Transition Sector' consists of economic activities that are necessary as intermediate steps toward transitioning to carbon neutrality but are not considered true green economic activities since they are not the final goal for achieving carbon neutrality. There are a total of 7 economic activities classified under the 'Transition Sector,' including greenhouse gas reduction activities in small and medium-sized enterprise facilities, energy production based on liquefied natural gas (LNG) and mixed gas, energy production based on nuclear power (new construction), energy production based on

nuclearpower (continuedoperation), blue hydrogen manufacturing, construction of eco-friendly ships, and transportation of eco-friendly ships.

Additionally, an economic activity is considered compatible with the Green Taxonomy if it meets all the activity, recognition, exclusion, and protection criteria. These criteria areas follows:

Item	Content
Activity Criteria	Determines if the economic activity matches the presented classification.
Recognition Criteria	Assesses if the economic activity meets the technical standards for achieving at least one of the six environmental objectives.
Exclusion Criteria	Evaluates if the economic activity complies with the criteria for significant environmental harm.
Protection Criteria	Determines if the economic activity does not violate laws related to human rights, labor, safety, anti-corruption, and destruction of cultural heritage.

While not legally binding, the K-Taxonomy serves as a guideline for financial institutions, companies, and investors in South Korea, helping them identify and invest in genuinely sustainable projects and activities. It is expected to play a critical role in enhancing transparency and accountability in the green finance market by providing a clear and common language for what constitutes sustainable economic activities and also to boost the green bond market in Korea by offering a robust framework for certifying green bonds and other sustainable financial products.

6-3) ESG information disclosure 38)³⁹⁾

38) ESG 금융추진단 제 2차 회의 안건: 해외주요국의 ESG 공시규제 강화에 따른 국내기업 지원방안

39) <https://www.fsc.go.kr/no010101/80911>

In January 2021, the Korea Exchange established the "ESG Disclosure Guidance," providing guidelines for the preparation of sustainability reports. Additionally, by analyzing the status of sustainability report disclosures and selecting best practices to share, and by launching the "Comprehensive ESG Information Platform (ESG Portal, <http://esgportal.kr>), it has continuously supported the enhancement of corporate capabilities related to the disclosure of sustainability information. However, considering the potential for worsening management due to the rapid increase in burdens on companies, the initial plan to apply the mandatory ESG disclosure regulations starting from 2025 for KOSPI-listed companies with assets of 2 trillion won or more was changed to start from 2026. The background for this postponement includes delays in the mandatory ESG disclosures in major countries such as the United States, the recent (June 2023) finalization of the IFRS-ISSB standards, which are a major reference for domestic ESG disclosures, and requests from companies for a delay to allow sufficient preparation time, as stated by the Financial Services Commission.

<Old schedule for the mandatory disclosure of sustainability management reports>

Period	Target
From 2021 to 2022	Voluntary disclosure
From 2025	Companies with assets over 2 trillion KRW
From 2030	All companies listed on KOSPI

The Financial Services Committee also stated that in establishing ESG disclosure standards, it would refer to the standards of major countries and international organizations while fully considering the uniqueness of the domestic market and companies. The introduction of ESG disclosures for targeted companies will be phased in, starting with large listed companies, and considering international trends and domestic market conditions for a gradual expansion. Furthermore, to ensure the smooth establishment of the ESG disclosure system, the initial introduction will minimize the level of sanctions.

Under these principles, the Korea Accounting Standards Board (KSSB) under the Korean Accounting Institute is preparing a Korean ESG disclosure standard draft based on the ESG disclosure standards announced last year by the International Sustainability Standards Board (ISSSB). The draft is expected to be released in early March of this year, with the final version announced in June, including a process for collecting corporate feedback. According to the Financial Services Commission, it appears that the introduction through exchange disclosures, which relatively involves less legal burden, and the application of minimal sanctions for violations during the initial introduction, are under consideration.

< Korea Exchange ESG Disclosure Guidance >

	Item	Metrics	Comments
Organization	ESG response (1)	Management roles	Management roles in identifying/controlling ESG issues
	ESG assessment (1)	ESG risks & opportunities	Assessment of ESG-related risks and opportunities
	Stakeholders (1)	Stakeholder participation	The way stakeholders are involved in the ESG process
Environment	GHG emissions (3)	Direct emissions (Scope 1)	GHG emissions from the factories or facilities owned/managed by the company
		Indirect emissions (Scope 2)	GHG emissions from electricity, heating, air conditioning, or steam purchased/obtained by the company for use
		Emissions intensity	GHG emissions per activity, production unit or other metric unit used by the organization
	Energy use (3)	Direct energy use	Energy use by those who are owned/managed by the organization
		Indirect energy use	Energy use outside of the organization such as disposal or use of products sold
		Energy intensity	Energy use per activity, production unit or other metric unit used by the organization
	Water use (1)	Total water usage	Total water usage by the organization
	Waste discharge (1)	Total amount of waste discharge	Waste amount by each disposal method such as burial and recycle
	Violation & accident (1)	Violation of environmental law & accidents	No. of violations of environmental law & accidents, and corrective actions taken
	Society	Employment (4)	Equality and diversity
New employee hires and employee turnover			Status of new employee hires and employee turnover
Intern Hiring			Intern hiring status and Intern to full-time conversation rate
Parental leave			Status of employees on parental leave
Safety & health (3)		Industrial accident	No. of deaths/injuries/diseases, and corrective actions taken
		Product safety	No. of product recalls (disposal, withdrawal, etc.), and corrective actions taken
		Labeling & Advertising	No. of breaches of labeling & advertizing regulations, and corrective actions taken
Customer privacy (1)		Personal data protection	No. of breaches of customer privacy, and corrective actions taken
Fair competition (1)		Fair competition & Abuse of market position	No. of non-compliance with laws and regulations on insider trading, subcontracting, franchise business, and agency contract, and corrective actions taken

6-4) ESG rating and evaluation Industry

6-4-1) Korean ESG Evaluation Status ⁴⁰⁾ ⁴¹⁾

In Korea, compared to advanced foreign countries, the ESG evaluation market is still in its initial stages. However, as the importance of ESG is gradually highlighted, interest and concern in the ESG evaluation market are expanding. The main ESG evaluation institutions in Korea are Korea ESG Standards Authority (formerly Governance Institute), Korea ESG Research Institute (formerly Daishin Economic Research), and Sustainvest, which are expanding their evaluation targets to listed and large corporations. However, issues such as ①lack of transparency in the evaluation system, ②potential conflicts of interest within evaluation institutions, and ③lack of reliability in evaluation results have been pointed out.

In particular, a survey conducted by the Korea Chamber of Commerce and Industry in June 2023, targeting 100 domestic companies, revealed that 63.0% of the responding companies answered that 'domestic ESG evaluation agencies are not operating transparently.' Companies also expressed concerns about the potential for conflicts of interest within domestic ESG evaluation agencies. When asked about the possibility of conflicts of interest within domestic ESG evaluation agencies, 85.0% of the total responding companies answered 'yes.' Moreover, when asked about the necessity for legal regulation of domestic ESG evaluation agencies, 60.0% of the responding companies stated it was necessary, indicating a generally low level of trust in domestic ESG evaluation agencies. Additionally, 64.0% of the responding companies identified the 'non-disclosure of evaluation systems, standards, and weights' as a major

40) 금융위원회 보도자료 ('23.4.27), 「ESG 금융 추진단」 제2차 회의 개최

41)

https://www.korcham.net/nCham/Service/Economy/appl/KcciReportDetail.asp?SEQ_NO_C010=20120936397&CHAM_CD=B001

problem of domestic ESG evaluation agencies. A 'lack of sufficient explanation for the evaluation results (46.0%)' was also highlighted as a major issue by the companies. (Multiple responses). Furthermore, in response to the question 'What difficulties are you facing regarding ESG evaluation responses?', companies answered in the order of 'responding to individual evaluation requests from ESG evaluators takes a lot of time and cost (53.0%)', 'it is too difficult to understand and interpret the ESG evaluation indicators and standards (44.0%)', and 'lack of internal personnel with ESG expertise (42.0%)' (Multiple responses).

6-4-2) ESG Evaluation Agency Guidance ⁴²⁾

To enhance the transparency and reliability of the ESG (Environmental, Social, Governance) evaluation market, three major domestic ESG evaluation agencies (SustainInvest, Korea ESG Standards Authority, and Korea ESG Institute) have been implementing the ESG Evaluation Agency Guidance (a self-regulatory nature) since September 1, 2023. The guidance serves as a model standard for the necessary procedures and criteria during the performance of ESG evaluation tasks. Each ESG evaluation agency voluntarily declares its participation in the guidance and participates through a comply or explain approach. Considering that the domestic market is still in the early stages of development regarding ESG evaluation, the regulatory method is operated at a lower level compared to credit rating regulations. It is composed of 6 chapters and 21 articles (① General Provisions - ② Establishment of Internal Control Systems - ③ Collection of Source Data and Management of Confidential Information - ④ Disclosure of Evaluation System - ⑤ Management of Conflicts of Interest - ⑥ Relationship with Evaluated Companies). Additionally, the three companies have launched the "ESG Evaluation Agency Council* (hereafter referred to as the Council)" as a self-regulatory body for the effective operation of the evaluation agency guidance on September 1, 2023. Agencies belonging to the Council must declare adherence to the

42) 금융위원회 보도자료 (2023.12.26) “ESG 평가기관 가이드스 이행 현황”

guidance and disclose their compliance status. According to the Council's operating rules, they jointly carry out tasks such as revising the guidance and discussing the development of the domestic ESG evaluation market. Each evaluation agency discloses its compliance status, and the Council operates by analyzing and comparing the compliance status in cooperation with the exchange, regularly distributing press releases.

The Korea Exchange, in collaboration with the Council, analyzed the implementation status of the evaluation agency's guidance enacted on September 1, 2023, as of December 2023. The results showed that the three evaluation agencies complied with most of the guidance items composed of 6 chapters and 21 articles. However, one agency failed to comply with one article ('Providing Opportunities for Explanation to Evaluated Companies') and announced plans to supplement the related procedures in the future. When comparing the implementation methods, all three agencies have posted their 'Guidance Compliance Reports' and 'Evaluation Methodologies' on their respective websites and the 'KRX ESG Portal'. However, there were some differences in the level of disclosure of compliance-based information and detailed methodologies between the agencies.

<ESG Evaluation Agency Guidance Compliance Status>

Category	Ch.1	Ch.2	Ch.3	Ch.4	Ch.5	Ch.6
	General Provisions	Internal Control System Establishment	Data Collection and Confidential Information Management	Evaluation System Disclosure	Conflict of Interest Management	Relationship with Evaluated Companies
SustainInvest	-	Compliant	Compliant	Compliant	Compliant	Compliant
Korea ESG Standards Authority	-	Compliant	Compliant	Compliant	Compliant	Compliant
Korea ESG Institute	-	Compliant	Compliant	Compliant	Compliant	Partially Non-Compliant*

*The procedure for providing opportunities for explanation before finalizing evaluation grades is non-compliant (consideration for future procedure establishment).

6-5) Emission Trading System (ETS)⁴³⁾

The Emission Trading System (ETS) in Korea, also known as the Korea Emissions Trading Scheme (K-ETS), was launched in 2015 as a major initiative to reduce greenhouse gas emissions and combat climate change. It represents Korea's commitment to a sustainable future and is a key element of its national strategy to meet its emission reduction targets. The primary objective of the K-ETS is to reduce greenhouse gas emissions in a cost-effective manner. By putting a price on carbon emissions, it incentivizes companies to adopt cleaner and more efficient technologies. The K-ETS operates on a cap-and-trade principle. The government sets a cap on the total amount of greenhouse gases that can be emitted by all covered entities. This cap is reduced over time to decrease total emissions and processes. Under the system, companies are allocated emission allowances, which represent the right to emit a certain amount of greenhouse gases. These allowances can be bought and sold in the ETS market.

The price of emission rights serves as an effective means of achieving carbon neutrality. It holds significant importance as it can be utilized for the evaluation of held emission rights, corporate value assessment, investment value assessment of carbon reduction projects, and budget planning. South Korea's Emission Trading System applies to entities with an annual average emission of more than 125,000 tons or those owning facilities with an annual emission of more than 25,000 tons. Since its introduction in 2015, it is currently in its third phase of operation (2021-2025).

43) 한국거래소 “배출권시장 현황 및 대응방향”

<Outline of K-ETS>

Phase	Period	Total Amount of Emission Rights	Key Policies
1 st	2015~2017	1.704 million KAU (Annual average of 568 million tons)	<ul style="list-style-type: none"> ■ Opening of the emission rights trading market ■ Full free allocation
2 nd	2018~2020	1.796 million KAU (Annual average of 599 million tons)	<ul style="list-style-type: none"> ■ Introduction of paid allocation (3%) through an auction system ■ Introduction of market maker system (enhanced liquidity)
3 rd	2021~2025	3.082 million KAU (Annual average of 616 million tons)	<ul style="list-style-type: none"> ■ Expansion of the paid allocation ratio (from 3% to 10%) ■ Participation of third parties (securities companies, institutional investors, etc.) ■ Introduction of emission rights-related derivative products

The emission trading market system has approximately 730 member companies subject to allocation. This includes 7 market makers and 21 securities firms engaged in proprietary trading. The trading targets include allocated emission rights, reductions from external projects, and offset emission rights, with the allocated emission rights assigned by the government to companies being primarily traded. In 2022, the daily average trading volume in the emission trading market was 105,000 tons, indicating that the trading volume is continuously increasing. As of the end of 2022, it can be observed that there has been an increase of more than 20 times compared to 2015.

<Trend in the trading volume of the ETS >



<Trend in the price of ETS>



After reaching its peak price of 40,900 KRW on December 23, 2019, the price of emission rights fell due to the impact of COVID-19. However, the price rebounded in the second half of 2021, supported by forecasts of economic recovery. Nonetheless, throughout 2022, the price has been fluctuating, showing patterns of both increases and decreases, amid mixed forecasts of economic recovery and recession.

(Ch. 7) Strategies for the Development of Sustainable Finance in Korea

7-1) Improvement of Fiscal Systems

7-1-1) Expansion of National Budget⁴⁴⁾

At this point, an increase in the national budget dedicated to sustainable growth is necessary. According to an analysis of the fiscal plan submitted by the Carbon Neutrality Committee by Jang Hye-young, a member of the National Assembly's Special Committee on Climate Crisis and Budget and Accounts Committee from the Justice Party, the budget for responding to the climate crisis in 2024 is 14.5181 trillion won, which falls short by 2.7233 trillion won (15.8%) of the 17.2414 trillion won planned in the

44) <https://www.etoday.co.kr/news/view/2288747>

National Basic Plan for Carbon Neutrality. The financial input plan submitted by the Carbon Neutrality Committee indicates an investment of 17.2414 trillion won in 2024, 18.6218 trillion won in 2025, 20.0059 trillion won in 2026, and 20.6548 trillion won in 2027, averaging 19.1435 trillion won per year for the next four years. However, the 2024 budget plan only reflects a total of 14.5181 trillion won. The project that saw the largest cut is the Ministry of Environment's zero-emission vehicle distribution project, which was set at 2.3988 trillion won, a reduction of 799.8 billion won (-25.0%) from the 3.1986 trillion won budget in 2023. This falls significantly short of the 3.9520 trillion won fiscal target for 2024 under the national basic plan. Following this, reductions were made in agricultural disaster insurance by 721 billion won, green remodeling of public buildings by 635 billion won, and the entire budget for custom job creation support for local industries (513 billion won) was cut.

After announcing the "2050 Carbon Neutrality Promotion Strategy" in 2020, the budgets for 2021 and 2022 were separately estimated for addressing climate change and pushed as a core national fiscal task. However, in the 2024 budget proposal, there's a complete absence of mentions regarding budgets supporting sustainable growth among the 20 key tasks. This indicates a sharp decline in government interest at the level of sustainable growth centered on carbon neutrality. Without continuous expansion of government budgets, it's challenging to expect proactive transition efforts from companies. The uncertainty in the size of government budgets to support sustainable growth, including carbon neutrality, triggers doubts among private companies and citizens about the active implementation of related policies. The South Korean government must keep in mind that continuous government budget investment is essential for acquiring technology to respond to climate change, transitioning to renewable energy, and encouraging private sector investment in eco-friendly fields, to motivate the primary contributors to carbon emissions, public and private enterprises, to make voluntary

efforts. Particularly, with the recent establishment and operation of the Climate Response Fund, it is believed that it will become possible to manage finances related to climate change response in a more unified and consistent manner by expanding and strengthening the role of the Climate Response Fund.

7-1-2) Creating a Taxation system to Encourage Corporate Participation

7-1-2-1) Reviewing on introduction of Carbon Tax

To address climate change, which can be considered a result of the negative externalities associated with the use of public goods, it's necessary to explore the introduction of a carbon tax. A carbon tax is imposed on the carbon content of fuels, aiming to reduce carbon dioxide emissions from the use of fossil fuels like oil, coal, and natural gas. The tax amount varies based on the carbon dioxide emitted when these fuels are used for activities such as operating factories and power plants, heating homes and businesses, or driving vehicles. Essentially, a carbon tax is a pollution tax that applies the economic principle of negative externalities, where the social costs of goods and services production are not reflected in their market prices. This policy is known as one of the primary carbon pricing strategies, alongside the Emission Trading System (ETS). South Korea has already implemented ETS and the government of South Korea is expressing concerns about introducing another pricing mechanism, the carbon tax, while the ETS has not yet fully settled. However, it's believed that these two systems can operate complementarily. Emission trading systems and carbon taxes each have their strengths and weaknesses, and by using them together, it's possible to offset each system's drawbacks and maximize the effectiveness of climate change response measures. For example, while the emission trading system focuses on specific industries or major emitters, a carbon tax can impose a consistent cost on a wide range of carbon emissions across the entire economy. Additionally, the

revenue generated from a carbon tax could be used to invest in eco-friendly alternatives like renewable energy, or to provide social support to mitigate the costs that could arise from the emission trading system. Also, we need to consider the advantages of the carbon tax which is the most economically efficient means of reducing carbon emissions. It allows the market to determine the most cost-effective ways to reduce emissions rather than relying on prescriptive regulations. This flexibility can lead to more innovative and less costly solutions for reducing carbon emissions.

Therefore, using these two policy tools together can create a more comprehensive and effective climate change response policy. However, careful and thorough consideration of the timing and scope of introduction is necessary, especially in terms of enhancing the acceptance of the carbon pricing system based on overseas examples and establishing the optimal conditions that can improve the system's acceptance.

7-1-2-2) Expanding tax benefits

The South Korean government has already taken steps to include key technologies that enhance energy efficiency in the list of new growth and original technologies eligible for tax benefits(023 Economic Policy Direction announced by the Ministry of Economy and Finance). Through this, large corporations can receive up to a 30% tax deduction on related research and development costs, while small and medium-sized enterprises (SMEs) can receive 40%. Additionally, for facility investments, large corporations receive a 6% tax deduction, and SMEs receive 18%. Furthermore, a depreciation allowance system is applied to energy-saving facilities acquired in 2023, allowing for the calculation of income amounts by freely adding or subtracting within 75% of the content years. Special tax reduction measures have also been extended for SMEs engaging in Energy Service Companies (ESCOs), offering a reduction in income or

corporate tax at a certain rate. However, to encourage corporate and individual participation in climate change response, the introduction of more diverse tax incentives is considered necessary. Learning from the United States, which offers various tax benefits through the enactment of the Inflation Reduction Act (IRA), it's evident that demonstrating a national commitment to providing incentives can significantly impact the expansion of investments by businesses and changes in citizens' lifestyle patterns.

Consideration could be given to expanding tax incentives such as property tax exemptions for acquiring real estate for carbon capture devices or electric vehicle charging facilities, and inheritance tax reductions for businesses transitioning from high-carbon industries to new, emission-reducing industries through the expanded family business inheritance tax exemption system.

Additionally, tax incentives for individual contributions to carbon neutrality, such as expanding tax reductions for electric vehicle purchases or registrations, or offering tax deductions for selling properties after conducting green remodeling on outdated buildings, could also be alternatives. While an extensive expansion of tax incentives might weaken the national fiscal foundation, it's undeniable that careful examination is required for introducing new systems. However, if national tax benefits can effectively encourage active participation in carbon neutrality, it could lead to more positive effects in the long term.

7-2) Strengthening of ESG Information Disclosure

√ Despite significant domestic opposition and criticism, South Korea has already taken steps towards establishing a system for ESG information

disclosure. However, the decision to postpone the mandatory disclosure schedule in October 2023 must be considered for its potential to send a negative signal to the market. Given the international context and the readiness of domestic companies, this postponement may have been an inevitable choice. Yet, further delaying the application of mandatory requirements is deemed undesirable. If such a decision is made, it could lead companies to perceive that the government no longer places importance on ESG disclosure. As currently planned, it should be pursued that from 2026, listed companies with assets of KRW 2 trillion or more will be required to disclose sustainability reports. For this, the disclosure standards being prepared by KSSB need to be finalized during the first half of 2024 as originally scheduled. It's clear that the standard-setting process should involve consultations with various stakeholders to ensure that the companies do not feel overly burdened or attribute poor management outcomes to these disclosures. Through this process, standards that match international criteria while reflecting Korean characteristics can be established. Furthermore, as the Financial Services Commission has indicated, when establishing domestic ESG disclosure standards, the compatibility with major international standards and ISSB should be actively considered to minimize the dual burden on companies, and this approach should be applied in future updates of the standards.

- √ To enhance the effectiveness of the disclosure system, it's crucial to ensure the reliability of the information disclosed by companies. Therefore, a more effective and credible system to certify the amount of greenhouse gas reduction is needed. This involves nurturing domestic verification and accreditation organizations and supporting the training of professionals in this field.

√ In the medium to long term, there needs to be proof and analysis that ESG information disclosure is inevitably linked to the financial performance of companies. Without such analysis, it will be challenging to justify the legitimacy of transitioning from a voluntary to a legal and mandatory regulatory system for disclosure.

7-3) Enhancement of ESG Evaluation / Rating System

As previously discussed, South Korea's ESG evaluation market is relatively in its early stages. There is a critical need to enhance the reliability of the evaluation system through increased transparency. In this context, there is a question regarding whether the current self-regulatory approach of evaluators is appropriate.

√ Companies subject to evaluation are indicating a preference for guidelines from the government or related agencies over a self-regulatory system operated by evaluators. Although not legally enforcing obligations, if the government were to establish official guidelines, it could alleviate concerns regarding unreliable self-evaluations based on the discretion of the evaluators.

√ Additionally, there's a pressing need for legal and institutional introductions for firms evaluating companies' ESG capabilities. As the market gradually expands, the possibility of an influx of small-scale evaluators cannot be excluded, necessitating legal and institutional arrangements to verify the eligibility of evaluation agencies and enhance the transparency of evaluations.

√ The issue of the capabilities of personnel within evaluators must also be considered. To date, there is a significant shortage of professionals specialized in ESG evaluation. It is thought that the government should support defining the necessary qualities and capabilities for ESG

evaluation and establishing related education programs. Considering the challenge of evaluating sustainability and ESG due to the conceptual ambiguity, there is an even greater need for definitive education programs for evaluators.

- √ Moreover, there seems to be a need to efficiently revamp the ESG portal currently operated by the Korea Exchange. Moving beyond merely compiling and disclosing evaluation results from various agencies, introducing a system that connects to the evaluators' websites for details of these results could be beneficial. Additionally, adding a sorting feature to categorize companies by grade could also enhance corporate interest in evaluation results.

These measures suggest a multifaceted approach to improving the ESG evaluation market in South Korea, emphasizing government involvement, legal frameworks, professional development, and technological enhancements to ensure a more transparent, reliable, and effective system.

7-4) Expand the support for the SMEs ⁴⁵⁾

Small and medium-sized enterprises (SMEs), which employ fewer than 300 workers and account for more than 31% of the industrial sector's carbon emissions, lack the capacity for carbon-neutral management unlike large corporations, necessitating comprehensive support and management for these businesses.

- √ Firstly, there's a need to establish a foundation for the voluntary carbon market, as most SMEs are not subject to the emissions trading scheme. Despite significant emissions from these businesses, being outside the mandatory trading scheme limits their ability to monetize reduction efforts through market mechanisms. Discussion is needed on the

45) 정책연구 22-09, 중소기업 탄소중립 현황 분석 및 향후 정책과제 (중소벤처기업연구원)

voluntary reduction market, where entities not obligated to reduce emissions, such as companies, organizations, and non-profits, can trade emission rights to offset their carbon footprint or purchase carbon credits for various goals. This voluntary carbon market, being less costly than the public mandatory market, could be more accessible for financially constrained businesses. It is expected that non-regulated SMEs could address supply chain carbon reduction issues, secure new investment opportunities through eco-friendly activities, and enhance competitiveness through customer retention and expansion through such a market. It is considered necessary to establish a governmental framework to ensure that this voluntary carbon market does not become a means of greenwashing. Establishing a verification process for greenhouse gas reduction achievements and creating a standardized system for transactions is needed. Additionally, providing consulting or educational programs to enhance businesses' capabilities to utilize this market is required.

- √ Domestic policy support has traditionally involved providing direct funding and technology to SMEs. However, enhancing SMEs' capability to directly measure greenhouse gas emissions is seen as a prerequisite. Considering this, policy efforts are needed to standardize energy-saving measures and disseminate information by typifying major processes and characteristics of business sites, primarily in the manufacturing sector. Moreover, establishing a foundation for small businesses to conduct joint projects or exchange information at the private level could be one way to reduce SMEs' carbon emissions.

- √ Additionally, there's a need to reassess the SME-related items within the K-Taxonomy. SMEs' green activities, along with nuclear and LNG, are included in the transition sector, which is set to be recognized only

temporarily until 2030. Post-2030, if the activities of SMEs are not recognized as green economic activities, there's a concern that lending and investment activities targeting SMEs could be restricted, necessitating a reconsideration of this aspect.

√ Lastly, policy efforts to improve SMEs' awareness of greenhouse gas emission reduction are necessary. SMEs have not yet felt external pressure for carbon reduction from a business standpoint. However, considering the expanding demands for carbon reduction from exporting companies and the global trend of mandating corporate climate information disclosure linked to investment decisions, it is crucial to help SMEs recognize this. That is, they need to understand that greenhouse gas emission reduction influences financial decision-making and support from the government in terms of education and consulting to enhance this awareness is vital.

7-5) Strengthening the Emission Trading System

South Korea's carbon emissions trading market is not necessarily late in its introduction compared to other countries. However, the market size is limited, and as a result, the trading prices have been formed at a low level recently, raising questions whether the emissions trading scheme itself is acting as an obstacle to setting an appropriate carbon price. It's thought that policy support is needed for the emissions trading market to function as a "financial market" that sets carbon prices.

Gradually expanding market participants is believed to contribute to the growth of the trading market size. In addition, developing derivative products such as futures could increase the attractiveness of carbon credits as an investment tool. Discussions should also take place on innovatively

expanding the current allocation of allowances, which stands at around 10%, in stages.

Considering the limited size of South Korea's emissions trading market, once the market has grown to an appropriate level, it is necessary to consider linking with overseas emissions trading markets. If our companies can secure competitiveness in carbon emissions, opening the emissions trading market could become another revenue-generating channel for our companies.

7-6) Enhancing the international cooperation to facilitate the carbon emission-reduction projects

South Korean companies are feeling the limits of reducing carbon emissions domestically. Given the difficulties of expanding renewable energy generation, such as solar and wind power, within South Korea's constraints, a short-term solution could be to consider offsetting domestic reductions with reductions achieved through overseas projects. To facilitate this, the government's active participation in the prompt establishment of the international carbon market is crucial. Currently, the international community lacks established rules and systems that legally recognize carbon reductions achieved through overseas projects. Without such a system, companies lack the incentive to pursue overseas projects for the purpose of carbon emission reduction. Therefore, the government needs to proactively engage in the international community to establish these systems swiftly.

Additionally, considering policy financial support for overseas carbon reduction projects could be valuable. Given that carbon reduction projects are likely to be pursued in developing countries, the high risk associated

with conducting projects in these regions might hinder smooth initial funding. Taking this into account, using policy funds for guarantee support or low-interest loans could facilitate smooth project financing. Also, to encourage investment by South Korean financial institutions in overseas carbon reduction projects, it is necessary to minimize legal barriers, including regulations related to foreign exchange transactions.

Furthermore, the government could expand projects with a confirmed effect on reducing carbon emissions among those conducted under Official Development Assistance (ODA), to allow private-led development projects to proceed. Sharing related information or advancing discussions with the governments of developing countries are roles the government can undertake to support this initiative.

8. Conclusion

So far, we have grasped the domestic and international status of sustainable finance, explored the institutional status of major countries related to this, and investigated the measures necessary for South Korea to advance its sustainable finance. Compared to major developed countries, it is true that the development of sustainable finance in South Korea has been lagging. However, if the government's active support for the initial market formation is accompanied by a proactive attitude from financial institutions and companies, based on their trust in the possibility of change, the future of sustainable finance in South Korea is expected to be bright.

References

1. <https://www.oecd-ilibrary.org/sites/fcbe6ce9-en/index.html?itemId=/content/publication/fcbe6ce9-en>
2. Global Outlook on Financing for Sustainable Development 2023 (OECD)
3. <https://think.ing.com/articles/big-swings-in-2023-but-global-sustainable-finance-remains-in-rude-health>
4. Big swings in 2023, but global sustainable finance remains in rude health
5. <https://g20sfwg.org/wp-content/uploads/2022/10/2022-G20-Sustainable-Finance-Report-2.pdf>
6. G20 sustainable Finance working group paper 2022
7. <https://www.climatepolicyinitiative.org/wp-content/uploads/2023/11/Global-Landscape-of-Climate-Finance-2023.pdf>
8. Global Land Scape of Climate Finance 2023 (By CPI) 2023.11
9. <https://www.spglobal.com/marketintelligence/en/news-insights/blog/the-rising-importance-of-sustainability-in-credit-risk>
10. The Rising Importance of Sustainability in Credit Risk (S&P global) 2023.9
11. <https://kpmg.com/xx/en/home/insights/2023/04/eu-sustainable-finance-disclosure-regulation.html>

12. EU Sustainable Finance Disclosure Regulation (By KPMG)
13. <https://kpmg.com/xx/en/home/insights/2020/10/esg-and-sustainable-finance.html>
14. KPMG sustainable Finance Homepage
15. <https://kpmg.com/xx/en/home/insights/2023/12/meeting-expectations-on-climate-related-financial-risk.html>
16. Meeting Expectations on climate-related financial risk (Update on BCB S principles reinforces supervisory messages for banks)
17. <https://www.climatebonds.net/>
18. Climate Bond Initiative
19. <https://www.gsi-alliance.org/>
20. Global Sustainable Investment Alliance
21. https://www.oecd-ilibrary.org/sites/134a2dbe-en/1/3/1/1/index.html?itemId=/content/publication/134a2dbe-en&_csp_=062998fb6eb20cf4e25d9a4ba3ba529e&itemIGO=oecd&itemContentType=book
22. Developing Sustainable Finance Definition and Taxonomies
23. <https://www.brookings.edu/articles/economic-implications-of-the-climate-provisions-of-the-inflation-reduction-act/>
24. Brookings study for the IRA
25. <https://unfccc.int/process-and-meetings/the-paris-agreement>

26. <https://www.cbpp.org/press/statements/inflation-reduction-act-takes-important-steps-forward-and-should-be-enacted>

27. Inflation Reduction Act Takes Important Steps Forward and Should Be Enacted (by Center on budget and policy priorities)

28. <https://newsroom.koscom.co.kr/31538>