



The Implementation of Sustainable Development

The 2024 Shanghai ESG Development Report

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Report Leading Organization

Shanghai Advanced Institute of Finance at Shanghai Jiao Tong University

Report Participating Organizations

Shanghai State-owned Capital Operation Research Institute

Shanghai Exchange Group

China Pacific Insurance (Group) Co. Ltd.

Ernst & Young Hua Ming LLP

Prestige and Fortune Fintech (Beijing) Co. Ltd.

Shanghai Pudong Development Bank Co. Ltd.

Guotai Junan Securities Co. Ltd.

Orient Securities Co. Ltd.

China Universal Asset Management Co. Ltd.

Harvest Fund Management Co. Ltd.

China Securities Index Co. Ltd.

Ecovane Environmental Co. Ltd.

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Preface

For over half a century, the rapid advancement of science and technology has significantly enhanced productivity, driving global economic growth. Meanwhile, the intensification of environmental issues and social conflicts has prompted the world to reassess economic development models. In this context, the concept of sustainable development is no longer merely an idealistic slogan but has become a key principle guiding countries and industries worldwide. It emphasizes the harmonious coexistence of the economy, society, and the environment, seeking a balance between long-term value and short-term benefits, and provides a solid conceptual foundation for exploring new development models.

When exploring practical pathways to sustainable development, we find that enterprises practicing ESG (Environmental, Social, and Governance) have become an important vehicle and foundation for the sustainable development of the economy and society. ESG evaluates an enterprise's richer and more diverse comprehensive performance in the process of realizing its own value from a broader and more specific perspective. It encompasses the relationships between corporate operations and the environment, society, and governance, forming a multi-dimensional and integrated evaluation system.

After experiencing rapid development following the Reform and Opening-up, China has entered a stage of high-quality growth, with sustainable development becoming a significant theme. In recent years, China has demonstrated unwavering determination in advancing ESG initiatives. Through a series of intensively released policies, a comprehensive framework is gradually being established to support enterprises and other stakeholders in participating in ESG development. By interacting with global trends and integrating Chinese practices, China is expanding its own path of ESG advancement. As China's economic center and international financial center, Shanghai is a pioneer of the Reform and Opening-up and a forerunner in innovative development. It also plays a leading role in sustainable development, with particularly outstanding exploration and practice in the ESG field. In areas such as corporate social responsibility, green financial innovation, and sustainable urban construction, Shanghai is at the forefront nationwide.

To systematically reflect the current state of ESG development in the Shanghai region, summarize the achievements attained and challenges faced by various participants, and explore future directions and strategies, Shanghai Advanced Institute of Finance (SAIF) at Shanghai Jiao Tong University took the lead in collaborating with multiple enterprises and institutions. Through extensive research and systematic analysis, incorporating the latest policies, data, and case studies, and after several months of intensive work, the team has authored the "The Implementation of Sustainable Development - The Shanghai ESG Development Report". This is the first comprehensive local ESG development report in China, aiming to fully showcase the overall landscape of Shanghai's efforts in promoting ESG development.

Through this report, we hope to showcase the valuable experiences Shanghai has accumulated in advancing ESG practices, identify the challenges that must be addressed for further in-depth development in the future, and stimulate more reflection and discussion on how to integrate economic benefits, environmental concerns, social responsibility, and corporate governance. Additionally, we hope this report can serve as a reference for policymakers, corporate management, investors, and the general public, helping to promote the healthy development of ESG practices in Shanghai and across the nation.

Looking ahead, as the global economy moves toward a greener, more inclusive, and sustainable trajectory, Shanghai will continue to play the role of practitioner and pioneer, bringing the beautiful vision of sustainable development to life through concrete actions. Shanghai will persistently explore new mechanisms and models for ESG development, delving deeply into solutions for the "Four Transformations" of ESG—namely, the internalization of ESG business activities, the standardization of ESG information disclosure, the systematization of ESG evaluation systems, and the concretization of ESG value realization. In doing so, Shanghai aims to contribute its "wisdom" and "solutions" to sustainable development both nationally and globally.

Outline

In the face of increasingly severe global climate challenges and rising demands for social responsibility, how businesses can promote the harmonious development of ESG factors while pursuing economic benefits has become a core issue of global concern. As a leader in China's economy and a key role in the international financial system, Shanghai's innovative practices in the ESG field not only lead domestic ESG development trends but also occupy an important position in the global ESG landscape.

In this context, this report summarizes the development of ESG practices in Shanghai. By comprehensively analyzing the ESG development status of various participants in Shanghai's ESG ecosystem, it highlights the city's exploration and efforts in advancing ESG goals. The report aims to provide reference points for identifying the current challenges Shanghai faces in ESG development and for refining future ESG strategies.

The report begins by systematically explaining the concept of ESG and its global evolution. It reveals that the ESG concept has gradually become an indispensable core issue for global enterprises and financial markets. It further emphasizes that ESG development has received significant attention from Shanghai's municipal government, businesses, and financial institutions. As a pioneer city in China's ESG development, Shanghai has actively responded to the national "dual carbon" strategy and, based on its position as an international economic and financial center, has implemented a series of forward-looking and innovative ESG policies and action plans. Moreover, Shanghai has made significant progress in key areas such as ESG information disclosure, index development, and institutional clustering, gradually becoming a benchmark for ESG development in China.

Regarding the ESG practices of Shanghai-based enterprises, the report shows that both listed and unlisted companies in the region are actively engaging in ESG practices to jointly promote sustainable development in Shanghai. Among them, listed companies are leading in ESG practices compared to unlisted companies, and state-owned enterprises outperform private companies, suggesting that external supervision and promotion play a critical role in advancing ESG principles and practices. In addition, small and medium-sized enterprises (SMEs) are gradually improving their ESG performance in areas such as supply

chain management, environmental risk assessment, and social responsibility projects. Foreign-invested enterprises, leveraging their global networks and advanced experience, are driving the implementation and spread of ESG concepts in the Shanghai market. Many startups are integrating ESG into their business models and development strategies from the outset, aiming to become pioneers in sustainable development. Regarding information disclosure, enterprises of different types are disclosing ESG development progress to varying extents, including policy enforcement, carbon emissions data, and improvements in energy efficiency.

As an international financial center, Shanghai's financial institutions have actively innovated ESG financial products and services to meet the demand for the green and low-carbon transformation of the economy and society. These innovations cover various sectors, including green loans, green bonds, ESG funds, green insurance, and carbon finance, accelerating the integration of ESG principles with China's market practices. In the area of green loans, Shanghai's banking industry has introduced a diverse range of green loan products, prioritizing support for enterprises and projects that meet environmental protection, low-carbon, and energy efficiency standards. In the field of green bonds, Shanghai's financial institutions have raised valuable funds for numerous green projects through the issuance of green bonds, investing in clean energy, energy conservation, environmental protection, and green transportation. ESG public funds in Shanghai have experienced rapid growth, both in terms of quantity and scale, maintaining a leading position domestically. In the green insurance sector, Shanghai's insurance industry has actively launched product innovations in fields such as clean energy, energy storage, ecological protection, carbon market development, and green transportation. In the field of carbon finance, Shanghai's financial sector has actively participated in the construction of the national carbon market, providing professional intermediary services for enterprises participating in carbon trading, and introducing financial services related to carbon asset collateral and repurchase, improving the market liquidity of carbon assets. Furthermore, Shanghai's financial sector has actively pursued ESG investment practices, improving its ESG investment management systems, incorporating ESG factors throughout the investment decision-making process, and implementing responsible management practices, thus offering investors a richer and more

diverse array of investment options.

From the perspective of supporting ESG development through market systems, Shanghai's major trading platforms are, on one hand, vigorously advancing the construction of **ESG data infrastructure**. Through improved mechanisms for data collection, analysis, and disclosure, these platforms enhance the **transparency and influence of ESG evaluation standards**. This helps investors more accurately assess a company's ESG performance, enabling them to make more informed investment decisions. On the other hand, Shanghai is further promoting the **standardization and unification of ESG evaluation criteria** to encourage continuous improvement and enhancement of corporate ESG practices, thus creating a virtuous cycle.

Shanghai's **third-party institutions offer a wide range of ESG services**, covering areas such as ESG strategic planning, report preparation and verification, environmental risk assessment and management, social responsibility project investment and evaluation, and ESG training and education. These institutions, with their professional knowledge, extensive experience, and advanced technical methods, **tailor ESG solutions for businesses**, assisting them in improving their ESG performance and achieving sustainable development goals. These organizations not only help enhance corporate ESG governance but also promote the widespread dissemination of ESG principles.

As one of China's most dynamic and open cities, Shanghai has demonstrated high foresight and proactive action in the global ESG arena. This is reflected in several aspects: First, Shanghai actively establishes close partnerships with international ESG organizations, research institutions, and leading companies, jointly exploring ESG evaluation systems and standards that are suited to China's national conditions. This helps facilitate mutual recognition and alignment between domestic and international ESG standards. Many multinational corporations have set up regional headquarters or R&D centers in Shanghai, deeply integrating their global ESG strategies into local business operations, while collaborating actively with local enterprises to enhance both parties' ESG capabilities. Second, Shanghai has actively responded to the national "Belt and Road" initiative by incorporating ESG principles into the initiative. Through project cooperation, technology transfer, and talent training, Shanghai collaborates with countries and regions

involved in the initiative to explore green, low-carbon, and sustainable development pathways.

The development of ESG practices in Shanghai is driven by the collective involvement of government, industry organizations, educational institutions, the media, and the public, which together form a healthy and comprehensive ESG ecosystem. The government, as both a guide and regulator, provides a solid institutional foundation for ESG practices through policy formulation and legislation. Industry organizations play a bridging and connecting role, promoting communication and collaboration between businesses and society. Educational institutions focus on spreading ESG concepts and cultivating talent, injecting continuous vitality into the ESG movement. The media and the public, through public opinion oversight and information dissemination, enhance the social influence and awareness of ESG. The report also highlights Shanghai's efforts in urban sustainable development, showcasing a comprehensive, coordinated, and sustainable development model. Through measures such as strengthened pollution control, water system management, and the promotion of smart city development, Shanghai has achieved significant results in improving urban environmental quality and the quality of life for its residents. Additionally, Shanghai has actively promoted the transformation and upgrading of traditional industries and the collaborative development of technological innovation with advanced manufacturing, laying a solid foundation for sustainable economic and social development.

Based on the issues and challenges faced in Shanghai's ESG practices, this report offers a series of recommendations for the future development of ESG in the city. At the policy level, first, the existing ESG regulatory policies and standard systems need to be further refined to ensure the effective guidance and incentivization of ESG practices. Second, the transparency and standardization of ESG information disclosure need to be enhanced. Specific disclosure content and indicators should be clearly defined to ensure the comprehensiveness and comparability of disclosed information, providing investors with more complete and accurate decision-making data. Third, there should be further optimization of policy support, increased fiscal incentives for green technology R&D, and the establishment of effective performance evaluation mechanisms to better motivate enterprises to enhance their ESG practices.

At the level of corporate ESG practices, to improve the quality and standards of ESG implementation, we recommend that Shanghai strengthen its guidance and support for enterprises, promote exchange and collaboration among companies on ESG practices, encourage the establishment of comprehensive ESG management systems and governance mechanisms, and enhance corporate ESG governance and information disclosure capabilities.

At the level of financial institutions' ESG services, we recommend enhancing the diversity and innovation of ESG financial products to meet the growing and diversified market demand. Additionally, it is important to strengthen the development of ESG professional talent teams to support further growth in ESG financial services. Furthermore, improving ESG risk management and evaluation processes is crucial to ensure the safe and effective allocation of funds.

At the level of the ESG market system, we recommend improving the mechanisms for collecting, integrating, and sharing ESG data, while strengthening international cooperation. Additionally, we suggest gradually refining ESG indices and rating systems to enhance their credibility and influence in global markets. Furthermore, it is recommended to bolster the construction of green finance and sustainable investment markets, providing more capital and channels for ESG investments.

At the level of Shanghai's ESG ecosystem development, we recommend the establishment of multi-tiered communication and collaboration mechanisms to promote information sharing and resource integration. There should also be a focus on the cultivation and introduction of ESG professionals to meet the rapidly growing market demand. Moreover, increased efforts should be made to raise awareness of ESG concepts and promote their adoption, thereby enhancing societal recognition and participation.

Finally, the report concludes by stating that Shanghai should strive to achieve the "Four Transformations" of ESG: the internalization of ESG business operations, standardization of ESG information disclosure, systematization of ESG evaluation frameworks, and concretization of ESG value realization. This approach is not only critical to Shanghai's sustainable development but also represents an important direction for advancing global ESG progress.

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Chapter 1: Background of ESG Development

In the 21st century business world, the rise of the ESG concept marks the emergence of a new development model. This model not only focuses on corporate economic performance but also emphasizes a company's actions in environmental protection, social responsibility, and good governance. The global development trajectory of this concept reflects society's increasing focus on sustainable development, while also revealing profound changes in financial markets and corporate behavior regarding environmental and social issues. From the moral investment principles rooted in religious beliefs to the rise of modern Socially Responsible Investing (SRI), and from global calls for action to the widespread dissemination of ESG education, the ESG concept has continuously evolved, ultimately becoming a key guide in driving companies toward long-term sustainable development. As global awareness of ESG deepens, different countries and regions have adopted diverse approaches to promote the application and development of ESG principles, creating distinct ESG practice pathways. Against this backdrop, China's ESG development exhibits unique characteristics, notably its close integration with national development strategies and the proactive actions taken by government, businesses, and institutions in the realms of environmental protection, social responsibility, and governance.

Section 1: The Concept of ESG and Global Development History

I. Origin and Evolution of the ESG Concept

ESG, which stands for Environmental, Social, and Governance, is an investment philosophy and corporate evaluation standard that focuses on a company's environmental, social, and governance performance rather than its financial performance. ESG comprises three key elements: Environmental (E), Social (S), and Governance (G)¹.

Based on ESG evaluation, investors can assess a company's performance in these three

Who Cares Wins: Connecting Financial Markets to a Changing World, United Nations, 2004

areas, determining how its actions contribute to economic sustainability, fulfillment of social responsibilities, and other related aspects (see Figure 1.1).

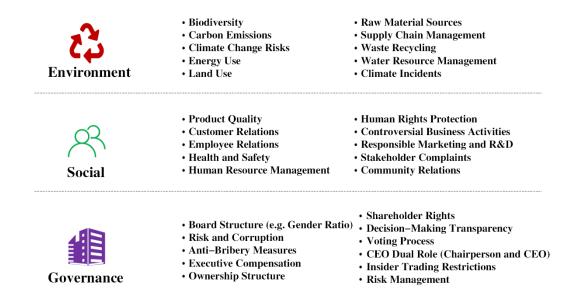


Figure 1.1: Key Components of ESG

Source: Compiled from publicly available materials

This report argues that ESG disclosures, ESG evaluation, ESG investment, and the ESG toolkit together form the ESG ecosystem. Overall, the ESG ecosystem encompasses a diverse range of stakeholders, including governments and regulatory bodies, businesses, financial institutions, third-party service providers, industry organizations, educational institutions, media, and the public (see Figure 1.2).

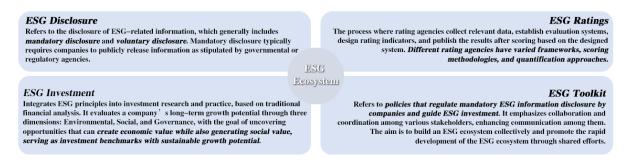


Figure 1.2: The ESG Ecosystem

Source: Compiled from publicly available materials

The concept of ESG originates from religious beliefs, environmental protection awareness, and business ethics. Over time, it has evolved into concepts such as SRI, corporate responsibility legislation, global action initiatives, ESG education, and ESG practices, ultimately forming the current understanding of ESG (see Figure 1.3).

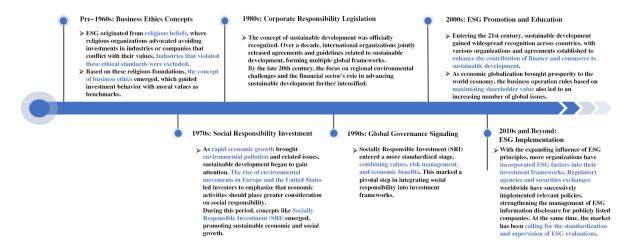


Figure 1.3: The Global Development History of the ESG Concept

Source: Compiled from publicly available materials

(I) 1960s and Before: Business Ethics

The ESG concept can trace its roots to religious beliefs. When religious principles became guiding tenets for investment, industries that engaged in activities contrary to religious doctrines were excluded. For example, some merchant groups in Western countries collectively agreed to principles such as refraining from unnecessary tree cutting, avoiding the manufacture of weapons, and not charging usury². These early concepts gradually evolved into business ethics, where moral values began to guide investment practices.

(II) 1970s: Socially Responsible Investment

As environmental pollution intensified with rapid economic growth, environmental issues gained increasing attention, sparking public environmental movements in Europe and the United States. Investors began to emphasize that economic activities should consider social responsibility, and the concept of SRI, which focused on the impact of business on the environment, gradually developed. The early definition of SRI included elements from ESG such as environmental concerns, ethics, and morality.

(III) 1980s: Corporate Responsibility Investment

In 1987, the United Nations officially defined "sustainable development" and proposed that social responsibility investment should incorporate environmental, social, and governance factors into the decision-making process while still aiming to achieve investment returns. This approach used strategies like negative screening, sustainability themes, and active shareholder engagement. In just a decade, the United Nations and other international organizations launched a series of initiatives related to sustainable development and established numerous international institutions. This movement significantly advanced sustainable development and also accelerated financial system reforms driven by the funding needs of sustainability.

(IV) 1990s: Global Call to Action

By the 1990s, SRI evolved into a modern form of social responsibility investment that integrated value-driven, risk, and return considerations. In 1990, the Domini 400 Social Index (the first ESG index) was introduced³. In 1992, the United Nations Conference on Environment and Development released *Agenda 21*, which discussed how to harmonize economic development with environmental protection. In 1997, the Kyoto Protocol was signed, prompting countries to set goals for addressing global warming. In 1999, the Dow Jones Sustainability World Index was launched, representing the top 10% of the largest companies in the S&P Global BMI Index based on long-term economic, environmental, and social standards.

(V) 2000s: ESG Education and Widespread Adoption

Entering the 21st century, sustainable development gradually moved from concept to action. While globalization fueled global economic prosperity, the shareholder value-maximization business model began to generate increasing externalities, making corporate governance a new dimension in assessing company value. In 2004, the United

³ Note: The Domini Index has since been renamed the MSCI KLD 400 Social Index, which is the first capital-weighted index tracking sustainable investments

Nations Global Compact (UNGC) and other leading organizations released the landmark report *Who Cares Wins*, which formally introduced the ESG concept. The report called for businesses to prioritize environmental protection, fulfill social responsibilities, and improve corporate governance.

(VI) 2010s and Beyond: Advancing ESG Practices

The influence of the ESG concept continued to expand, with more and more institutions integrating ESG factors into their investment frameworks. Regulatory bodies around the world developed related policies and standards to enhance ESG disclosure management. At the same time, businesses and institutions called for the standardization of ESG evaluation systems in response to the diversity of assessment models in the market. In 2023, the International Financial Reporting Standards (IFRS) Foundation launched the International Sustainability Standards Board (ISSB), which issued two new standards: *IFRS S1 General Requirements for Disclosure of Sustainability-Related Financial Information* (IFRS S1) and *IFRS S2 Climate-Related Disclosures* (IFRS S2). These standards further promoted the global alignment of sustainability reporting.

II. The Current Global Practice of ESG Development

As global attention to sustainable development deepens, countries and regions have adopted diverse methods to advance the application and development of ESG principles. These methods are tailored to each region's unique characteristics and development stage, exploring paths for ESG practices that are suitable for their specific contexts.

First, countries are promoting ESG development that is adapted to their local contexts. The European Union (EU) has implemented sustainable development goals through comprehensive legislation, investment, and talent development, with a focus on progressively raising corporate ESG disclosure requirements. The United States relies on international organizations and market forces to refine ESG legislation while encouraging bottom-up corporate practices. Japan employs a dual approach, combining policy guidance with market practices, with many regulations being voluntary initiatives that emphasize

corporate self-participation. **Singapore** focuses on building international consensus on ESG, adopting a "soft" strategy that emphasizes communication and context-specific solutions, gradually transitioning toward mandatory disclosures. **Hong Kong** emphasizes alignment with international standards and has made continuous revisions to its *Environmental*, *Social*, and *Governance Report*, shifting from voluntary to mandatory disclosures and emphasizing the principle of materiality while requiring the quantification of performance metrics.

Second, financing and investment are driving sustainable development. The EU is actively mobilizing financial resources for green investments, aiming to raise €1 trillion through policies like the *European Green Deal Investment Plan* (EGDIP). The U.S. has the largest ESG investment market, with sustainable investment assets totaling \$17.08 trillion in 2020, accounting for nearly half of the global total. Japan encourages businesses to disclose environmental information based on the *Task Force on Climate-Related Financial Disclosures* (TCFD) standards. Singapore supports the adoption of sustainable solutions by SMEs through green financial products and preferential financing rates. Hong Kong has fostered green financial innovation, such as assisting with the pricing of "Belt and Road" green bonds, with issuance exceeding \$40 billion.

Third, supporting the low-carbon transformation of key industries is a priority. The EU has introduced measures such as the EU Emissions Trading System (EU ETS) and carbon border adjustment mechanisms (carbon tariffs) to help industries transition toward sustainability. In the U.S., large financial institutions like JPMorgan Chase and BlackRock are using ESG screening strategies to drive sustainable transformations in businesses. Japan supports projects related to industrial transformation, green initiatives, and innovation while encouraging companies to disclose environmental information. Singapore is driving low-carbon transitions in high-carbon industries by offering integrated financing solutions. Hong Kong requires fund managers to consider climate-related risks in their investment and risk management processes, helping push the financial industry to meet higher ESG standards.

Fourth, building a robust ESG standards system is a key focus. The EU has made significant strides with regulations such as the *Non-financial Reporting Directive* (NFRD), the *Corporate Sustainability Reporting Directive* (CSRD), and the *European Sustainability*

Reporting Standards (ESRS), which have progressively standardized corporate ESG disclosures. In the U.S., guidance from organizations such as Nasdaq, the New York Stock Exchange, and the U.S. Securities and Exchange Commission (SEC) promotes ESG disclosures. International organizations like the Global Reporting Initiative (GRI) and the Sustainability Accounting Standards Board (SASB) provide frameworks for global ESG standards. Japan's ESG standards are focused on single-issue legislation, with various institutions offering guidance in specific sectors. Singapore has made ESG disclosures mandatory for listed companies through the Sustainability Reporting Guide, and is gradually enforcing mandatory climate-related financial disclosures. Hong Kong has progressively revised its Environmental, Social, and Governance Reporting Guidelines to enhance the mandatory nature of disclosures and align with international standards.

Finally, exploring further expansion of ESG practices remains a priority. The EU supports green skills training through specialized funds to reduce the ESG implementation costs for both businesses and the workforce. Initiatives like the European Social Fund+ and the Just Transition Mechanism provide substantial financial support for green skills development. In the U.S., market mechanisms and investor demand drive ESG practices, with corporate ESG investments primarily realized through market returns. Japan uses public financial tools like the Global Warming Countermeasure Tax to promote green finance and regulate the green finance market. Singapore assists SMEs and mid-sized companies by offering green loans and preferential financing rates. In Hong Kong, the *Pilot Green and Sustainable Finance Capacity Building Support Scheme* provides subsidies for individuals seeking careers in green and sustainable finance, contributing to the sector's development.

III. The Latest Global Trends in ESG Development

First, the ESG concept has achieved global consensus, and the relationship between nations in this regard has evolved into a "new normal" of competition and cooperation. Since 2016, over 2,000 ESG-related regulatory policies have been issued globally⁴. This

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⁴ Zhong, H. W. (2023). 多管齐下聚合力加快 ESG 中国化进程——对中国 ESG 现状的分析和展望 [Taking a multi-pronged approach to accelerate the localization of ESG in China: An analysis and outlook on China's ESG status]. China Economic Special Report.

concerted effort has accelerated the development of ESG, positioning it as a key driver of sustainable development and a vital area for institutional openness. As countries push forward with diversified standards and regulatory policies, they adhere to the principle of "seeking common ground while respecting differences," creating a shared consensus for advancing ESG while also safeguarding and strengthening their own influence and initiative in the ESG field.

Second, ESG practices are advancing in depth, with net-zero emissions in industries becoming a "new highlight." Driven by regulatory requirements from governments and industries, increased investor attention, and changing consumer demand, the focus has shifted to achieving net-zero emissions across supply chains. Green trade is emerging as a crucial means to balance economic growth with environmental preservation, encouraging businesses to produce and supply environmentally friendly products and services, thereby reshaping industrial and supply chain systems. Leading companies, with their market dominance and extensive supply chain networks, play a critical role in setting and promoting environmental standards, as well as in research and development. Their business decisions and ethical codes will also influence the actions of their supply chain and industry partners.

Third, ESG standards are evolving toward greater uniformity and transparency, with corporate reporting becoming a "new fashion." Countries are actively promoting the development of ESG disclosure and ESG rating standards, which are moving toward greater alignment and transparency under the coordination of international organizations. Issuing ESG reports has become a standard practice among the world's leading companies, with the disclosure rate steadily increasing. In 2022, the disclosure rate among global N100 companies reached 79%, a 15% increase from 2002. For G250 companies, the disclosure rate reached 96%, consistently remaining above 90% over the past decade⁵. New-generation information technologies are providing more precise, comprehensive, and real-time support for ESG disclosures and evaluations.

Fourth, ESG investment has gained increased capital attraction, with green assets becoming the "new trend" in investment. Under the guidance of the United Nations

⁵ KPMG: Global ESG Information Disclosure Survey (2022). "N100" represents the 100 largest companies in each sample country; "G250" represents the 250 largest companies in the Fortune 500.

Principles for Responsible Investment (UN PRI), by the end of 2023, 5,370 institutions had signed the UN PRI, committing to integrating ESG factors into their investment practices. The global assets under management by UN PRI signatories grew from \$6.5 trillion in 2006, the year of its establishment, to \$121.3 trillion in 2021, reflecting the broad global recognition and practice of ESG investment principles.

Fifth, the construction of the ESG system is becoming more comprehensive and practical, with a "new landscape" of multi-stakeholder collaboration in building the ecosystem. As ESG principles have been increasingly adopted, different stakeholders now have diverse expectations, demands, and points of focus, creating a collective drive for ESG development. Investors are concerned with the impact of ESG on long-term returns and risk management; suppliers and partners seek to collaborate with businesses that uphold good business ethics and comply with environmental regulations; and governments and regulatory bodies aim to drive corporate adherence to ESG principles through laws and standards. These varied concerns are profoundly influencing the formulation of ESG standards and corporate development strategies.

IV. Challenges Facing Global ESG Development

(I) Differences in Development Concepts

Firstly, there is a disparity in the level of attention paid to ESG. Under the 1.5°C and 2°C temperature control targets outlined in the *Paris Agreement*, different countries have varying attitudes toward these targets, as well as differing levels of enthusiasm in assuming responsibility. Moreover, countries are at different stages of ESG development: some have made significant progress in implementing ESG principles, while others are still in the early stages of ESG awareness. Secondly, there are differences in ESG priorities. Some countries view ESG as part of corporate social responsibility, while others consider it a key factor in investment decisions. Thirdly, there is the emergence of "anti-ESG" sentiment. In 2023, several Republican politicians in the United States proposed numerous "anti-ESG bills," reflecting the deepening divide and controversy over ESG principles in the country. This has led to a sharp decline in the launch of ESG-focused funds in the U.S., which stands

in stark contrast to the more stringent ESG regulations in Europe.

(II) Economic Growth Pressures

Firstly, global economic growth is slowing. The global economy is facing recession risks and increasing economic inequality, which places greater financial pressure on companies when implementing ESG measures. Secondly, high inflation and tightened monetary policies are compounding these economic pressures, making companies more cautious when allocating resources, and potentially leading to a reduction in investment in ESG initiatives. Thirdly, balancing ESG goals is difficult. Given that ESG measures may have negative short-term impacts on economic growth, some governments and businesses have developed resistance to ESG targets. For example, while India has adopted clean energy policies to reduce reliance on fossil fuels, it will still need to address the growing demand for energy in the future.

(III) Industry Transformation Challenges

Firstly, climate change is triggering financial risks. Climate risks are transmitted through the financial system, and the role of the financial sector in supporting climate risk management and low-carbon transition has become a global focus. Secondly, traditional industries face significant decarbonization pressures. Some traditional industries, such as energy, mining, and manufacturing, are struggling with ESG-related transformation challenges. Efforts to reduce environmental impacts in these sectors often result in higher costs and decreased competitiveness. Thirdly, the issue of supply chain emissions is a major challenge. Currently, only 20% of surveyed organizations integrate ESG metrics into their supply chain operations management⁶.

(IV) Lack of Infrastructure

Firstly, ESG disclosure standards still need further improvement and unification.

Although guidelines from organizations like the International Sustainability Standards Board

⁶ IBM Business Value Institute, 2023 ESG Data Challenges Research Report, 2023

(ISSB) provide globally comparable sustainable disclosure standards, there is still fragmentation across institutions, countries, and industries, making it difficult to establish a unified standard applicable to all companies. Secondly, there are differences in ESG evaluation methodologies and frameworks. Various ESG rating agencies have different evaluation focuses, exposure definitions, topic selections, weighting methods, data sources, and estimation techniques, leading to differing evaluation outcomes for the same company across different systems. Thirdly, the scope of ESG investment strategies remains limited. The performance of different ESG asset classes and products can vary significantly. There is also a lack of transparency and consistency in ESG data, and ESG investments often require long periods to realize their value, leading investors to remain skeptical about the correlation between ESG and investment returns, as well as the profitability of ESG investments.

(V) Barriers to Implementation Costs

Firstly, collecting and accounting for ESG data is challenging. Due to the broad scope of ESG, which covers information from all business lines and departments within a company, gathering and accounting for this data is a difficult and resource-intensive task, presenting significant challenges for companies when disclosing ESG information. Secondly, compliance costs are high. Some large corporations have shifted their supply chains from regions with high transparency requirements to those with lower or no mandatory disclosure requirements. Thirdly, there is a lack of talent and knowledge support. According to the Information Quality in China's Capital Market and the Information Transparency Index White Paper (2022) published by Peking University Guanghua School of Management, the primary obstacles for companies when incorporating ESG-related issues into strategic planning and operations include the lack of ESG reporting guidelines, insufficient personnel support, and a lack of knowledge and expertise in relevant topics.

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⁷ Lu, H., Peng, Q., Shin, J. E., & Yu, L. (2023). Migration of global supply chains: A real effect of mandatory ESG disclosure. Available at SSRN 4581611.

Section 2: Overview of China's ESG Development

I. Evolution of China's ESG Policies

China's ESG development began relatively late, but it has made significant progress in recent years. China's ESG policies encourage companies to consider the environmental and social impacts of their business operations, as well as the effectiveness of corporate governance. These policies reflect China's positive response and support for the ESG concept and contribute Chinese wisdom and solutions to global sustainable development. The evolution of China's ESG policies can be summarized into four stages, as shown in Figure 1.4.

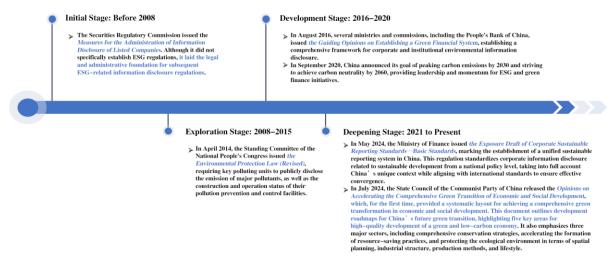


Figure 1.4: China's ESG Policies Evolution: Initial, Exploratory, Developmental, Deepening Stages Source: Compiled from publicly available materials

Initial Stage (Before 2008): Before 2008, China's ESG development primarily involved the initial establishment of policies and regulations. Corporate disclosure on environmental and social responsibilities was mostly voluntary, but it gradually moved toward institutionalization and standardization.

Exploratory Stage (2008-2015): From 2008 to 2015, China's ESG-related policies and regulations gradually improved, and information disclosure mechanisms were standardized and strengthened. Both mandatory and voluntary disclosure systems were implemented, driving corporate ESG development.

Development Stage (2016-2020): Between 2016 and 2020, China's ESG policies and top-level designs were progressively refined. A mandatory information disclosure system was

established, green finance and investment were strongly promoted, and alignment with international standards advanced in an orderly manner. Information disclosure and evaluation mechanisms were continuously enhanced, contributing to a comprehensive improvement in ESG development.

Deepening Stage (2021-Present): Since 2021, ESG policies and regulations have been further refined. Green finance and ESG investment have developed synergistically, while information disclosure and evaluation mechanisms have been progressively strengthened. International cooperation and alignment with global standards have been achieved, and carbon neutrality targets are being progressively implemented. The requirements for corporate social responsibility have increased, leading to further deepening of ESG development.

II. Characteristics of China's ESG Development

China's attention to key ESG issues has its own distinctive features. In terms of the environment, China has set the goals of "peaking carbon emissions by 2030 and achieving carbon neutrality by 2060." The "carbon peaking and carbon neutrality goals" drive companies to take active action in environmental governance. Policies such as the revision of the *Environmental Protection Law of the People's Republic of China* by the 12th Standing Committee of the National People's Congress and the *Measures for the Administration of Carbon Emissions Trading (for Trial Implementation)* issued by the Ministry of Ecology and Environment have further promoted corporate practices in environmental protection and pollution control.

Regarding **social responsibility**, China emphasizes achieving common prosperity, and companies are increasingly focusing on poverty alleviation, rural revitalization, and social welfare projects—such as education, healthcare, and infrastructure development—when fulfilling their social responsibilities. These initiatives help improve the living conditions in impoverished areas and enhance corporate social image, while also boosting employee satisfaction and a sense of belonging.

In the area of corporate governance, China places great importance on the leadership

role of state-owned enterprises (SOEs). In recent years, central SOEs have served as models for ESG information disclosure and governance structure optimization. Meanwhile, Chinese companies have widely adopted digital tools to improve corporate governance efficiency and transparency, thereby promoting the sustainable development of supply chains.

China's focus on key ESG issues is not only evident in the proposed concepts and goals, but also in the implementation and deepening of a series of policies, regulations, and practical activities. In recent years, ESG practices in China have developed rapidly, with substantial growth in investment, frequent regulatory actions, orderly progress in evaluations, continuous deepening of exchanges, and a growing awareness among companies. Information disclosure rates have also steadily increased. Overall, China's ESG practices have entered the deepening development phase 2.0, marked by four main characteristics.

In China, the synergy between infrastructure development and practical ESG activities is advancing through the strengthening of policy frameworks and the growth of corporate ESG reporting. In terms of infrastructure, policy promotion and regulatory frameworks are progressively being improved. The Chinese government, through a series of policy documents, such as the *Guidelines for Establishing the Green Financial System* jointly issued by seven ministries including the People's Bank of China and the Ministry of Finance, is driving the construction of a green financial system covering banking, securities, insurance, and other sectors. At the same time, the ESG evaluation system is being continually improved. China is referencing the latest international standards to build a distinctive ESG national standard with Chinese characteristics. In terms of practical activities, ESG initiatives have significantly grown. As of May 11, 2024, 2,094 A-share listed companies had disclosed their 2023 ESG reports, with a disclosure rate of 39.05%. By June 2024, more than 95% of centrally-controlled listed state-owned enterprises had made specific or related ESG disclosures.

The development of policy frameworks and market mechanisms is aligning to create a unified push for the growth of ESG in China. In recent years, China's ESG ecosystem has moved from its nascent stage to maturity, with active participation from various ecosystem stakeholders. ESG data, ratings, and index services have rapidly developed in the market. In terms of policy promotion, major policies have been released in recent years,

such as Opinions of the Central Committee of the Communist Party of China and the State Council on Accelerating the All-round Green Transformation of Economic and Social Development issued by the Central Committee of the Communist Party of China State Council, Guiding Opinions of the State Council and the State-owned Assets Supervision and Administration Commission on Fulfilling Social Responsibilities According to High Standards by Central Enterprises in the New Era issued by the State-owned Asset Supervision & Administration Commission of the State Council, and Letter of the General Office of the Ministry of Finance on Requesting Public Comments on the Corporate Sustainability Disclosure Standards—Basic Standards (Exposure Draft) issued by the Ministry of Finance. The Shanghai Stock Exchange (SSE), Shenzhen Stock Exchange (SZSE), and Beijing Stock Exchange (BSE) have also released the Issuing the Self-Regulatory Guidelines for Companies Listed—Sustainability Report (For Trial *Implementation*). In terms of market mechanisms, significant progress has been made in the construction of China's carbon market. By the end of 2023, the national carbon emission trading market had accumulated a transaction volume of 442 million tons, with a total transaction value of 24.919 billion yuan, covering over 40% of the nation's carbon dioxide emissions. It has become the largest carbon market in the world⁸.

The ESG ecosystem in China thrives through the coordinated efforts of multiple stakeholders, including government, enterprises, investors, and the media. The functioning of the ESG ecosystem requires the coordination and cooperation of multiple stakeholders, including the government, enterprises, investors, third-party service providers, industry organizations, and the media. Industry associations and professional institutions play a key role in promoting the formulation and implementation of ESG standards. For example, institutions such as the State Power Investment Corporation, the China ESG Research Institute at Capital University of Economics and Business, and GCL Energy Technology jointly developed China's first industry-specific ESG group standard, the *Energy Enterprises ESG Disclosure Guidelines*. The media promotes corporate ESG practices and role models, driving the development of ESG initiatives in China. For instance, Sina Finance has

⁸ Ministry of Ecology and Environment, National Carbon Market Development Report (2024)

established the Global ESG Leaders Conference, collaborating with leading ESG companies and partners to promote the development of ESG investment in China's asset management industry.

China's ESG practices are developing in tandem with global trends, integrating international standards with local context. The policy documents issued by government departments and capital market regulators are aligned with international standards and practices. Other stakeholders are also actively exploring localized ESG implementation pathways. For example, the Ministry of Finance follows the general approach of "actively learning from others, prioritizing our own practices, embracing diverse approaches, and highlighting unique characteristics." On the one hand, it draws on the valuable experiences of the two international sustainability disclosure standards issued by the International Sustainability Standards Board (ISSB), particularly IFRS S1. On the other hand, it adheres to Chinese characteristics and makes corresponding provisions based on the country's realities in the Letter of the General Office of the Ministry of Finance on Requesting Public Comments on the Corporate Sustainability Disclosure Standards—Basic Standards (Exposure Draft). By the end of 2023, the number of Chinese signatories to the United Nations Principles for Responsible Investment (UN PRI) reached 139, setting a new historical record.

III. Comprehensive Impact and Significant Achievements of ESG Development in China

Through policy guidance and market mechanisms, China has promoted the overall socio-economic system to develop in a more sustainable direction, producing a series of impacts on relevant entities. These policies have not only driven the transformation of corporate models but also facilitated China's shift from high-speed growth to high-quality development, aligning with the goals of carbon peaking and carbon neutrality.

First, the enforcement of policies and regulatory efforts have been further strengthened. The Chinese government continues to enhance the execution and supervision of ESG policies to ensure effective implementation and to penalize violations. At the local level, multiple provinces and cities have introduced ESG policies with local characteristics

based on the national framework. For example, Shanghai's green finance policies and Shenzhen's green building standards have promoted the green transformation of the economy. Simultaneously, enterprises and the government emphasize carbon footprint management, actively participating in global carbon reduction actions through carbon trading and carbon sink projects.

Second, the capital market's emphasis on ESG continues to increase. With the promotion of ESG concepts, Chinese investors' awareness and demand for ESG investments have been growing, prompting asset management companies and financial institutions to develop more ESG investment products and services. According to the Asset Management Association of China, as of the end of 2022, the number of ESG-themed public funds exceeded 200, with assets under management surpassing RMB 200 billion, reflecting investors' initial recognition of ESG investment principles.

Third, the supply of green financial products continues to innovate. Policies have driven innovation in financial products such as green credit and green bonds. In 2022, local green financial development in China was active, with 23 cities (districts) becoming the country's first batch of climate investment and financing pilots. The Executive Committee of the Yangtze River Delta Ecological Green Integrated Development Demonstration Zone, together with banking and insurance regulatory departments, ecological environment departments of the two provinces and one city, and the governments of the two districts and one county, jointly issued local policies like the *Implementation Opinions on Green Insurance in the Yangtze River Delta Ecological Green Integrated Development Demonstration Zone*, playing a pivotal role in exploring and practicing green finance⁹. Additionally, China's carbon emissions trading market has provided a market-driven incentive mechanism for carbon reduction.

Fourth, global collaborative development of ESG continues to advance. China actively participates in international ESG cooperation and exchanges, such as encouraging enterprises to join the United Nations Principles for Responsible Investment (UN PRI) and participating in the G20 Sustainable Finance Working Group. China and the European

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⁹ Social Value Investment Alliance, China Asset Management Co, Ltd. China ESG Development and Innovation White Paper 2022, 2022.

Commission's Financial Services and Capital Markets Council jointly released the *Common Ground Taxonomy - Climate Change Mitigation*, enhancing the consistency of global ESG standards and practices. China promotes the integration of technological innovation with ESG, providing new tools and methods for the collection, analysis, and management of ESG information in emerging technology fields like artificial intelligence, big data, and blockchain.

Fifth, corporate participation in ESG has further increased. The quality of companies' ESG information disclosure has gradually improved, with greater emphasis on disclosing material topics and applying quantitative indicators. Chinese companies' attention to ESG information disclosure continues to rise, with disclosure rates increasing year by year. At the listed company level, as of May 2024, a total of 2,094 A-share companies disclosed their 2023 ESG reports, with a disclosure rate of 39.05%, an increase of 2.68 percentage points year-on-year¹⁰. At the central state-owned enterprise (SOE) level, over 95% of central SOE-controlled listed companies have implemented ESG-specific disclosures or related disclosures to date¹¹.

Sixth, reforms in corporate governance structures have further accelerated. Driven by policies, companies have begun to place more emphasis on improving internal governance structures, including enhancing transparency, strengthening risk management, and optimizing decision-making processes. Many enterprises have integrated ESG concepts into their development strategies, promoting ESG practices through green supply chain management and the application of energy-saving and emission-reduction technologies. Furthermore, companies have increased investment in social responsibility projects such as education support, public health, and community development, enhancing their social image and contributing to overall social welfare.

Seventh, the demand in the ESG talent market continues to expand. Numerous universities and research institutions in China have established ESG-related courses and training programs to cultivate professional talent, meeting the market's demand for ESG knowledge and skills. In the past year, newly posted ESG positions increased by over 60%

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¹⁰ Data sourced from Wind.

¹¹ "Disclosure Rate Exceeds 95%; Central SOE-Controlled Listed Companies Vying to Answer the ESG 'Exam'." *China Securities Journal*, 2024.

year-on-year, with an average annual recruitment salary exceeding RMB 310,000. ESG-related positions in the data industry offer competitive salaries, with junior ESG data analysts earning annual salaries between RMB 150,000 and RMB 300,000, while experienced senior analysts or consultants may earn over RMB 600,000 per year¹².

Section 3: Overview of ESG Development Status in Key Regions Nationwide

Beijing, the Guangdong-Hong Kong-Macao Greater Bay Area, and the Yangtze River Delta region each have distinct characteristics and focal areas in ESG development. Beijing emphasizes information disclosure and the construction of standard systems; the Greater Bay Area highlights pioneering green finance practices; and the Yangtze River Delta values the collective efforts of listed companies and regional sustainable development. Within the Yangtze River Delta, Shanghai stresses alignment with international standards and the leading role of state-owned enterprises (see Table 1.1).

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¹² "Disclosure Rate Exceeds 95%; Central SOE-Controlled Listed Companies Vying to Answer the ESG 'Exam'." *China Securities Journal*, 2024.

Table 1.1: Comparison of ESG Development in Key Regions

Region	Background of ESG Development	Characteristics of ESG Development
Beijing	One of the regions with the most comprehensive ESG ecosystem nationwide,	Emphasizes information disclosure and the establishment and improvement of ESG
	attracting numerous international organizations and multinational companies to set up offices. The municipal government attaches great importance to ESG development and has released the <i>Implementation Plan for Promoting High-Quality Development of the Environmental, Social, and Governance (ESG) System in Beijing (2024-2027).</i>	standard systems. Leads the nation in information disclosure rates, promotes an ESG rating system with Chinese characteristics, supports the application of ESG in government investment and procurement, and possesses a complete ESG ecosystem.
Guangdong-Hong Kong-Macao Greater Bay Area	One of China's most open and economically vibrant regions, home to carbon exchanges in Shenzhen and Guangzhou and the Sustainable and Green Exchange in Hong Kong. Green finance policies have been introduced successively.	Strong policy support; Hong Kong leads in green and sustainable finance, while Shenzhen and Guangzhou have made significant progress in green finance. The region has formed multiple ESG-related industrial clusters, and corporate ESG information disclosure levels have been improving year by year.
Yangtze River Delta Region	The Yangtze River Delta is one of China's most economically active, open, and innovative regions, with a solid economic foundation and industrial system. Under the impetus of the national "dual carbon" strategy and sustainable development strategy, the region is actively promoting ESG development. Shanghai, as an international financial center, is actively building an ESG investment system aligned with international standards, promoting the greening path in the financial sector.	Listed companies in the Yangtze River Delta show strong momentum in overall ESG development. They continue to make significant achievements in leading high-quality industrial development through low-carbon transformation, addressing climate change, expanding employment and stabilizing jobs, promoting agricultural and rural modernization, and enhancing corporate ESG management.
Shanghai	Shanghai is China's economic center and an international financial center, boasting strong financial infrastructure and a complete industrial system. Centered around the "dual carbon" strategy, multiple policies and action plans have been introduced.	Focuses on foreign-related enterprises and state-controlled listed companies, issuing the nation's first regional ESG action plan to enhance the ESG capabilities of foreign-related enterprises. Significant progress has been made in information disclosure, promoting the development of green and sustainable finance, launching multiple ESG-related indices, and attracting a large number of ESG-related institutions.

Source: Compiled from publicly available materials

I. Beijing: Striving to Build a National High Ground and an Internationally Representative City for ESG Development

In ESG development, Beijing emphasizes the importance of information disclosure and is committed to establishing and improving ESG standard systems. From the perspective of information disclosure, Beijing leads the nation. As of the end of 2023, the number of Beijing-listed companies (including A-shares and H-shares) that independently disclosed ESG reports reached 363, with a disclosure rate of 56%. In March 2024, the Beijing Municipal Development and Reform Commission released the *Implementation Plan for Promoting High-Quality Development of the Environmental, Social, and Governance (ESG) System in Beijing (Exposure Draft)*, proposing to strive to increase this proportion to about 70% by 2027.

Regarding rating systems, Beijing is promoting the establishment of an ESG rating system with Chinese characteristics and Beijing-specific features that are internationally comparable, aiming to enhance the professional capabilities and rating quality of rating agencies. In terms of practice and innovation, Beijing supports the application of ESG in government investment and procurement, promotes ESG investment and financing practices, and advances ESG collaborative development in the Beijing-Tianjin-Hebei region. Concerning the ecosystem, Beijing has initially formed a unique ESG ecosystem. International organizations such as the International Sustainability Standards Board (ISSB) and the Carbon Disclosure Project (CDP) have set up offices here, and the city has gathered headquarters of many large banks, funds, and insurance institutions.

II. Guangdong-Hong Kong-Macao Greater Bay Area: Promoting Innovative Practices in Green Finance

The Guangdong-Hong Kong-Macao Greater Bay Area leverages its resource endowments to continuously advance innovative development in green finance practices. As one of China's most open and economically dynamic regions, the Greater Bay Area holds significant strategic importance in the nation's pursuit of high-quality sustainable

development. In terms of **policy support**, the "14th Five-Year Plan" explicitly proposes to promote green finance and ESG development in the region. The area hosts the Shenzhen Emissions Exchange, the Guangzhou Emissions Exchange, and the Guangzhou Futures Exchange, and can connect with international carbon markets through Hong Kong's Sustainable and Green Exchange (STAGE). Regarding **financial innovation**, Hong Kong, as an international financial center, launched the three-year *Green and Sustainable Finance Grant Scheme* in May 2021, providing subsidies for eligible green and sustainable bonds and loans issued in Hong Kong to promote the sector's development. In 2023, Hong Kong's issuance of green and sustainable bonds ranked first in the Asia-Pacific region, exceeding \$50 billion. In May 2024, the Hong Kong Monetary Authority extended the GSF Grant Scheme by three years to 2027 and updated guidelines to expand the scope of subsidies, adding transition bonds and loans as eligible financial instruments.

Guangdong Province has also made significant progress in green finance. In June 2022, the General Office of the People's Government of Guangdong Province issued the Implementation Plan for Developing Green Finance to Support Carbon Peak Actions in Guangdong Province, proposing to continuously deepen green financial reforms, guide listed companies to voluntarily disclose carbon emission information, and innovate ESG evaluation system products. Shenzhen introduced mainland China's first green financial laws and regulations. In 2024, Guangdong's Green Finance Reform and Innovation Promotion Cases were publicly released at the Financial Expo, with 50 cases shortlisted covering multiple fields. Regarding industrial clustering, the Greater Bay Area has formed ESG industrial clusters, including financial services, communication electronics, and new energy vehicle industries, providing a solid foundation for ESG development in the region. In terms of **information disclosure**, the ESG reporting levels of enterprises within the Greater Bay Area have been improving year by year, with an average annual growth rate of about 40% from 2019 to 2021. Internationally, the Greater Bay Area has attracted numerous international organizations and multinational companies to set up offices and carry out ESG practices, fostering a favorable atmosphere for global collaboration.

III. Yangtze River Delta Region: Strong Momentum in the Overall ESG Development of Listed Companies

In recent years, listed companies in the Yangtze River Delta have continued to make significant efforts and achieved remarkable results in leading high-quality industrial development through low-carbon transformation, addressing climate change, expanding employment, promoting agricultural and rural modernization, and enhancing corporate ESG management. In green and low-carbon transformation, these companies have performed outstandingly, with over 90% of the "Yangtze River Delta Pioneer 50" enterprises investing in new green and low-carbon sectors and actively promoting the development of green industries. Regarding climate change, nearly 60% of these enterprises have formulated goals, strategies, and action plans to tackle climate issues. In terms of employment and social responsibility, they excel in stabilizing jobs and fulfilling social duties, employing over 1.3 million people. By creating job opportunities and supporting employment for key groups, these companies have promoted regional economic stability and development.

In **technological innovation and rural revitalization**, enterprises in the region have advanced agricultural and rural modernization through innovation, with approximately 20 companies disclosing investments in rural revitalization totaling about 120 million yuan. Concerning the systematic construction of ESG management, 90% of the "Yangtze River Delta Pioneer 50" enterprises have established ESG committees or leadership groups; nearly 70% have set up **ESG management methods and systems**; and over 60% have conducted ESG training. These measures enhance their adaptability and resilience to risks on the path to sustainable development¹⁴.

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¹³ The Yangtze River Delta ESG Action Report (2024), released by China Media Group, selected 972 listed companies as the sample space. From these, 279 listed companies in the Yangtze River Delta were chosen for research and evaluation, leading to the compilation of the "Top 50 ESG Pioneer Listed Companies in the Yangtze River Delta (2024)" list (referred to as the "Yangtze River Delta Pioneer 50").

¹⁴ Yangtze River Delta ESG Action Report (2024)

IV. Shanghai: Accelerating the Formation of an ESG Ecosystem with Coordinated Development Among All Parties

As the "leader" of the Yangtze River Delta region and China's economic center and international financial center, Shanghai possesses strong financial infrastructure and a complete industrial system, providing favorable conditions for promoting ESG development. It holds an important strategic position in the nation's pursuit of high-quality sustainable development. Unlike other regions, Shanghai focuses on the pioneering role of foreign-related enterprises and state-controlled listed companies in ESG development, accelerating the formation of an ESG ecosystem with coordinated development among all parties. In terms of policy support, Shanghai has centered around the "dual carbon" strategy and has successively issued seven versions of business environment action plans, covering multiple aspects such as labor and employment, financial services, and promoting market competition. In February 2024, the Shanghai Municipal Commission of Commerce formulated and issued the Action Plan for Accelerating the Improvement of Environmental, Social, and Governance (ESG) Capabilities of Foreign-related Enterprises in Shanghai (2024 - 2026) (hereinafter referred to as the Action Plan), which is the nation's first regional ESG action plan. It comprehensively covers the ESG capacity building of various types of enterprises, emphasizing the cultivation of professional service institutions, strengthening publicity and promotion, and establishing service systems. In March 2024, the General Office of the Shanghai Municipal People's Government issued the Action Plan for Accelerating the Establishment of a Product Carbon Footprint Management System and Building a Green and Low-Carbon Supply Chain in Shanghai. In June 2024, the CN100 Green and Low-Carbon Supply Chain Leading Enterprise Alliance was officially established at the Shanghai Carbon Neutrality Expo, emphasizing the role of leading enterprises in key industries to drive and promote the formation of a market-oriented, virtuous-cycle green and low-carbon supply chain.

From the perspective of **information disclosure**, Shanghai has made significant progress in ESG reporting. The Shanghai State-owned Assets Supervision and Administration Commission of the State Council released the *Three-Year Work Plan for ESG Construction of*

Shanghai State-Controlled Companies (2023–2025), promoting the establishment of the "Four Ones" work objectives, including formulating one set of indicator systems, constructing one work mechanism, forming one batch of outstanding enterprises, and building one shared ecosystem.

Regarding **financial innovation**, as an international financial center, Shanghai focuses on building an ESG investment system that aligns with international standards, actively integrating into the international discourse, and taking the lead in exploring the "greening" path in the financial sector. The Shanghai Stock Exchange has launched multiple ESG-related indices, such as ESG40, ESG100, and 180ESG, providing investors with diverse choices and reference indicators.

In terms of **industrial clustering**, Shanghai has gathered a large number of ESG-related rating agencies, professional service providers, and index companies. Institutions such as the Shanghai Environment and Energy Exchange Co. Ltd (hereinafter referred to as "Shanghai Environment and Energy Exchange") and the National Green Development Fund have also settled in Shanghai, laying a foundation for the promotion and deepening of ESG.

In the process of building and improving the ESG ecosystem, Shanghai, with its unique geographical advantages, significant economic status, and strong financial capabilities, is gradually becoming a center of diversified cooperative forces that jointly promote the close integration of ESG concepts and practical operations. Participants include government agencies at all levels, various market entities, financial institutions, professional service providers, as well as a broad range of investors and consumer groups. Each plays an indispensable role in this closely connected ESG development network.

In the subsequent chapters, we will explore the key players within Shanghai's ESG ecosystem in depth, outlining their roles, functions, and the significant contributions they make towards the advancement of ESG initiatives. This includes enterprises' practical explorations, financial institutions' innovative services, the foundational support of market systems, knowledge and technical support from professional service institutions, policy guidance at the government level, standard-setting and promotion by industry organizations, talent cultivation by educational institutions, and concept promotion by the media. Participants contribute to ESG development uniquely.

Chapter 2: ESG Practices among Enterprises in Shanghai

Enterprises are the micro-level agents that implement and promote ESG development, playing a core role in Shanghai's ESG progress. Shanghai enterprises have demonstrated outstanding innovation and execution in ESG practices. Not only have they optimized internal management to enhance risk management capabilities and market resilience, but they have also boldly explored sustainable products and services, providing the market with more environmentally friendly options while boosting their own brand value and market competitiveness. Additionally, Shanghai enterprises value the development of human capital, enhancing employees' ESG awareness and capabilities through training, injecting new vitality into both the enterprise and society. They actively participate in international ESG cooperation, continuously improving management levels and contributing unique Shanghai wisdom and strength to global sustainable development.

The exploration and achievements of Shanghai enterprises in ESG practices have not only promoted their own sustainable development but have also made significant contributions to social progress and the global sustainable development process. Therefore, an in-depth examination of the current state of ESG practices among Shanghai enterprises is of great significance for comprehensively understanding the overall development of Shanghai's ESG ecosystem.

Section 1: Overview of ESG Practices among Enterprises in Shanghai

I. Classification by Listing Status and Ownership Nature

In Shanghai, **listed state-owned enterprises** are at the forefront of ESG practices. They excel not only in the proportion of ESG report releases and carbon emission information disclosure but also in enhancing governance efficiency through strengthened party building and internal governance structures. Although **listed non-state-owned enterprises** started slightly later, they have shown a rapid growth trend in the number of ESG reports released

and the disclosure of key topics in recent years, indicating a strong increase in ESG awareness and a catching-up momentum. **Non-listed SOEs**, while at the initial stage of ESG practices, have made preliminary achievements in corporate governance and environmental responsibility through party leadership and institutional reforms. **Non-listed non-state-owned** enterprises, driven by innovation—especially specialized and innovative enterprises and foreign-funded companies—have demonstrated a positive attitude and effectiveness in ESG practices, making significant efforts to enhance market competitiveness and brand image.

Overall, various types of enterprises are promoting ESG practices to varying degrees, reflecting a common pursuit of sustainable development.

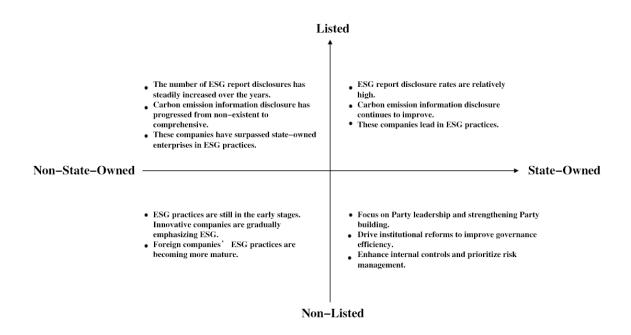


Figure 2.1 Characteristics of ESG Practices Among Shanghai Enterprises: Classified by Listing Status and Ownership Nature

(I) Listed State-Owned Enterprises: Leaders in Information Disclosure, Continual Deepening of ESG Practices

Listed SOEs have outstanding performance in ESG information disclosure. In 2017, 54 SOEs released ESG reports¹⁵, accounting for 43.2%, surpassing the Shanghai-listed

¹⁵ In this chapter, "ESG reports" refer to broad ESG reports, meaning any non-financial reports containing environmental,

companies' average level of 19.09%. By 2023, this proportion had risen to 77.6%, far exceeding the Shanghai-listed companies' average of 47.95% (see Figure 2.2).

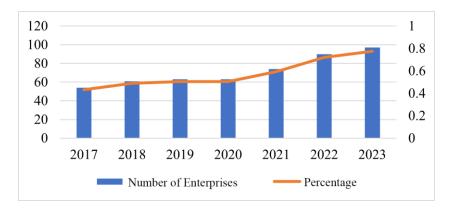


Figure 2.2 Release of ESG Reports by State-Owned Enterprises

Data Source: iFind, compiled and analyzed by Shanghai Environment and Energy Exchange

In terms of carbon emission information disclosure, listed SOEs also perform excellently. In 2017, 32 SOEs disclosed carbon emission information, accounting for 25.6%. This number increased annually, reaching 60 companies (48%) by 2022. Although it slightly decreased to 57 companies (45.6%) in 2023, it still remained above the average level of Shanghai-listed companies (see Figure 2.3).

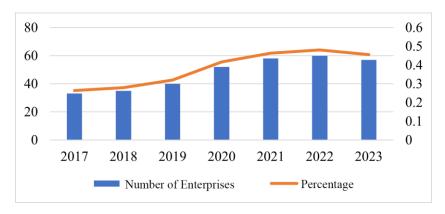


Figure 2.3 Disclosure of Carbon Emission Information by State-Owned Enterprises

Data Source: Refinitiv Eikon, compiled and analyzed by Shanghai Environment and Energy Exchange

The proportion of ESG report releases and the degree of key topic disclosures among listed SOEs have steadily increased. From 2018 to 2023, the compound annual growth rate of SOEs releasing ESG reports was 10.25%, with a growth rate of 21.62% in 2022. The proportion of carbon information disclosure also grew at an annual rate of 10.1% during the same period, especially in 2020, when the growth rate reached 33.33%, indicating a

significant increase in attention to ESG issues among listed SOEs (see Figure 2.4).

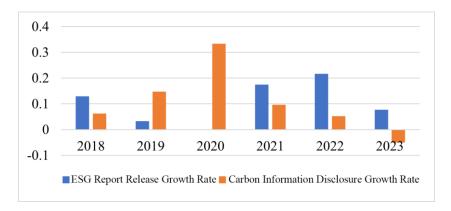


Figure 2.4 Changes in Growth Rates of ESG Report Releases and Carbon Emission Information
Disclosure by State-Owned Enterprises

Data Source: iFind, compiled and analyzed by Shanghai Environment and Energy Exchange

In summary, listed SOEs outperform the Shanghai average in both the number of ESG reports released and carbon emission information disclosure. These performances may benefit from earlier policy requirements and normative guidance on ESG information disclosure and practices for listed companies and SOEs. While adhering to disclosure guidelines from stock exchanges, listed SOEs also need to strengthen high-level ESG information disclosure in accordance with the requirements of the State-owned Assets Supervision and Administration Commission of the State Council, continuously enhancing ESG governance capabilities and performance levels to increase value recognition in the capital market.

(II) Listed Non-State-Owned Enterprises: Rapid Growth in ESG Reports, Enormous Development Potential

As an important component of Shanghai-listed companies, non-state-owned enterprises, although currently not matching SOEs in ESG practices, have already shown significant potential for improvement and growth trends.

The number of ESG reports released by listed non-state-owned enterprises has steadily increased since 2020. In 2017, 30 listed non-state-owned enterprises released ESG reports, accounting for 9.49%. There was a slight decline between 2018 and 2019, with 26 companies releasing ESG reports, accounting for 8.23%. However, starting from 2020, the number of ESG reports began to grow steadily, reaching 46 companies (14.56%) by 2023 (see Figure 2.5).

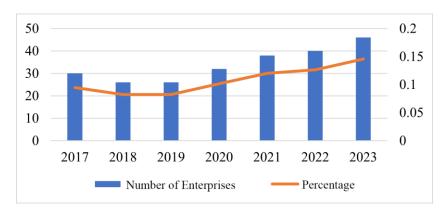


Figure 2.5 Release of ESG Reports by Non-State-Owned Enterprises

Data Source: iFind, compiled and analyzed by Shanghai Environment and Energy Exchange

Initially, listed non-state-owned enterprises underperformed in disclosing carbon emission information but made significant improvements in subsequent years. In 2017, only two companies disclosed carbon emission information, accounting for just 0.63%. By 2023, the number of companies disclosing carbon emission information had increased to 18, accounting for 5.7% (see Figure 2.6).

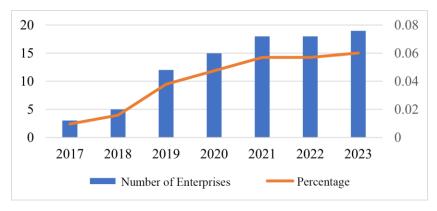


Figure 2.6 Disclosure of Carbon Emission Information by Non-State-Owned Enterprises

Data Source: Refinitiv Eikon, compiled and analyzed by Shanghai Environment and Energy Exchange

Although there remains a considerable gap between listed non-state-owned enterprises and SOEs in terms of the proportion of ESG report releases and the degree of key topic disclosures, their growth rate is noteworthy. From 2018 to 2023, the CAGR of companies releasing ESG reports was 7.38%, with the highest growth rate of 23.08% in 2020. The CAGR of ESG report coverage was 44.22%, reaching an annual growth rate of 175% in 2019 (see Figure 2.7).

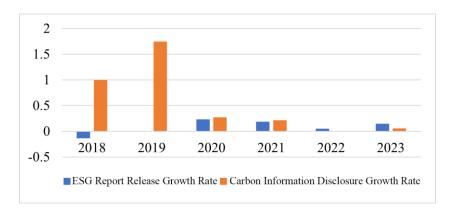


Figure 2.7 Changes in Growth Rates of ESG Report Releases and Carbon Emission Information
Disclosure by Non-State-Owned Enterprises

Data Source: iFind and Refinitiv Eikon, compiled and analyzed by Shanghai Environment and Energy Exchange

These data reflect the rapidly increasing awareness of ESG among listed non-state-owned enterprises, which are catching up with SOEs at a high speed, showing enormous potential for development and improvement in practice and information disclosure. As the understanding of ESG importance deepens, it is expected that they will make more significant progress in ESG practices in the future.

(III) Non-Listed State-Owned Enterprises: Actively Responding to National Strategies, Continuous Innovation in ESG Practices

In Shanghai, group companies constitute a significant proportion of non-listed state-owned enterprises. Many large groups, although they have listed subsidiaries, typically include non-listed segments as well. These non-listed portions often involve the group's core businesses or other strategic assets, playing a crucial role in the group's overall operations. These non-listed state-owned enterprises span multiple key industries and sectors, such as energy, infrastructure construction, transportation, and comprehensive services. This unique background endows Shanghai's non-listed state-owned enterprises with distinctive characteristics in management and operational models. They not only pursue economic benefits but also fulfill social responsibilities, ensuring that their business activities align with national development strategies and societal needs.

Shanghai's non-listed state-owned enterprises, in their exploration and practice of social responsibility and ESG initiatives, generally reflect a positive response to national strategies, demonstrating efforts and innovation on the path to sustainable development. These

enterprises not only exhibit a proactive attitude toward ESG concepts but have also achieved preliminary results in practice.

In terms of social responsibility, these enterprises strive to closely integrate their main businesses with social obligations, actively supporting national strategies such as rural revitalization and technological innovation to promote the country's overall development. Regarding environmental protection, they place greater emphasis on energy conservation, emission reduction, and ecological preservation than before, making progress especially in low-carbon development. In corporate governance, they adhere to party leadership and respond to state-owned enterprise reforms by improving governance structures through measures like introducing independent directors and optimizing decision-making mechanisms. These steps strengthen internal control and risk management, enhancing transparency and efficiency in governance.

In ESG investment and financing, these enterprises actively explore relevant development paths. Although at an initial stage, they have already implemented numerous innovative initiatives. For example, subsidiaries under the Baowu Group have explored mechanisms linking industry and investment, combining the construction of industrial ecosystems with the goals of carbon peaking and carbon neutrality. They leverage equity investments to directly support industrial upgrading and development, promoting innovative growth in carbon-neutral green industries through the efficient operation of green financial capital. Simultaneously, they effectively facilitate the enterprises' green transformation by issuing green funds, exploring private equity investments that link industry and investment, implementing carbon sink expected income right pledge loans, and issuing low-carbon transition green bonds—innovative financial instruments.

The ESG practices of Shanghai's non-listed state-owned enterprises vary according to their industries, technological levels, innovation capabilities, and strategic planning, primarily manifesting in social responsibility and environmental aspects. These variations demonstrate their diversified efforts and innovative explorations in pursuing sustainable development.

Social Responsibility: Shanghai's non-listed state-owned enterprises engage in differentiated practices based on their main businesses, focusing on themes such as

implementing national strategies, public welfare undertakings, and employee care. For instance, Shanghai Municipal Investment Group concentrates on supporting Shanghai's key initiatives and ensuring people's livelihoods. Specific practices include promoting the optimization of raw water supply structures and upgrading water treatment plants to ensure the safety of residential water use. Other enterprises also conduct social responsibility activities aligned with their main businesses. For example, Shanghai Qiangsheng Taxi Co. Ltd has collaborated with multiple districts in Shanghai to jointly launch the "Assured Elderly Assistance" service, exploring "Assured Medical Care" services. They have installed self-service car systems, set up dedicated ride-hailing accounts, and customized service cards to facilitate travel for the elderly.

Environmental Aspects: The environmental strategies of these state-owned enterprises reflect their respective industry characteristics. Manufacturing or energy companies, such as several non-listed enterprises under the aforementioned Baowu Group, focus on innovations in waste gas and wastewater treatment technologies and in energy saving and consumption reduction, making significant contributions to the group's overall environmental strategy and green development goals. The environmental technology subsidiary under the group, known as the "Soil Hospital," successfully restored a solid waste landfill covering approximately 32,000 square meters using its upgraded "Version 3.0 Comprehensive Solution for Historical Legacy Landfill Sites" and new digital technologies. Collaborating with the group's water technology enterprise in an integrated operation, they jointly build an environmental protection industry platform encompassing water, air, and solid (hazardous) waste to support the environmental needs of the steel industry and contribute to the nation's environmental protection efforts. Service industry or asset-light state-owned enterprises place greater emphasis on greening service processes. For example, Shendi Group reduces negative environmental impacts by improving energy efficiency during service delivery and promoting green office environments.

(IV) Non-Listed Non-State-Owned Enterprises: Innovation Drives ESG Practices, Initial Achievements in Sustainable Development

To illustrate the ESG practice characteristics of Shanghai's non-listed non-state-owned enterprises, the following sections will explore how non-state-owned enterprises within Shanghai's regional equity market promote sustainable development through ESG practices, analyze the accomplishments of Shanghai's specialized and innovative enterprises, and compare the unique features of Shanghai's foreign-funded enterprises. These perspectives collectively present a comprehensive view of the diversity and advancement of ESG practices among Shanghai's non-listed non-state-owned enterprises.

1. Non-State-Owned Enterprises in Shanghai's Regional Equity Market

The Shanghai Equity Exchange Center (referred to as "Shanghai Equity Exchange") is the main platform for Shanghai's regional equity market. Non-state-owned enterprises in this market promote their own sustainable development through ESG practices, enhancing their competitiveness and brand image. By leveraging new technologies such as new energy, big data cloud computing, and artificial intelligence, these enterprises maintain market competitiveness. They optimize resource utilization, reduce energy consumption and waste generation, improve supply chain efficiency, and lower operational costs, thereby forming differentiated competitive advantages. Moreover, their green development strategies help elevate their market image, attracting more consumers and partners, and increasing investment and financing opportunities.

In various industries, enterprises in the energy, utilities, finance, biopharmaceuticals, and information technology sectors exhibit particularly outstanding ESG practices. Due to severe environmental pollution issues and strict environmental policy regulations, energy and utility companies need to invest resources to meet regulatory requirements. These industries are highly aligned with the environmental goals in ESG. For instance, clean energy companies reduce carbon emissions through the research, development, and promotion of clean energy technologies, improve environmental quality, create numerous job opportunities, and drive the optimization of the energy structure. In corporate governance, new energy companies

emphasize technological innovation and sustainable development strategies, ensuring their market competitiveness.

Industries such as finance, biopharmaceuticals, and information technology also actively practice ESG concepts, recognizing the importance of ESG factors in evaluating investment risks and returns. Guided by regulations and facing rising social expectations, these companies demonstrate higher transparency and responsibility in their operations. They shape brand images through ESG practices, attract customers and investors, and integrate ESG into their core strategies, achieving long-term sustainable development and market leadership.

2. Specialized and Innovative Non-State-Owned Enterprises

Shanghai's specialized and innovative enterprises are actively engaged in ESG practices. According to the 2023 Shanghai Specialized and Innovative Enterprises Development Index Report released by the Shanghai Guochuang Technology Industry Innovation and Development Center and Deloitte China Research, Shanghai has 8,288 specialized and innovative enterprises, including nearly 700 national-level "Little Giant" enterprises. These are mainly distributed in strategic emerging industries such as the digital economy, green and low-carbon sectors, the metaverse, and intelligent terminals, playing a key role in innovation and high-quality development. Additionally, based on the lists of specialized and innovative enterprises released by the Shanghai Municipal Commission of Economy and Informatization in recent years, more than 80%—and even up to 90%—of Shanghai's specialized and innovative enterprises are privately owned. This indicates that the private economy plays an extremely important role among Shanghai's specialized and innovative enterprises.

In terms of the **environmental aspect**, they continuously promote the innovative application of green and low-carbon technologies by increasing R&D investment. Regarding **social responsibility**, they fulfill it by providing high-quality products and services, creating job opportunities, and participating in public welfare activities, and in return, they receive rewards and one-stop service support from the Shanghai municipal government. Moreover, when it comes to **corporate governance**, these companies focus on establishing transparent and standardized management systems. Meanwhile, the Shanghai municipal government and

related institutions offer services such as training, talent recruitment, and financing matchmaking to assist in enhancing their management capabilities.

Taking Shanghai Pearl Hydrogen Energy Technology Co Ltd, a listed company, as an example, this enterprise demonstrates how specialized and innovative companies achieve a win-win situation of financial growth, brand enhancement, and sustainable development through ESG transformation. As a company listed on the Sci-Tech innovation board (referred to as the "N Board") of the Shanghai Equity Exchange, it specializes in the R&D and production of hydrogen energy power products and leads domestically in the field of air-cooled fuel cells. With the support of the Shanghai Equity Exchange, the company implemented ESG transformation strategies, improving financial performance and brand value, and received policy support to resist operational risks and promote high-quality development. The company utilized big data systems to analyze financial data, patent numbers, R&D investments, etc., providing references for fair valuation and successfully applied to become a specialized and innovative enterprise. With the help of the Shanghai Equity Exchange's green financial service system, the company participated in green transformation counseling and training, built financial products centered on green development, accelerated the B-round financing process, and successfully secured RMB 31 million in equity financing in 2022.

3. Non-Listed Foreign-Funded Enterprises

The ESG practices of foreign-funded enterprises in Shanghai differ significantly from those of domestic companies. These differences are reflected in ESG concepts, system establishment, practice motivations and disclosures, and practice maturity.

ESG Concepts: Influenced by international standards, foreign-funded enterprises (mainly from Western) usually prioritize corporate governance over social and environmental aspects in ESG. Corporate governance is their primary focus, with the establishment of a top-down ESG institutional management system being key. In contrast, domestic enterprises are relatively weaker in building management systems and place more emphasis on environmental practices. This difference may result from varying national development

stages and strategies.

System Establishment: Foreign-funded enterprises spontaneously improve relevant methods based on their own development needs through technological innovation and efficient management, forming ESG management systems.

Practice Motivations and Disclosures: Foreign-funded enterprises exhibit stronger intrinsic motivations, such as cost reduction and efficiency enhancement, increased competitiveness, and image improvement. They enhance investor confidence through comprehensive and transparent ESG reports and complete ESG systems, influencing the industrial chain and consumer behavior. Additionally, they place greater emphasis on meeting ESG indicators in international evaluation systems to avoid additional costs arising from non-compliance with standards.

Practice Maturity: Foreign-funded enterprises demonstrate relatively mature practice depth, with more comprehensive and transparent information disclosure. While adhering to China's ESG standards, they actively benchmark against more mature and comprehensive international standards and hire third-party agencies for evaluation. Furthermore, they integrate ESG practices into daily operations as part of risk management, avoiding "greenwashing" and focusing on actual results.

For example, the measures adopted by GLP China illustrate the typical ESG practices of foreign-funded enterprises. GLP has established ESG committees globally and in China, viewing ESG as a means to enhance competitiveness and brand effect. They have formulated an ESG development manual that runs through the entire production and operation chain. GLP's ESG practices stem from an understanding of industry development trends and the prevention and control of potential risks. Through intelligent asset management and combining the development of the new energy industry, they have explored a unique path to carbon neutrality—for instance, adhering to green building standards from project site selection to construction and providing clean energy through photovoltaic power generation systems.

Additionally, GLP has established an efficient monitoring system to ensure effective prevention and rapid response to emergencies, significantly reducing the incidence and damage of human and natural accidents. They also value community interaction, providing

fair compensation and quality working environments, ensuring transparent and compliant decision-making. By continuously self-evaluating and improving, GLP optimizes ESG practices, maintains open communication with stakeholders, and promotes social sustainable development. ESG is not just a management and operational principle that GLP follows and implements; it is also their most valued business criterion and the core of GLP's business model.

I. Classification by Industry

(I) Industry Characteristics of ESG Practices

Given the availability of data, the following discussion on industry classification will focus on listed companies. Shanghai's listed companies encompass 11 industries: real estate, industrials, utilities, financials, consumer discretionary, energy, communication services, information technology, healthcare, materials, and consumer staples. Among these, the industrial sector has the largest number of companies, totaling 132 and accounting for 30% of the total. The information technology industry includes 77 companies (17.5%), and the consumer discretionary sector has 50 companies (11.36%). The remaining industries each have fewer than 50 companies.

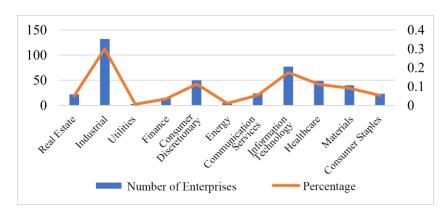


Figure 2.8: Industry Distribution of Shanghai's Listed Companies

Data Source: CSI Index, compiled and analyzed by Shanghai Environment and Energy Exchange

Due to differences in production and operational models, each industry emphasizes different aspects in ESG practices. Real estate companies focus on environmental certification of products or services and carbon emission measures. Industrial companies disclose carbon emission information, formulate policies to reduce resource consumption,

and are more willing to publicize their environmental expenditures. Utilities, especially power generation companies, concentrate on the proportion of renewable energy and pollutant emissions. Financial institutions emphasize their own energy efficiency management. The consumer discretionary industry pays attention to carbon emissions, reducing resource consumption, and energy efficiency. Energy companies focus on reducing land impact and emissions. The communication services industry highlights carbon emissions and reducing resource consumption. The healthcare sector is concerned with reducing resource consumption and improving energy efficiency. The materials industry places emphasis on green expenditures and atmospheric pollutant emissions, while the consumer staples industry focuses on carbon emission information and environmental expenditures (see Table 2.1).

Despite their differing focal points, carbon emission information, energy efficiency policies, and policies to reduce resource consumption are key topics commonly addressed across most industries. This indicates that reducing environmental impact and enhancing resource efficiency are core consensuses in ESG practices among various industries.

Table 2.1: Summary of High-Frequency Disclosed ESG Topics by Industry Among Shanghai's Listed Companies

Industry	First Priority	Second Priority	Third Priority
Real Estate	Carbon Emission	Product Environmental	Product Environmental
	Information	Certification	Responsibility Usage
Industrials	Carbon Emission	Policies to Reduce	Environmental
	Information	Resource Consumption	Expenditures
Utilities	Renewable Energy	Carbon Emission	NOx and SOx Emissions
	Production	Information	
Financials	Carbon Emission	Policies to Reduce	Energy Efficiency Policies
	Information	Resource Consumption	
Consumer	Carbon Emission	Policies to Reduce	Energy Efficiency Policies
Discretionary	Information	Resource Consumption	
Energy	Reduction of Land	Carbon Emission	Policies to Reduce NOx
	Environmental Impact	Information	and SOx Emissions
Communication	Carbon Emission	Policies to Reduce	Energy Efficiency Policies
Services	Information	Resource Consumption	
Information	Energy Efficiency	Waste Reduction	Environmental
Technology	Policies	Measures	Management Training
Healthcare	Policies to Reduce	Energy Efficiency	Carbon Emission
	Resource Consumption	Policies	Information
Materials	Environmental	NOx and SOx Emissions	Water Use Efficiency
	Expenditures		Policies
Consumer Staples	Policies to Reduce	Carbon Emission	Green Supply Chain
	Resource Consumption	Information	Policies

Data Source: Refinitiv Eikon, compiled and analyzed by Shanghai Environment and Energy Exchange

(II). Shanghai's Characteristics in ESG Practices

To analyze Shanghai's performance in ESG practices across different industries, we selected three sectors with high concentrations: industrials, information technology, and financials. By comparing Shanghai's listed companies with those in other regions, we aim to highlight the characteristics and differences of Shanghai enterprises in ESG practices within these industries.

1. Industrials: Leading in ESG Practices with Multiple Outstanding Indicators

Among Shanghai's 132 listed industrial companies, the proportion issuing ESG reports increased from 15.91% in 2017 to 42.42% in 2023, consistently surpassing the 1,553

companies in other regions each year (see Figure 2.9).

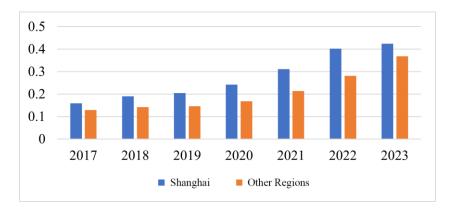


Figure 2.9: ESG Report Releases of Listed Industrial Companies in Shanghai and Other Regions
Data Source: iFind, compiled and analyzed by Shanghai Environment and Energy Exchange

Shanghai enterprises demonstrate leading advantages in key ESG topics such as carbon emission information disclosure, policies to reduce resource consumption, and environmental expenditures. The proportion of companies disclosing carbon emission information rose from 8.33% in 2017 to 23.48% in 2023, which is twice the increase seen in other regions (from 3.22% to 13.97%) (see Figure 2.10). The percentage of enterprises formulating policies to reduce resource consumption increased from 6.06% to 22.73%, while in other regions it grew from 2.32% to 13.14% (see Figure 2.11). Regarding environmental expenditures, Shanghai enterprises increased from 2.27% to 20.45%, whereas other regions rose from 0.77% to 9.4%. Although the growth trends are similar, Shanghai companies consistently lead in terms of proportion (see Figure 2.12).

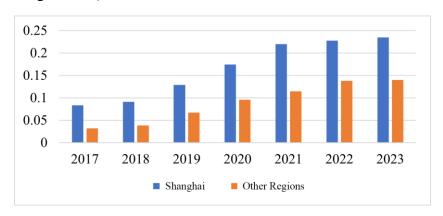


Figure 2.10: Carbon Emission Information Disclosure of Listed Industrial Companies in Shanghai and Other Regions

Data Source: Refinitiv Eikon, compiled and analyzed by Shanghai Environment and Energy Exchange

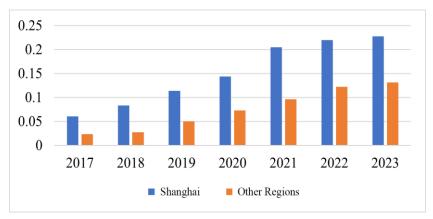


Figure 2.11: Formulation of Policies to Reduce Resource Consumption by Listed Industrial Companies in Shanghai and Other Regions

Data Source: Refinitiv Eikon, compiled and analyzed by Shanghai Environment and Energy Exchange

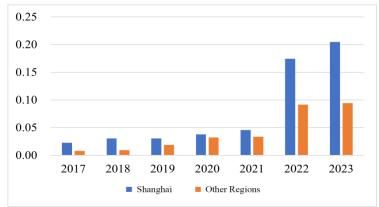


Figure 2.12: Environmental Expenditures by Listed Industrial Companies in Shanghai and Other Regions

Data Source: Refinitiv Eikon, compiled and analyzed by Shanghai Environment and Energy Exchange

Overall, in 2023, more than 20% of Shanghai's industrial enterprises effectively engaged in the three ESG topics of carbon emission information disclosure, policies to reduce resource consumption, and environmental expenditures. In most years, the number of enterprises practicing these initiatives in Shanghai was twice that of other regions. This not only underscores the leading position of Shanghai enterprises in ESG practices but also reflects their active efforts in promoting sustainable development and environmental protection.

2. Information Technology Industry: Rapid Growth in ESG Practices, Multiple Indicators Surpass Expectations

In the information technology industry, Shanghai's 77 listed companies have exhibited rapid growth in ESG practices, with several indicators surpassing those of other regions. From 2017 to 2019, the proportion of Shanghai's information technology companies releasing

ESG reports remained steady at 15.58%. Afterward, it swiftly increased to 38.96% in 2023, consistently higher than the figures in other regions each year (see Figure 2.13).

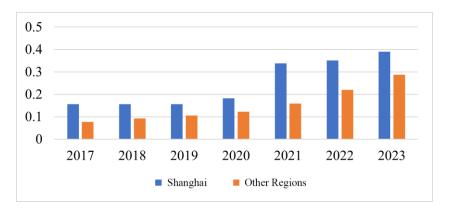


Figure 2.13: ESG Report Releases by Listed Information Technology Companies in Shanghai and Other Regions

Data Source: iFind, compiled and analyzed by Shanghai Environment and Energy Exchange

Although Shanghai companies started later in areas such as carbon emission information disclosure, policies to reduce resource consumption, and energy efficiency policies, they have experienced rapid growth since 2019. The proportion of companies disclosing carbon information rose from 6.49% in 2019 to 16.88% in 2021, surpassing the 15.03% in other regions, and further increased to 22.08% in 2023, compared to 16.76% elsewhere (see Figure 2.14). The formulation of policies to reduce resource consumption in Shanghai quickly overtook others, rising from 5.19% in 2019 to 12.99% in 2020; by 2023, Shanghai's proportion had grown to 20.78%, leading the 15.46% in other regions (see Figure 2.15). A similar trend is observed in the development of energy efficiency policies. Starting from 5.19% in 2019, Shanghai's proportion rapidly increased to 18.18% in 2023, surpassing other regions each year since 2020 (see Figure 2.16).

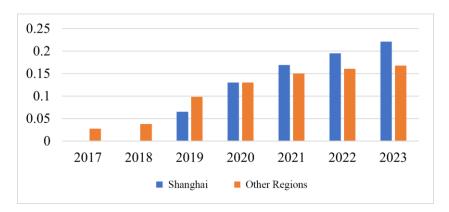


Figure 2.14: Carbon Emission Information Disclosure by Listed Information Technology Companies in Shanghai and Other Regions

Data Source: Refinitiv Eikon, compiled and analyzed by Shanghai Environment and Energy Exchange

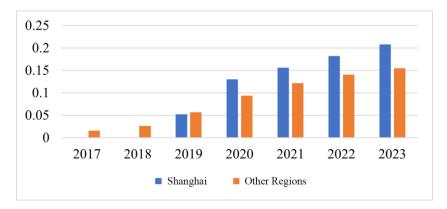


Figure 2.15: Formulation of Policies to Reduce Resource Consumption by Listed Information Technology Companies in Shanghai and Other Regions

Data Source: Refinitiv Eikon, compiled and analyzed by Shanghai Environment and Energy Exchange

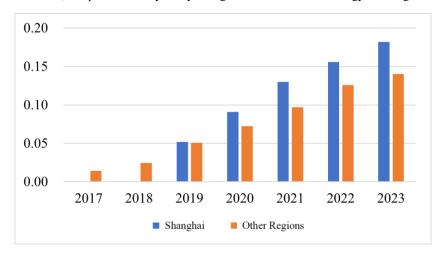


Figure 2.16: Development of Energy Efficiency Policies by Listed Information Technology Companies in Shanghai and Other Regions

Data Source: Refinitiv Eikon, compiled and analyzed by Shanghai Environment and Energy Exchange

3. Financial Industry: Pioneering ESG Development, Maintaining High Standards

In the financial industry, Shanghai's 15 listed companies have maintained a leading position in ESG practices. In 2017, the proportion of Shanghai financial enterprises releasing ESG reports reached 73.33%, increasing to 100% by 2021 and maintaining this level through 2023. In contrast, the 113 financial companies in other regions grew from 54.78% in 2017 to 91.15% in 2023 (see Figure 2.17).



Figure 2.17: ESG Report Releases by Listed Financial Companies in Shanghai and Other Regions
Data Source: iFind, compiled and analyzed by Shanghai Environment and Energy Exchange

Regarding key ESG topics such as carbon emission information disclosure, policies to reduce resource consumption, and energy efficiency policies, Shanghai financial enterprises have performed well, stabilizing from 2022 to 2023. In 2017, the proportion of carbon information disclosure in Shanghai was 60%, compared to 40.71% in other regions. By 2023, Shanghai's figure had increased to 93.33%, while other regions reached 82.3% (see Figure 2.18). In terms of formulating policies to reduce resource consumption, Shanghai grew from 46.67% in 2017 to 86.67% in 2023, whereas other regions increased from 25.66% to 76.11% (see Figure 2.19). For energy efficiency policies, Shanghai rose from 40% in 2017 to 86.67% in 2023, while other regions went from 23.01% to 72.57% (see Figure 2.20).

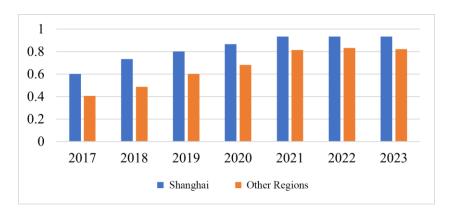


Figure 2.18: Carbon Emission Information Disclosure by Listed Financial Companies in Shanghai and Other Regions

Data Source: Refinitiv Eikon, compiled and analyzed by Shanghai Environment and Energy Exchange

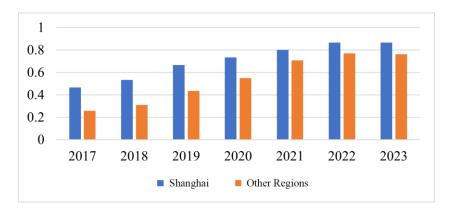


Figure 2.19: Formulation of Policies to Reduce Resource Consumption by Listed Financial Companies in Shanghai and Other Regions

Data Source: Refinitiv Eikon, compiled and analyzed by Shanghai Environment and Energy Exchange

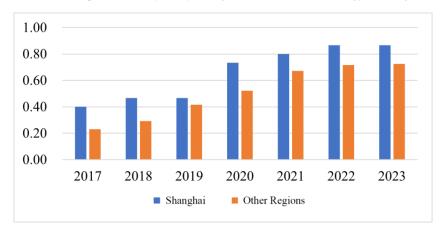


Figure 2.20: Development of Energy Efficiency Policies by Listed Financial Companies in Shanghai and Other Regions

Data Source: Refinitiv Eikon, compiled and analyzed by Shanghai Environment and Energy Exchange

Overall, Shanghai's financial enterprises started early in addressing ESG topics and, after reaching high levels, have tended to stabilize. Financial companies in other regions are rapidly increasing their focus and efforts on ESG issues, gradually narrowing the gap with Shanghai.

III. Classification by Listing Location

As of the end of June 2024, Shanghai had a total of 19 A+H dual-listed companies, accounting for approximately 4.32% of all listed companies in Shanghai. These cross-market listed companies are mainly concentrated in industries such as industrials, financials, and healthcare. In terms of the proportion and coverage of ESG report releases, these companies significantly exceed Shanghai's average levels. In 2017, 15 A+H listed companies released

ESG reports, accounting for 78.95%. By 2021, all 19 companies had released ESG reports, achieving a 100% release rate and maintaining this through 2023 (see Figure 2.21).

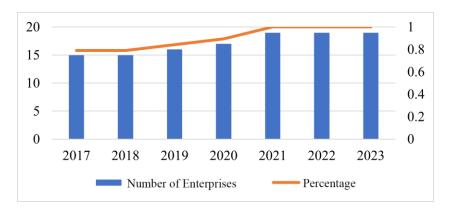


Figure 2.21: ESG Report Releases of Shanghai A+H Companies

Data Source: iFind, compiled and analyzed by Shanghai Environment and Energy Exchange

Regarding ESG report coverage, in 2017, 13 A+H listed companies disclosed carbon emission information, accounting for 68.42%. By 2021, all 19 companies achieved 100% disclosure of carbon emission information, continuing through 2023 (see Figure 2.22).

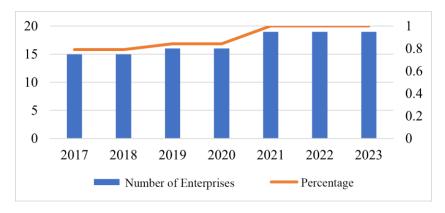


Figure 2.22: Carbon Emission Information Disclosure of Shanghai A+H Companies

Data Source: Refinitiv Eikon, compiled and analyzed by Shanghai Environment and Energy Exchange

In summary, Shanghai's A+H dual-listed companies not only started early in releasing ESG reports and disclosing key issues but have also achieved comprehensive coverage, showcasing industry-leading ESG practices and high transparency.

Section 2: Motivations behind ESG Practices of Enterprises in Shanghai

I. Policy Orientation

Domestic and international ESG policies have a profound impact on corporate ESG practices. In recent years, as the global emphasis on sustainable development has grown, governments worldwide have introduced a series of ESG policies to encourage companies to address climate change and improve their environmental and social responsibility performance. According to the 2024 domestic and international ESG policy trends, global ESG regulations are accelerating, and domestic policies are frequently being issued, propelling the "acceleration" of corporate ESG development.

In May 2022, the State-owned Asset Supervision and Administration Commission of the State Council released the *Work Plan for Improving the Quality of Listed Companies Controlled by Central Enterprises*, which laid out strategies for enhancing the quality of these companies. The plan proposed exploring the establishment and improvement of ESG systems and promoting "full coverage" in the disclosure of specialized reports. In practice, the proportion of Shanghai's listed state-owned enterprises releasing ESG reports is significantly higher than the average level.

For non-listed companies, policies likewise drive their ESG practices. In terms of environmental protection, the government requires companies to reduce emissions of waste gas, wastewater, and solid waste, imposing severe penalties for exceeding emission standards. Regarding social responsibility, the government encourages companies to participate in poverty alleviation and public welfare activities. Under such circumstances, non-listed companies correspondingly promote technological innovation, enhance resource utilization efficiency, and actively engage in rural revitalization efforts.

II. Investor Demand

With the popularization of responsible investment concepts, investors increasingly

emphasize corporate ESG performance, expecting their investments not only to yield financial returns but also to have positive social and environmental impacts. To enhance competitiveness, companies need to strengthen their ESG performance, reduce risks, elevate brand value, and create long-term value. Investor expectations prompt companies to comply with regulatory requirements and adapt to market trends.

Following the release of the Self-Regulatory Guidelines for Companies Listed—Sustainability Report (For Trial Implementation) and the Letter of the General Office of the Ministry of Finance on Requesting Public Comments on the Corporate Sustainability Disclosure Standards—Basic Standards (Exposure Draft), investor demand for ESG information has grown significantly. Transparent information disclosure and proactive ESG practices enable companies to build investor trust while establishing a good reputation among a broader group of stakeholders. By actively responding to ESG regulatory requirements and market demands, companies can attract more long-term investors and gain a more favorable position in the capital market, thereby creating additional development opportunities.

III. Supply Chain Management

The motivation to implement ESG in supply chain management stems from the emphasis on suppliers' ESG practices during procurement and related foreign requirements. As companies recognize the importance of supply chains in environmental and social responsibility, an increasing number of firms are requiring their suppliers to meet specific ESG standards. This approach not only enhances the sustainability of the entire supply chain but also reduces reputational and financial risks arising from suppliers' misconduct. Companies ensure adherence to ESG principles across all supply chain stages by establishing stringent supplier selection criteria and regular audit mechanisms.

For example, in terms of carbon emissions, the European Union mandates companies to disclose Scope 1, 2, and 3¹⁶ carbon emissions under the Corporate Sustainability Reporting Directive and European Sustainability Reporting Standards, along with mandatory assurance.

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¹⁶ The *Greenhouse Gas Protocol Corporate Standard* divides a company's greenhouse gas emissions into three "scopes." Scope 1 emissions are direct emissions from sources owned or controlled by the company. Scope 2 emissions are indirect emissions from the generation of purchased energy. Scope 3 emissions are all other indirect emissions that occur in the company's value chain (not included in Scope 2), including both upstream and downstream emissions.

These regulations apply to large EU companies, companies listed in the EU, and non-EU companies with branches in the EU. Additionally, the EU's Carbon Border Adjustment Mechanism (CBAM) imposes carbon tariffs on the embedded carbon emissions of products exported to the EU, increasing costs for Chinese high-carbon enterprises exporting to the EU and prompting companies to undertake low-carbon transformations.

Since approximately 60% of a company's ESG footprint comes from its supply chain, sustainable procurement has become crucial for achieving sustainable development strategies. Supply chain transparency is also gaining importance; consumers, investors, and governments expect companies to provide information about product origins and manufacturing processes, prompting firms to enhance supply chain transparency.

IV. Corporate Image and Market Value Management

ESG practices not only bolster a company's performance in the capital market but also serve as the core of long-term sustainable development. In today's business environment, which emphasizes sustainability, strong ESG performance can enhance brand value and social reputation, attract investors and consumers, and reduce capital costs. ESG initiatives help manage environmental risks and fulfill social responsibilities, avoiding negative impacts and reducing reputational and financial losses. Moreover, with increasingly stringent ESG-related regulations, compliance becomes essential for corporate operations, aiding in mitigating legal and financial risks. Transparent ESG reporting builds investor trust, which is crucial for the stability and growth of a company's market value.

V. Reducing Financing Costs

Implementing ESG practices can lower a company's financing costs. By demonstrating commitment to environmental protection, social responsibility, and sound governance, companies can enhance market trust, boost brand value, and attract more investors, thereby securing lower borrowing costs. Markets generally perceive such companies as lower risk with stronger sustainable development capabilities. Additionally, ESG practices help companies effectively manage and assess risks, improve credit ratings, comply with

regulatory requirements, and obtain better financing conditions.

To support green and those with excellent ESG performance enterprises, financial institutions and governments have introduced low-cost financing policies, such as low-interest loans, green bonds, tax incentives, and green funds, to encourage the development of the green economy. Governments also reduce corporate financing risks and costs through subsidies, guarantees, risk compensation, and green project insurance.

Section 3: Challenges and Opportunities Faced by Shanghai Enterprises in ESG Practices

I. Challenges Faced by Enterprises

(I) Internal Challenges

1. Lack of Professional ESG Knowledge, Skills, and Management Teams

When implementing ESG strategies, enterprises may face challenges due to a lack of professional ESG knowledge and skills, including: outdated knowledge, making it difficult to keep up with the continuously evolving standards and practices; a shortage of professionals, especially those in the fields of environmental science, social responsibility, and corporate governance, and there are also differences among different enterprises in terms of investment in and expectations for the compensation and benefits of relevant employees; insufficient skill development, with employees lacking the ability to integrate ESG into daily operations and decision-making; and a lack of training, resulting in employees having an inadequate understanding of ESG.

These issues make it challenging for enterprises to identify, assess, and manage ESG risks, affecting strategic planning and decision-making. They hinder innovation in products and services, fail to meet market demands and regulatory requirements, and make it difficult to effectively communicate ESG performance and impacts to stakeholders.

Enterprises need professional management teams to deepen ESG understanding, formulate strategies, and enhance sustainable development capabilities. Companies that

prioritize ESG will establish specialized ESG management teams, transparently disclose ESG performance, demonstrate responsibility, and maintain brand image. ESG issues like environmental pollution, social injustice, and poor governance increase operational risks. Professional teams can identify and manage these risks, helping to reduce potential losses and ensure stable operations. However, most enterprises have yet to establish such teams.

2. Insufficient Awareness and Balance Between Costs and Benefits

Some enterprises have not fully recognized the importance of ESG, still focusing primarily or solely on economic benefits and neglecting the positive impact of ESG on long-term development, lacking the motivation to proactively implement ESG practices.

Implementing ESG indeed requires certain costs, such as improving production processes, enhancing employee training, and upgrading management systems. This poses short-term profit pressures, especially for small and medium-sized enterprises in regional markets, making it challenging to balance costs and potential long-term benefits when evaluating ESG practices.

(II) External Challenges

1. Lack of Unified ESG Disclosure and Evaluation Standards

Variations in ESG disclosure and evaluation standards present significant challenges for enterprises implementing ESG practices. The multitude of standards makes it difficult for companies to choose and comply, affecting their ability to effectively carry out ESG initiatives.

In information disclosure, requirements differ across regions and institutions—for example, the differences between the disclosure standards of the Hong Kong Stock Exchange and mainland exchanges, and among various countries internationally—adding complexity to standardized reporting.

In terms of ratings, differences in indicator systems and rating methodologies among rating agencies lead to inconsistent ESG ratings, making it difficult for stakeholders to obtain

effective decision-making information. If a company's evaluations vary significantly across different rating agencies, it becomes challenging to gain investor trust.

2. Difficulty in ESG Data Collection and Limited Disclosure Scope

Enterprises need to collect extensive environmental, social, and governance data for ESG disclosure, but common issues like diverse and incomplete data sources affect the accuracy and comparability of reports.

To comprehensively reflect ESG performance, companies need to establish robust data collection systems. However, factors like incomplete regulatory frameworks and the lack of a unified disclosure and evaluation system aligned with international standards affect information transparency and data accuracy. Limited resources, especially for small and medium-sized enterprises, make it harder to meet complex requirements. Additionally, some companies may selectively disclose ESG information for reasons like protecting trade secrets, undermining the authenticity and credibility of ESG information.

3. Lack of Third-Party Assurance in ESG Practices

Much of the ESG information disclosed by enterprises is self-reported and lacks third-party verification, reducing its credibility. Currently, relevant guidelines encourage, but do not mandate, eligible entities to engage third-party organizations to verify ESG reports. Third-party assurance provides independent audits to ensure the accuracy, reliability, and transparency of disclosed information, reducing information asymmetry, helping stakeholders fully understand a company's sustainable development status, and enhancing external trust. Assurance providers also help companies identify shortcomings and potential risks in ESG management, promoting the development of improvement measures and advancing corporate sustainability.

II. Opportunities for Enterprises

(I) Consumer Trends and Market Expansion

Increased consumer environmental awareness has boosted demand for sustainable products and services, providing enterprises with opportunities to strengthen ESG practices, explore markets, and enhance product value. Institutional investors favor companies with excellent ESG performance, helping enterprises obtain more favorable financing conditions, effectively reducing capital costs, and enhancing market appeal. Good ESG practices are also crucial for brand building and reputation management. Proactive ESG communication and transparent reporting can build public trust and attract more customers and talent.

Enterprises should recognize that ESG is not only a manifestation of social responsibility but also an important means to increase long-term corporate value and market competitiveness. Companies should first enhance their understanding of ESG concepts and strengthen employees' comprehension of ESG standards and regulations through internal education and training. Additionally, enterprises should establish scientific mechanisms for ESG data collection, analysis, and disclosure to ensure data accuracy and transparency, improving the quality of ESG report disclosures.

(II). Risk Management and Sustainable Development

ESG practices enable enterprises to identify and address environmental, social, and governance risks early on. By proactive risk management, companies can avoid legal disputes, fines, and reputational damage, ensuring business continuity and long-term sustainable development.

Enterprises should establish comprehensive risk management systems to identify and mitigate potential ESG-related risks. Simultaneously, increasing transparency in information disclosure can enhance stakeholder trust, including investors, consumers, and regulatory agencies.

(3). Innovation and Collaboration

ESG practices promote technological innovation, driving enterprises to develop technical solutions that reduce environmental impact and enhance production efficiency and quality. Using clean energy and efficient energy management systems can not only reduce energy consumption and costs but also help companies strengthen their competitive advantages and establish leadership positions in the market.

Enterprises should encourage the integration of ESG concepts into product development and operational processes and strengthen collaboration with suppliers and partners to jointly promote sustainable development across the industry chain. Moreover, companies should actively establish regular communication mechanisms with ESG investment institutions to facilitate information sharing and achieve mutual benefits.

Chapter 3: ESG-related Financial Services by Financial Institutions in Shanghai

Financial institutions are key promoters and practitioners of ESG concepts and practices. Historically, ESG originated from corporate social responsibility investments in Western countries during the 1960s. As more institutions began incorporating ESG factors into investment decisions, ESG gradually became an essential tool and support for evaluating corporate sustainable development. In practice, beyond leading by example in adopting ESG principles and transforming development methods and evaluation standards, financial institutions play a crucial professional role in resource allocation, risk management, and market pricing. They provide support and guidance for enterprises in practicing ESG, further establishing and consolidating a sustainable development orientation in the economy and society. Currently, Shanghai's financial institutions are accelerating the integration of ESG concepts with China's market practices. Focusing on the demand for green and low-carbon economic and social transformation, they are actively innovating ESG financial products and services. These efforts cover multiple areas, including green credit, green bonds, ESG funds, green insurance, and carbon finance. Financial institutions' ESG investment management systems are continually improving, and the application of ESG strategies such as responsible management is deepening, providing significant support for the green and low-carbon transformation of the economy and society.

Section 1: Overview of ESG Financial Services by Shanghai Financial Institutions

Shanghai's financial industry has made significant progress in promoting ESG development. By deepening innovation in financial products and services such as green credit, bonds, funds, and insurance, actively serving the national carbon market, strengthening ESG responsible management, and deepening cross-institutional cooperation, it jointly promotes the green and low-carbon transformation of enterprises and the economy. The current state of

ESG financial services by Shanghai financial institutions can be summarized in the following seven points:

Deepening Integration of Green Credit and Industries: In recent years, Shanghai's banking industry has continuously improved the full-process management of green finance, strengthening the construction of statistics, risk management, and assessment mechanisms. Focusing on national green and low-carbon industrial policies, it has deepened development in new areas such as green manufacturing, new energy, and carbon finance. It actively supports energy-saving technological transformation and low-carbon transition in traditional industries, continuously improving green financial service solutions, and enhancing the quality and efficiency of green financial services. By the end of the first quarter of 2024, the balance of green credit in Shanghai's banking sector reached 1.5 trillion yuan, an increase of 10.04% from the beginning of the year¹⁷.

Rapid Development of the Green Bond Market: Green bonds are divided into "use of proceeds green" and "labeled green" categories. The former refers to bonds where the use of proceeds complies with standards such as the Catalogue of Projects Supported by Green Bonds (2021) issued by the People's Bank of China, the National Development & Reform Commission and the China Securities Regulatory Commission, while the latter refers to green bonds issued with recognition from regulatory agencies. According to statistics from China Central Depository & Clearing Co. Ltd (CCDC), in 2022, Shanghai issued 87 "use of proceeds green" bonds with a total scale of 115.265 billion yuan and 69 "labeled green" bonds totaling 79.985 billion yuan. The credit ratings of Shanghai's green bonds performed excellently overall, with AAA ratings accounting for 76.74% of "use of proceeds green" bonds and 73.98% of "labeled green" bonds 18.

Leading Development of ESG Funds Nationwide: Shanghai's ESG public funds have shown a rapid development trend overall. In terms of quantity, from 2018 to the first half of 2024, the number of ESG public funds in Shanghai grew from 54 to 224. In terms of scale, ESG public funds increased rapidly from 47.7 billion yuan in 2018 to a peak of 394.3 billion yuan in 2021, before slightly declining to 227.4 billion yuan in the first half of 2024.

¹⁷ Data source: Industry exchange data.

¹⁸ China Central Depository & Clearing Co, Ltd, Shanghai Financial Industry Federation. Yangtze River Delta Green Bond Development Report (2023). June 2023.

Nationwide, Shanghai continues to lead in both the number and scale of ESG funds, reflecting the city's significant position in ESG funds.

Accelerated Innovation in Green Insurance Products: Shanghai's insurance industry focuses on environmental governance, green shipping, green energy, carbon market construction, and other fields, continuously upgrading traditional insurance products and innovating green insurance products to safeguard the development of new quality productivity. In the first half of 2024, Shanghai's green insurance premium income reached 9.95 billion yuan, a year-on-year increase of 42.6%, providing risk protection amounting to 64.69 trillion yuan, a year-on-year increase of 179.6% ¹⁹.

Active Service in the National Carbon Market Development: Shanghai's financial industry actively serves the construction of the national carbon market, continuously promoting product and service innovation. Shanghai's securities industry took the lead in conducting carbon asset spot trading, China Certified Emission Reductions (CCER) trading, and carbon quota repurchase transactions, successfully launching multiple industry firsts. Shanghai's banking industry has formed comprehensive carbon finance service solutions, making breakthroughs in areas such as carbon asset pledge financing. Shanghai's insurance industry has introduced a series of innovative products, including the nation's first carbon emission quota pledge loan guarantee insurance, carbon asset repurchase performance guarantee insurance, and carbon capture, utilization, and storage (CCUS) project carbon asset loss insurance, providing important guarantees for the development of the carbon market.

Active Promotion of ESG Responsible Management Development: Shanghai's financial industry adheres to the fundamental purpose of serving the real economy through finance, proactively implementing ESG responsible management to assist enterprises in green and low-carbon development. In recent years, Shanghai's financial institutions have successively formulated and publicly released responsible management policies, clarifying the promotion of more active and transparent measures in environmental protection, social responsibility, and internal governance by exercising voting rights and directly communicating with invested companies. This participation helps promote the long-term

¹⁹ Data source: Industry exchange data.

stability and healthy development of China's real economy and is an important initiative for financial institutions to provide high-quality services for economic and social development.

Continuous Deepening of Cooperation in the ESG Field Among Financial Institutions: Leveraging the resource advantages of Shanghai as an international financial center with complete elements and institutions, the city's financial industry actively explores cross-institutional and cross-departmental cooperation, continuously deepening product and service innovation in the ESG field. In bank-securities cooperation, Guotai Junan Securities and China Construction Bank jointly launched the "Construction Carbon Loan" business, collaborating on Shanghai's carbon emission quota pledge financing and disposal transactions. In bank-insurance cooperation, China Pacific Insurance and Shanghai Rural Commercial Bank innovatively implemented the nation's first chemical industry "insurance + transition finance loan," marking the first cross-border cooperation between banking and insurance institutions in the field of transition finance.

Section 2: ESG Financial Services in Various Financial Sectors in Shanghai

I. Development Status of ESG Financial Services in the Banking Industry

(I) Development Background

In recent years, China's green finance policy system has been continuously improved, providing important guidance for the green and sustainable development of the banking industry. In 2019, the National Development and Reform Commission and six other ministries jointly issued the *Green Industry Guiding Catalogue (2019 Edition)*, providing clear industry definitions and guidance for green finance development, supporting the identification and investment of green industries, and effectively promoting innovation in green financial products and services. In 2022, the former China Banking and Insurance Regulatory Commission (CBIRC) issued the *Guidelines on Green Finance for the Banking and Insurance Industries*, directing the banking industry in developing green finance from

multiple aspects such as strategic advancement, main responsibilities, risk management, and investment and financing processes. In the same year, the People's Bank of China released the *Green Finance Performance Evaluation Scheme for Banking Depository Financial Institutions*. The evaluation of financial institutions can be applied in areas such as differentiated deposit insurance fee rates approval, Macro Prudential Assessment (MPA), monetary policy tools, window guidance, and countercyclical capital requirements, having a widespread impact on the banking industry. In 2024, the People's Bank of China, along with six ministries, issued the *Guiding Opinions of Further Strengthening Financial Support for Green and Low-Carbon Development*, proposing to build an internationally leading financial support system for green and low-carbon development in the next five years. It encourages banks and other financial institutions to develop comprehensive green finance and support green and low-carbon development.

As one of China's economic centers, Shanghai actively promotes the development of green finance. In 2021, the General Office of the Shanghai Municipal People's Government issued the Implementation Opinions on Accelerating the Development of an International Green Financial Hub to Serve the Goals of Carbon Peaking and Carbon Neutrality (hereinafter referred to as the "Implementation Opinions"), clarifying the main tasks for banking financial institutions in participating in the development of green finance. In 2023, the Shanghai Local Financial Supervision and Administration Bureau, in conjunction with the Shanghai Branch of the People's Bank of China, the Shanghai Regulatory Bureau of the National Financial Regulatory Administration, the Municipal Development and Reform Commission, and other departments, jointly issued the Shanghai Transition Finance Catalogue (Trial). In August 2024, the Shanghai Municipal People's Government issued the Action Plan of Shanghai on Accelerating Green and Low-carbon Transition (2024-2027), effectively guiding banks and other financial institutions to support high-carbon industries in transitioning to low-carbon through capital introduction, promoting synergy and complementarity between transition finance and green finance, enriching the supply of transition finance products, and pioneering innovation in transition finance development. These policies reflect Shanghai's foresight and innovation in the field of green finance. Through policy guidance and incentives, they effectively promote the tilt of financial

resources toward green and low-carbon fields, supporting sustainable economic development and green transformation.

(II) Service Categories

1. Green Credit

Green credit refers to the lending approach where financial institutions, based on national environmental economic policies, use environmental audits as an important principle in loan issuance, prioritizing support for fields such as green environmental protection and energy conservation. Under the premise of controllable risks and commercial sustainability, banks and other financial institutions can increase green credit support for key areas, thereby optimizing the credit structure and promoting the green transformation of the economic structure.

2. Green Bonds

Green bonds refer to corporate bonds where the raised funds are mainly used to support fields such as energy-saving and emission reduction technological transformation, green urbanization, clean and efficient energy utilization, new energy development and utilization, and circular economy development. They can effectively guide social capital toward green industries, thereby promoting energy conservation and emission reduction and facilitating sustainable economic development. Banks' green bond businesses include green bond underwriting and green bond investment.

3. Other Services

The ESG services of the banking industry are extensive. Besides green credit and green bonds, banking ESG services also include green supply chains, green leasing, green deposits, and various other services. Green supply chains are an innovative model of green financial services, providing financial products and services such as green procurement, green factoring, green bills, green letters of credit, and carbon footprint-linked loans to support the

green and low-carbon transformation of upstream and downstream enterprises in the supply chain. Green leasing is also an important financial service product in the field of green finance, offering leasing products and services that support environmental improvement, address climate change, and promote resource conservation and efficient utilization. Green deposits refer to deposit products absorbed by financial institutions that are directed to support green industries and sustainable development projects. With the increasing emphasis on various ESG topics, banks and other financial institutions will further strengthen exploration in ESG innovative service areas, adding vitality to ESG development.

(III) Development Status

After years of development, Shanghai's banking industry has achieved significant results in the ESG field.

At the organizational system level, many banks in Shanghai have incorporated environmental and social issues into the agendas of their board meetings. Non-financial indicators such as environmental and social benefits have also been appropriately introduced into the performance appraisals of management teams, continuously promoting the implementation of ESG management. Starting from ESG factors, these banks have sorted out and improved the overall organizational system, department and job responsibilities, business processes, and management systems. For example, Shanghai Pudong Development Bank has established a Green Finance Promotion Committee and a Green Finance Department at the level of the head office. Bank of Shanghai has formulated the Regulations on Green Finance Management of Bank of Shanghai and Management Procedures of the Green Finance Promotion Committee of Bank of Shanghai, etc.

At the risk management level, formulating ESG risk management measures and incorporating environmental, social, and governance risks into the comprehensive risk management system is an important part of the implementation of the ESG concept by the banking industry in Shanghai. Currently, many banks in Shanghai classify their customers from the dimension of environmental risk in accordance with the regulatory requirements for the identification and assessment of environmental, social, and governance risks. They also

conduct regular monitoring of credit customers regarding environmental and social risk events, continuously collect information on environmental and social risks, and establish and maintain lists of customers with significant environmental and social risks, covering enterprises subject to administrative penalties, those belonging to the category of eliminating backward production capacity, and key state-controlled enterprises, etc. For example, Industrial and Commercial Bank of China has set up a five-color environmental and climate risk rating system for enterprises, namely "green, blue, yellow, red, and black", linking the climate risk rating with the loan interest rate, using the results of the environmental and climate risk rating to guide the allocation of credit funds and implementing differentiated management.

At the ESG information disclosure level, many Shanghai-based corporate banks have disclosed their ESG reports externally, systematically elaborating on the situation of the banks' ESG governance and system construction. Meanwhile, under the guidance of the Shanghai Head Office of the People's Bank of China, many Shanghai-based corporate banks, branches of various banks in Shanghai, and foreign banks have compiled the *Environmental Information Disclosure Report of Financial Institutions*. Some banks have publicly disclosed such reports externally, comprehensively explaining to the public the banks' green development strategies, governance and related policies, as well as the management processes, latest products and service schemes in the field of environmental risks.

II. Development Status of ESG Financial Services in the Securities Industry

(I) Development Background

In recent years, relevant departments have issued a series of policies to promote the development of ESG financial services in the securities industry. In terms of **implementing** the ESG development concept, the Self-Regulatory Guidelines for Companies Listed—Sustainability Report (For Trial Implementation) released by the three major stock exchanges and the Shanghai State-Owned Holding Listed Companies Environmental, Social, and Governance (ESG) Index System (Version 1.0) formulated by the Shanghai Municipal State-owned Assets Supervision and Administration Commission aim to further standardize

the preparation and disclosure of ESG reports of listed companies and promote the participation of financial institutions and intermediary service institutions in sustainable development. In terms of **developing green financial products and services**, the *Green Investment Guidelines (For Trial Implementation)* released by the Asset Management Association of China, the *Green Bond Issuance Guidelines* issued by the General Office of the National Development and Reform Commission, and the *Implementation Opinions* issued by the General Office of Shanghai Municipal People's Government are all vigorously promoting financial services such as ESG investment and ESG financing to help enterprises achieve sustainable financing and green development through the capital market. In terms of carbon emission reduction policies, the *Action Plan for Carbon Dioxide Peaking Before 2030* issued by the State Council and the *Measures for the Administration of Carbon Emissions Trading (for Trial Implementation)* issued by the Ministry of Ecology and Environment provide guidelines for the securities industry to engage in carbon emission reduction business.

(II) Service Categories

1. ESG Investment

By improving the green investment research system, integrating ESG factors into the entire process of target screening, due diligence, investment decision-making, post-investment management, and capital exit, securities firms further strengthen their green investment layout. They enrich ESG product offerings, promote index development and product innovation, guide social capital toward projects that align with ESG concepts, and help clients achieve long-term sustainable returns.

2. ESG Financing

Optimizing business processes, conducting ESG negative screening and due diligence, and using enterprises' ESG performance as an important basis for determining financing amounts, costs, and terms. Establishing fast approval channels for green projects and

strengthening ESG management during the project's duration. Providing comprehensive investment banking services such as IPOs, refinancing, and mergers and acquisitions for green industrial development and the transformation and upgrading of traditional industries. Actively expanding green infrastructure public REITs business. Increasing efforts to develop green bonds, social responsibility bonds, and green asset securitization projects to enhance bond underwriting scale.

3. Carbon Financial Services

Carbon financial services refer to financial activities related to carbon emission trading, including primary market carbon asset development (CCER, carbon inclusive, Verified Carbon Standard (VCS), etc.), secondary market proprietary trading, carbon financial product business (carbon-neutral bonds, carbon-structured products, etc.), carbon financial derivatives business (such as carbon quota forward transactions, futures, options, and other on-exchange and over-the-counter derivatives), and carbon asset management business (such as carbon borrowing, custody, repurchase). Additionally, securities companies can participate in the carbon market as intermediaries and become liquidity providers.

4. Other Services

Other services mainly include ESG asset custody business and ESG agency sales business. In the ESG custody business, ESG standards are integrated into the custody services of public funds, private funds, and other various financial products to ensure that the investment of custody assets complies with sustainable development principles, promoting the construction and development of a green financial ecosystem. In the ESG agency sales business, by actively promoting and selling financial products that meet ESG standards, such as ESG-themed funds and green bonds, securities firms help investors achieve social responsibility and sustainable development goals through the capital market.

(III) Development Status

Shanghai's securities industry has shown a good development momentum in various

aspects, including ESG governance, ESG investment and financing, and carbon finance, and has initially formed a relatively complete financial product and service system.

In terms of ESG Governance, Many securities firms in Shanghai are promoting the establishment of ESG committees at the management level, setting up specialized departments, teams, and positions as needed, and exploring the establishment of cross-line, full-business-chain agile organizations. The committees strengthen overall coordination, regularly summarize the work progress of subordinate units, promptly research and solve encountered problems and challenges, enhance cross-unit collaboration, and systematically advance ESG governance work.

In terms of ESG Investment and Financing, the amount of green bonds underwritten by securities companies has increased significantly, and market demand for green financial products continues to rise. According to disclosure information in ESG reports from multiple Shanghai-based securities companies such as Guotai Junan Securities, Haitong Securities, Orient Securitie, Everbright Securities, and Shenwan Hongyuan Securities, the total scale of green bonds underwritten in 2023 has reached 115.157 billion yuan, reflecting the continuous growth in market demand for ESG products.

In terms of Carbon Finance, Shanghai's securities industry is gradually becoming an important participant and influential pricing and trading institution in the carbon trading market. Taking Guotai Junan Securities as an example, it has successively completed the first CCER transaction in the domestic securities industry, the first carbon inclusive transaction, the first income certificate linked to carbon emission quotas, and the first over-the-counter option linked to domestic carbon emission rights. As of the end of August 2024, it has cumulatively participated in carbon trading market transactions exceeding 80 million tons, providing the market with high-quality carbon financial services, helping enterprises effectively activate carbon assets, and assisting in carbon price discovery.

III. Development Status of ESG Financial Services in the Fund Industry

(I) Development Background

In 2016, the Guiding Opinions on Building a Green Financial System jointly issued by

seven ministries, including the People's Bank of China and the Ministry of Finance, proposed guiding more social capital to invest in green industries. It encouraged relevant financial institutions to develop green financial products such as public and private funds based on green indexes, pointing the direction for the fund industry's green investment. In 2018, the Asset Management Association of China released the *Green Investment Guidelines (For Trial Implementation)*, further strengthening fund managers' awareness of environmental risks, clarifying the connotation of green investment, and providing specific norms for the fund industry to carry out green investment.

As an important carrier of national strategies, Shanghai has a demonstrative effect in the ESG development of the fund industry. In 2021, actively responding to national policies, the General Office of the Shanghai Municipal People's Government issued the *Several Opinions on Accelerating the Building of Shanghai Global Asset Management Center*, proposing to strengthen Shanghai's position as a global asset management center by enriching green bonds and stock indexes and promoting the development of fund products based on these indexes, clarifying the path for the green transformation of the financial market. Under the guidance of relevant policies, Shanghai's fund industry actively practices sustainable development and ESG concepts, gradually increasing its layout in ESG investment, and is expected to play a leading role in the field of green finance, contributing more to achieving the carbon peaking and carbon neutrality goals.

(II) Service Categories

1. ESG Investment

Pure ESG Funds mainly include pure ESG thematic funds and ESG strategy funds. Pure ESG thematic funds refer to funds whose names contain ESG keywords, and they generally use ESG investment decisions as the main strategy. ESG strategy funds refer to funds that include ESG in their investment strategies and performance benchmarks; these funds typically use ESG as an auxiliary strategy.

General ESG Funds include environmental protection funds, social responsibility funds, and corporate governance funds. Environmental protection funds are funds whose names

contain keywords such as low carbon, carbon neutrality, new energy, environmental protection, green, ecological environment, and clean energy. They generally consider environmental protection factors such as greenhouse gas emissions, energy consumption and efficiency, and air pollutants as primary considerations. Social responsibility funds are funds whose names contain the keyword "responsibility," generally focusing on social responsibility performance such as diversity and equality, opportunity, health, and safety. Corporate governance funds are funds whose names include the keyword "governance," typically considering corporate governance aspects such as codes and business principles, transparency, and board diversity as primary factors.

2. Responsible Management

Responsible management by fund companies is an important component of financial services to the real economy, playing a practical role in promoting sustainable development in their regions and markets. Specifically, responsible management includes exercising voting rights externally and participating in the governance of invested companies. These two aspects are key means to guide the healthy development of the market. Through this approach, fund companies can not only bring economic returns to investors but also make positive contributions to the sustainable development of society.

(III) Development Status

1. Number and Scale of ESG Funds

Although ESG investment started relatively late in China, it has developed rapidly. After years of independent exploration on the investment side, the ESG concept has been incorporated into the policy framework. Under the dual drive of policy guidance and market forces, the domestic ESG investment ecosystem—from asset owners to fund managers to listed companies—continues to show strong development momentum, giving rise to diversified ESG investment practice innovations. In terms of the number and scale of funds, since 2018, the number of ESG funds nationwide has grown rapidly. By mid-2024, the

number of ESG funds nationwide had reached 484, an increase of 325% compared to 2018. Although the scale of ESG funds nationwide declined after 2021, the overall trend shows that by mid-2024, the scale of ESG funds nationwide had reached 502.1 billion yuan, an increase of 422% compared to 2018.

The number and scale of ESG funds in Shanghai have grown rapidly overall. From 2018 to 2024, the number of ESG funds in Shanghai increased significantly, reaching 224 by mid-2024, a 315% increase compared to 2018 (see Figure 3.1). Although the scale of ESG funds in Shanghai declined after 2021, by mid-2024, the scale had increased by 376% compared to 2018, showing a significant long-term increase (see Figure 3.2). Meanwhile, Shanghai's ESG funds have consistently maintained a leading position nationwide, accounting for nearly 50% of both the number and scale, reflecting the strong advantages of Shanghai's fund industry in the ESG field.



Figure 3.1: Number of ESG Funds Nationwide and in Shanghai

Data Source: Wind Database, compiled by Harvest Fund and China Universal Asset Management Co. Ltd.



Figure 3.2: Scale of ESG Funds Nationwide and in Shanghai (100 million yuan)

Data Source: Wind Database, compiled by Harvest Fund and China Universal Asset Management Co. Ltd.

2. Performance of ESG Funds

ESG funds have shown significant excess returns over the long term, but over shorter

periods, ESG funds have not demonstrated a clear advantage compared to similar public funds.

(1) Equity ESG Funds

The performance of equity ESG funds managed by fund companies in Shanghai is similar to the national level. As of June 30, 2024, all equity ESG funds had cumulative returns over the past five and three years that generally exceeded the CSI 300 Index, indicating good long-term investment value. However, over the past year and year-to-date, the performance of equity ESG funds showed some volatility compared to index benchmarks, mainly affected by environmental protection ESG funds. This subcategory experienced significant performance fluctuations over the past year due to market style shifts, and its high scale proportion dragged down the average performance of overall ESG funds. Pure ESG funds, social responsibility funds, and corporate governance funds all exhibited good excess returns compared to the CSI 300 Index, especially two corporate governance funds under Shanghai fund companies, which had an average excess return of 12.74% over the index in the past year, demonstrating the resilience of corporate governance factors during market volatility.

(2) Bond ESG Funds

The performance of bond ESG funds managed by Shanghai fund companies is similar to the national level. Nationwide, bond ESG funds performed relatively steadily, with an average return of 5.08% year-to-date. Bond ESG funds under Shanghai fund companies slightly outperformed the national average, with a year-to-date return of 5.64%. ESG strategy funds and social responsibility thematic funds had higher cumulative returns over the past year and year-to-date, possibly related to these funds allocating more to lower-risk policy financial bonds and other interest rate bond varieties. However, due to the allocation characteristics of bond ESG funds, they are less likely to achieve excess returns compared to medium- and long-term pure bond funds in credit bonds and first-tier and second-tier bond funds that can allocate equity or equity-like assets.

(3) Mixed ESG Funds

The performance of mixed ESG funds managed by Shanghai fund companies is similar to the national level. In recent years, the substructure of mixed ESG funds has been adjusted,

gradually shifting from mainly environmental protection and social responsibility thematic funds to more comprehensive pure ESG thematic funds and ESG strategy funds. Over the past five years, all mixed ESG funds have performed well, with corporate governance funds performing particularly prominently. Over the past year and year-to-date, the performance of different ESG thematic funds has diverged. Based on the characteristics of investment targets that meet relevant thematic criteria and the alignment with market styles, corporate governance thematic funds have shown outstanding cumulative returns, while social responsibility and environmental protection thematic funds have experienced greater short-term performance fluctuations.

3. Implementation of Responsible Management

According to statistics from voting advisory firm ZD Proxy Shareholder Services, Shanghai fund companies have performed excellently in independently disclosing responsible management policies, increasing from one company at the end of 2020 to seven companies at the end of 2023. The proportion of Shanghai fund companies among the national total has significantly increased from 9.09% to 36.84%, reflecting the firm determination of Shanghai fund companies to fulfill social responsibility.

IV. Development Status of ESG Financial Services in the Insurance Industry

(I) Development Background

Since 2022, insurance regulatory agencies have continuously intensified the construction of ESG systems in the insurance industry. In June 2022, the former CBIRC issued the *Guidelines on Green Finance for the Banking and Insurance Industries*, becoming the first comprehensive green finance programmatic document. In November of the same year, the former CBIRC released the *Notice of Issuing the Statistical System for Green Insurance Business*, clarifying the scope and statistical standards of green insurance for the first time. As a supplement to regulatory systems, the Insurance Association of China released the *Green Insurance Classification Guidelines (2023 Edition)* in 2023, becoming a self-regulatory norm

for the insurance industry to carry out green insurance, green investment, and green operations.

Shanghai has always attached great importance to the development of green insurance in the process of building a green financial system. In the Implementation Opinions issued by the General Office of the Shanghai Municipal People's Government in 2021, it was clearly proposed to actively innovate green insurance products, encourage the development of green industry insurance, carbon trading credit guarantee insurance, carbon sink loss insurance, and other related insurance products, and pilot compulsory environmental pollution liability insurance. In 2023, the Shanghai Office of the CBIRC, together with the Shanghai Municipal Development and Reform Commission and seven other departments, jointly issued the Action Plan for Shanghai Banking and Insurance Industry for Promoting Green Finance Development to Serve the Carbon Peaking and Carbon Neutrality Strategy During the 14th Five-Year Plan Period, setting a development goal of exceeding 1.5 trillion yuan in green insurance protection amounts by 2025. In 2022, Pudong New Area introduced the Provisions of Pudong New Area of Shanghai Municipality on Promoting the Green Finance Development, promoting the inclusion of environmental pollution liability insurance in local regulations, and in 2023, it issued the first environmental pollution liability insurance norms, taking the lead in exploring the implementation of a compulsory environmental pollution liability insurance system.

(II) Service Categories

1. Green Insurance

According to the *Green Insurance Business Statistical System* issued by the former CBIRC, green insurance refers to the collective term for economic behaviors in which the insurance industry provides risk protection and capital support in areas such as environmental resource protection, social governance, green industry operation, and green life consumption. It is divided into three categories: ESG risk insurance, green industry insurance, and green life insurance. ESG risk insurance includes weather index insurance, catastrophe insurance, and environmental pollution liability insurance. Green industry insurance includes insurance

related to clean energy, energy conservation and environmental protection, green agriculture, and other related industries. Green life insurance mainly refers to insurance related to new energy vehicles.

2. Green Investment

Insurance funds are characterized by large scale, long terms, and a pursuit of stable returns, which can match the long-term and large-scale capital needs of green industries. Green investment of insurance funds refers to the practice of green "investment concepts" or investment in the scope of green "investment targets." The green "investment concept" responds to the national green and low-carbon development goals and plans, as well as relevant environmental protection laws and regulations, industrial policies, and industry access policies, promoting a comprehensive green transformation of economic and social development. The scope of green "investment targets" supports the construction of a clean and low-carbon energy system, supports energy conservation, pollution reduction, carbon reduction, greening, and disaster prevention in key industries and fields, promotes the promotion and application of green and low-carbon technologies, and provides financial support to key green industry fields.

(III) Development Status

1. Continuous Enrichment of Green Insurance Products, Forming a Diversified Product Pattern

Shanghai's insurance industry continues to enrich the supply of green insurance products, actively providing innovative service solutions around the development of fields such as clean energy, green transportation, and ecological carbon sinks.

Clean Energy: Shanghai's insurance industry innovatively developed distributed photovoltaic power generation loss compensation insurance, upgrading from insuring property losses to insuring power generation efficiency for photovoltaic projects. It covers operational risks of investors and property owners during the operation of photovoltaic power

plants, effectively assisting the high-quality development of the photovoltaic power generation industry.

Energy Storage: The industry actively explores and promotes energy storage system capacity attenuation compensation guarantee insurance, protecting against direct losses caused by the actual capacity of new energy storage systems being lower than the capacity standards agreed upon in purchase and sale contracts. It establishes a closed-loop system of "pre-insurance certification + in-insurance monitoring + post-insurance management" for full-process risk control and certification evaluation.

Ecological Protection: A series of ecological carbon sink insurance products have been launched, including forest carbon sinks, grassland carbon sinks, and wetland carbon sinks.

Carbon Market Development: Innovative development of carbon asset protection products such as carbon emission reduction loss insurance and low-carbon project machinery damage carbon trading loss insurance.

Green Transportation: Actively deploying the entire industry chain of new energy vehicles and expanding new energy vehicle insurance business. Leveraging the advantages of the shipping center, the industry actively responds to the trend of increasing international shipping emission reduction requirements, constructs a shipping decarbonization risk reduction system, and improves the risk management system for new fuel shipbuilding and modification, providing assistance for the green transformation and development of the shipping industry.

2. Continuous Growth in Green Investment Scale, Promoting Industry Transformation and Upgrading

The insurance industry continues to increase its layout in the field of green investment, actively assisting the green and low-carbon transformation of the economy and society. In recent years, Shanghai's insurance industry has participated in the construction of green projects in fields such as clean transportation, clean energy, and pollution prevention through debt investment plans, equity investment plans, asset-backed plans, and industrial funds, playing a key role in promoting the "dual carbon" goals. By the end of 2023, China Pacific

Insurance's total green investment exceeded 200 billion yuan, and PICC Asset Management's green investment scale reached 97.9 billion yuan. Meanwhile, Shanghai's insurance industry continues to improve the ESG investment management system, enhance ESG investment capabilities, and promote the implementation of ESG investment work by formulating responsible investment policies, ESG investment management methods, and green investment guidelines, clarifying ESG investment methods and process requirements.

Section 3: Challenges Faced by Shanghai Financial Institutions in Providing ESG Financial Services

Despite the enormous development potential of ESG-related financial businesses, financial institutions need to overcome multiple challenges in the implementation process, including data quality, risk management, customer demand, and regulatory requirements, to achieve sustainable business growth and social impact.

I. Data Foundation Remains Weak

Currently, ESG information disclosure in China is still mainly by listed companies and financial institutions, with issues such as low disclosure rates, low quality of disclosed content, and low standardization of data. The infrastructure construction of ESG data is lacking, and there are difficulties in verifying corporate environmental data, making horizontal and vertical comparative evaluation of ESG disclosures challenging. The weakness of the data foundation directly restricts the development of related financial products and businesses.

II. Inconsistent ESG Evaluation Standards

ESG evaluation systems lack uniformity and standardization, and integration with China's national conditions needs to be strengthened. In the ESG investment field, the combination of ESG risk screening concepts and practices is still in the exploratory stage. There is no consensus in the market on the competitive differences reflected by ESG concepts and how to

balance long-term investment returns with short-term interests.

III. Risk Management Capabilities Need Improvement

ESG risks involve long-term and non-financial risks, such as climate change and social injustice. The identification, assessment, and management of related risks are still in the initial stages, and systematic management methods have not yet been formed. Further acceleration in research on management tools and technologies is needed.

IV. Shortage of ESG Professional Talent

The ESG field requires interdisciplinary professional talent, and the existing talent supply is far from sufficient to meet the rapidly growing market demand, limiting the development and innovation of ESG financial businesses.

Chapter 4: ESG Practices in Shanghai's Exchange Market System

As China's economic center and international financial hub, Shanghai's diversified and mature market system constitutes one of its key developmental advantages. With ESG concepts gradually becoming core elements of capital markets and corporate strategic planning, the current state and development trends of Shanghai's ESG market system not only have a profound impact on the green transformation of the local economy but also serve as a model for ESG practices and standard-setting nationwide and globally.

Section 1: Overview of ESG Practices in Shanghai's Exchange Market System

In recent years, Shanghai's market system construction has made significant progress, achieving notable enhancements in resource allocation capabilities and service outreach. Leveraging multi-tiered market platforms such as stock exchanges, environmental energy exchanges, regional equity markets, and data exchanges, Shanghai has not only facilitated efficient resource allocation but also played a crucial role in promoting the practice of ESG concepts. This has provided a solid foundation and strong impetus for the in-depth advancement of ESG-related activities.

Stock exchanges are vital components of capital market operations, serving as key platforms that connect investors, listed companies, and intermediary institutions. Within the ESG ecosystem, stock exchanges guide market participants to focus on and practice ESG principles by formulating and implementing ESG-related rules, thereby promoting the sustainable development of capital markets. Under the unified leadership of the China Securities Regulatory Commission and with robust support from the Shanghai Municipal Party Committee and Municipal Government, the Shanghai Stock Exchange continuously optimizes and enhances its own sustainable development while serving the national agenda of green development and promoting social harmony.

Environmental energy exchanges play a pivotal role in the ESG ecosystem by allocating carbon emission resources, helping enterprises realize ecological value. They promote

low-carbon development of enterprises, direct funds toward green and low-carbon sectors, and enhance corporate ESG performance. The Shanghai Environment and Energy Exchange is an important market-based platform serving the nation's "dual carbon" goals, incentivizing enterprises to actively practice ESG concepts, especially those related to green and low-carbon development. Through market transactions, the carbon market optimizes the allocation of carbon emission resources, thereby promoting low-carbon development in enterprises, channeling funds into green and low-carbon fields, and improving corporate ESG performance. Leveraging the functionalities of the carbon market trading platform, the Shanghai Environment and Energy Exchange actively expands market construction efforts in carbon finance, carbon inclusiveness, and capacity building, providing support for enterprises in ESG practices.

As a key component of China's capital market system, regional equity markets focus on supporting the growth and development of small and micro enterprises. Within the ESG ecosystem, these markets can encourage more enterprises to value sustainable development from their growth stages by establishing dedicated ESG boards and indices, thereby fostering a robust atmosphere for ESG practices. The Shanghai Regional Equity Market, primarily represented by the Shanghai Equity Exchange Center, not only provides a platform for equity trading and custody—promoting capital flow and optimal resource allocation—but also guides enterprises to implement ESG transformation through its platform. This enhances their financial performance and brand value, promotes high-quality development, and ultimately achieves sustainable development goals.

As emerging trading venues, data exchanges facilitate the effective circulation and utilization of data resources by providing data trading services, offering essential data support for ESG-related services within the ESG ecosystem. This promotes communication and collaboration among various social entities, collectively aiding the green transformation of the economy and comprehensive social development. The Shanghai Data Exchange, a quasi-public service institution established under the guidance of the Shanghai Municipal People's Government, is tasked with constructing a data factor market and advancing the process of data assetization. It undertakes functions such as exploring and innovating data factor circulation systems and norms, providing infrastructure services for data factor

circulation, and managing data product registration and trading. The Shanghai Data Exchange is committed to promoting the circulation and trading of ESG data factors, injecting new vitality into the ESG ecosystem, and supporting high-quality economic development.

Section 2: Current Status of ESG Practices in Shanghai's Exchange Market System

I. Shanghai Stock Exchange

In recent years, the Shanghai Stock Exchange (SSE) has been fully expanding direct financing channels for the green and environmental protection industries, continuously enhancing the environmental responsibility awareness of listed companies, investors, and other market participants. It actively supports international cooperation in China's green finance sector, jointly promoting the construction of the ESG system. The specific measures taken by the SSE include:

First, supporting financing for green enterprises and projects. Actively serving the national "Carbon Peaking and Carbon Neutrality" strategy, the SSE supports green enterprises in their development through equity and debt financing.

Equity financing: As of the end of 2023, 57 companies in the new energy and energy-saving environmental protection industries have been listed on the SSE STAR Market, with cumulative financing of RMB 91.555 billion and a total market capitalization of RMB 634.866 billion. Fifteen companies have completed refinancing, with a total financing amount of RMB 52.997 billion.

Debt financing: In 2023, the SSE issued green bonds totaling RMB 152.6 billion, a year-on-year increase of 6%. By the end of 2023, the cumulative issuance of green bonds on the SSE reached RMB 692.5 billion, including RMB 423.8 billion in green corporate bonds and RMB 268.7 billion in green asset-backed securities.

Second, strengthening ESG information disclosure by listed companies. Continuously improving the information disclosure rules related to ESG for listed companies, guiding them to better integrate sustainable development concepts, and enhancing corporate governance levels and social responsibility awareness (see Table 4.1). On April 12, 2024, under the unified deployment and guidance of the China Securities Regulatory Commission,

the SSE officially released the "Guidelines No. 14 of Shanghai Stock Exchange for Self-Regulation of Listed Companies—Sustainability Report (Trial)", which came into effect on May 1, 2024. The guidelines require that sample companies of the SSE 180 Index, the STAR Market 50 Index, and companies listed both domestically and internationally must disclose their 2025 sustainable development reports by 2026 at the latest, and encourage other listed companies to disclose voluntarily.

In 2023, 1,184 companies listed on the SSE disclosed special reports on ESG, social responsibility, sustainable development, etc., increasing the proportion to 53%. The disclosure rate of SSE 50 Main Board companies reached 100%, and the disclosure rate of SSE 180 Main Board companies exceeded 90%. 790 companies have disclosed ESG-related reports for more than three consecutive years, and over 600 companies have disclosed such reports for more than five consecutive years. A group of companies that consistently disclose sustainable development information is taking shape (see Figure 4.1).

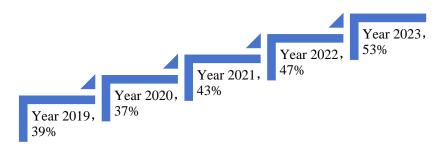


Figure 4.1: Trend of Proportion Changes in ESG and Special Report Disclosures by Shanghai-Listed Companies

Data Source: Wind Database

Table 4-1: Shanghai Stock Exchange Guidelines on ESG Information Disclosure

Release Date	Guideline Name	Main Content
May 2008	Shanghai Stock Exchange Guidelines for Environmental Information Disclosure of Listed Companies	Requires listed companies to disclose major environmental protection-related events that may impact stock prices, and companies listed as heavily polluting by environmental authorities must promptly disclose relevant information.
December 2016	Notice on Further Improving Information Disclosure on Poverty Alleviation Work by Listed Companies	Details the requirements for information disclosure on poverty alleviation and emphasizes the social responsibilities companies should fulfill in poverty-related initiatives.
September 2020	SSE Guidelines No.2 on the Application of Self-Regulation Rules for Listed Companies on SSE STAR Market - Voluntary Information Disclosure	Encourages STAR Market companies to voluntarily disclose more ESG information.
April 2024	Shanghai Stock Exchange Guidelines No. 14 of Shanghai Stock Exchange for Self-Regulation of Listed Companies— Sustainability Report (Trial)	Requires companies included in the SSE 180 Index, STAR 50 Index, and companies dual-listed domestically and internationally to disclose their 2025 Sustainability Report by 2026, while encouraging other companies to disclose voluntarily.

Data Source: Shanghai Stock Exchange Official Website

Third, enriching ESG indices and products. The stock exchange accelerates the construction of the investment end, vigorously expanding green investment varieties. For example, as of the end of 2023, the Shanghai Stock Exchange (SSE) and China Securities Index Co. Ltd have cumulatively released 138 ESG and other sustainable development indices, with 86 tracking products totaling 105.028 billion yuan in scale. They have made significant efforts to promote the development of green Exchange-Traded Fund (hereinafter referred to as "ETF") products. By the end of 2023, the Shanghai market had listed a total of 43 green ETFs, with a combined scale of 46.4 billion yuan, covering deep low-carbon themes such as new energy vehicles, photovoltaics, Yangtze River protection, and carbon neutrality of the Environmental Energy Exchange. Three representative products—the Photovoltaic ETF, New Energy Vehicle ETF, and New Energy ETF—each have scales exceeding 5 billion yuan.

Fourth, cultivating ESG investors. The stock exchange continuously strengthens the promotion of ESG concepts, actively guiding green investment. It organizes cooperative

investor education activities with members, conducts presentations and promotions, and guides investors to fully recognize the value of green investment. Advocating rational investment philosophies, it directs investors to value the sustainable development capabilities and social value of listed companies, better serving long-term funds such as social security funds and pensions in practicing green investment.

Fifth, deepening international cooperation on ESG. The stock exchange actively contributes China's experience in the formulation of international standards for green finance. For example, after the International Sustainability Standards Board (ISSB) released IFRS S1 and IFRS S2 in March 2022, the SSE, as the Vice Chair of the Sustainability Working Group of the World Federation of Exchanges (hereinafter referred to as "WFE"), actively led discussions among working group members, promoting peer exchanges to form relevant feedback opinions. Simultaneously, it actively participated in providing feedback on multiple documents such as the carbon market consultation paper by the International Organization of Securities Commissions (hereinafter referred to as "IOSCO") and the WFE's green equity labels. It actively engages in international promotion of green finance, setting up green topics in international investor conferences and international roadshow activities, and organizes international investors to visit Shanghai-listed companies with outstanding ESG performance.

II. Shanghai Environment and Energy Exchange

The Shanghai Environment and Energy Exchange (SEEE) is an important market-based platform serving the national Carbon Peaking and Carbon Neutrality goals, motivating enterprises to actively practice ESG concepts, particularly the principles of green and low-carbon development. Through market transactions, the carbon market optimizes the allocation of carbon emission resources, thereby promoting low-carbon development in enterprises, directing funds toward green and low-carbon sectors, and enhancing enterprises' ESG performance. Leveraging the functionalities of the carbon market trading platform, the SEEE actively expands market development efforts in carbon finance, carbon inclusiveness, capacity building, and other areas, providing support for enterprises in ESG practices.

In terms of carbon market construction, the SEEE undertakes the construction and operation of the national carbon emissions trading system. Under the guidance of competent

authorities, it is deeply involved in establishing the carbon market's institutional framework. The systems for carbon emission data accounting, reporting, and verification ensure the accuracy of enterprises' carbon data, providing fundamental data support for their carbon-related ESG information disclosure. The quota allocation and compliance system, along with carbon emission trading and regulatory systems, ensure the smooth operation of the market. The national carbon market covers approximately 5.1 billion tons of annual carbon dioxide emissions, incorporating 2,257 key emitting entities, making it the world's largest carbon market by greenhouse gas emissions coverage. In the future, following the unified national deployment, the carbon market will gradually include key emitting entities from industries such as petrochemicals, chemicals, building materials, steel, non-ferrous metals, paper, and civil aviation.

The SEEE is also the designated trading platform for Shanghai's carbon trading pilot and the nationally registered trading platform for the China Certified Emission Reduction (CCER) under the national carbon trading regulatory authorities. Shanghai's pilot carbon market already has over 1,600 market participants, including more than 400 key emitting entities and over 1,200 investment institutions, greatly enriching the diversity of market participants and helping to enhance market liquidity. Additionally, the Shanghai carbon market is the only pilot carbon market that includes the water transportation industry, covering over 50% of the city's carbon emissions. Since its opening in 2013, it has achieved 100% compliance among regulated enterprises for ten consecutive years, making a positive contribution to Shanghai's Carbon Peaking and Carbon Neutrality goals.

In terms of Carbon Inclusiveness System construction, the Shanghai Environment and Energy Exchange provides support for Shanghai's carbon inclusiveness operations, carrying out tasks such as connecting emission reduction scenarios, operating the carbon points mall, and trading emission reductions.

Carbon Inclusiveness offers value realization channels for small and medium-sized emission reduction projects and individual emission reduction behaviors. It mobilizes widespread social participation in carbon emission reduction efforts by connecting and supporting small and micro projects and individual low-carbon scenarios, stimulating the vitality of market entities.

A new path for value realization of small and micro emission reduction projects and individual low-carbon scenarios has been established, based on the fundamental principle of "benefiting the people and enterprises." It supports the development and construction of small and micro emission reduction projects and the verification of emission reductions. By connecting with low-carbon scenarios that gradually cover areas closely related to the public's daily life and work, it aggregates data on emission reduction behaviors and taps into the benefits of individual emission reductions.

By combining policy incentives, emission reduction trading, commercial incentives, and other measures, the incentive mechanisms are improved to achieve the creation and development of individual carbon accounts. This meets diversified consumer needs, builds a scientific and reasonable model for the development and absorption of emission reductions, promotes multi-party participation, and facilitates a closed-loop in resource utilization.

Carbon Inclusive emission reductions can be used to offset carbon emissions, encouraging social entities to participate in carbon neutrality activities. Social entities such as enterprises, institutions, and industry organizations can voluntarily purchase emission reductions to offset emissions from their own operations or activities to achieve carbon neutrality, actively fulfill social responsibility, enhance brand image, and set a positive benchmark.

In terms of carbon finance innovation, the Shanghai Environment and Energy Exchange (SEEE), from the perspective of serving market trading entities and promoting low-carbon investment and financing, has developed carbon market-related trading tools, financing tools, and support tools to provide financial support for enterprises in their ESG practices. Financing tools include carbon pledges, carbon repurchases, carbon lending, etc., which help enterprises better activate their carbon assets and reduce financing costs. The cash flow generated through these financing tools can effectively support enterprises in carrying out energy-saving and emission-reduction transformations and other ESG practice actions. The Shanghai Emission Allowance Forward is the nation's first and only centrally cleared standardized carbon financial derivative, which can help adjust the cost-benefit of emission reduction efforts and manage risks. Support tools include carbon-neutral stock indices and ETF funds, carbon insurance, carbon funds, etc., to broaden financing channels for

enterprises transitioning to low-carbon operations and green industry enterprises. Among these, the CSI Shanghai Environment and Energy Exchange Carbon Neutrality Index is guided by the goal of carbon neutrality, covering both green industry development and traditional industry transformation. This index applied the SEEE's carbon neutrality evaluation model for the first time; the model estimates the emission reduction potential of key industries by fitting carbon neutrality realization paths and analyzes key indicators affecting corporate carbon emissions, forming an effective low-carbon evaluation system. Once released, the CSI Shanghai Environment and Energy Exchange Carbon Neutrality Index attracted significant market attention. In 2022, eight leading fund companies issued ETF products linked to this index, with the initial fundraising totaling 16 billion yuan, playing a demonstrative role in leading low-carbon investment.

In terms of capacity building, specialized training in carbon trading, carbon management, carbon neutrality, and other areas has been actively carried out. The training has covered 17 provinces and cities nationwide and more than 30,000 participants, contributing to improving the overall quality of carbon-related practitioners and cultivating more low-carbon development and ESG management talents for enterprises. Regarding the carbon neutrality service platform, the SEEE initiated the establishment of the Carbon Neutrality Action Alliance, bringing together nearly a hundred enterprises and institutions, including industry-leading enterprises, financial institutions, and consulting agencies, to jointly explore low-carbon development paths for industries and enterprises. Additionally, the SEEE provides standardized carbon neutrality assessments, serving various enterprises, institutions, and individuals to meet their needs for carbon neutrality in operations, products, and activities.

III. Shanghai Equity Exchange

In April 2021, the Shanghai Equity Exchange launched the Carbon Neutrality Index, incorporating enterprises involved in new energy, energy conservation, and environmental protection within the Share Transfer System (hereinafter referred to as the "E Board") and the N Board, especially those that help offset carbon dioxide or greenhouse gas emissions.

Simultaneously, relying on the Basic Information Disclosure Layer of the Exhibition

Board (hereinafter referred to as the "Q Board"), the Shanghai Equity Exchange introduced the Green Q Board specifically serving green industry enterprises. In addition to meeting the basic listing display conditions of the Shanghai Equity Exchange, Green Q Board enterprises must also comply with the "Green Industry Guiding Catalog" jointly issued by seven ministries including the National Development and Reform Commission. As of the end of July 2024, there were 268 enterprises on the Green Q Board, with 165 constituent companies of the Carbon Neutrality Index, and the index stood at 12,327.61 points. According to the annual reports disclosed in 2023, the average operating revenue of the Carbon Neutrality Index constituent companies was 91.3203 million yuan, significantly higher than the average level of 56.1939 million yuan for all companies that disclosed annual reports, representing a year-on-year increase of 4.78%, with an average net profit of 482,500 yuan.

The construction of the Carbon Neutrality Index and the Green Q Board marks the basic establishment and improvement of the green financial service system in Shanghai's regional equity market. It not only constitutes an important part of the Yangtze River Delta Green Finance Reform and Innovation Pilot Zone but also helps to enhance the city's green enterprise project database, supports the financing needs of green and low-carbon enterprises, promotes all market participants to focus on social responsibility and sustainable development, and plays a positive role in Shanghai's efforts to build an international carbon financial center.

IV. Shanghai Data Exchange

As the core platform of the data factor market, the Shanghai Data Exchange has played a crucial role in promoting ESG development. It has not only facilitated the innovation of data products and the construction of the market ecosystem but also made significant contributions in ensuring the compliance and security of data transactions, promoting green supply chain management, responding to national policies, strengthening international cooperation, and cultivating professional talent. These efforts have provided solid support for the prosperity and sustainable development of the data factor market, specifically reflected in the following six aspects:

First, innovation and listing of ESG data products. The Shanghai Data Exchange has

listed various ESG-related data products, providing governments, enterprises, and investors with compliant and reliable ESG data sources, empowering precise ESG decision-making and promoting sustainable development. For example, the "Susallwave FIN-ESG Database" and "MioTech ESG Ratings" offer abundant data resources to market participants. These products not only provide basic data but also combine tools and solutions to help enterprises comprehensively enhance sustainable development value management. Particularly, the launch of the "Date Easy Loan" product, through the DCB (Data-Capital Bridge) data asset framework, provides data-factor enterprises with credit loan services centered on data assets, unleashing the potential of data factors.

Second, data support for green supply chain management. In terms of green supply chain management, the Shanghai Data Exchange has launched the carbon section, where data products applicable to green and low-carbon scenarios are centrally displayed. This not only enriches the supply side but also promotes upstream and downstream ecological collaboration, helping to facilitate the circulation and trading of carbon emission data factors along the industrial chain. It enhances enterprises' carbon emission management capabilities, thereby meeting the requirements of green trade standards and providing support for the development of export businesses. These data products not only play a role in the green and low-carbon field but also have wide cross-industry applications. They are equally practical in financial services, urban governance, transportation, and emergency management, effectively promoting the optimization of production processes, improving energy utilization efficiency, and driving the transition of low-carbon technologies, thereby promoting the construction and development of the ESG ecosystem. Over 50 data products in green and low-carbon scenarios have been listed, further advancing the development of green finance and carbon emission management.

Third, the construction of the data merchants system and activation of the market ecosystem. The Shanghai Data Exchange has built a data merchants system covering multiple fields such as data trading entities, data compliance consulting, and quality evaluation. This system nurtures and standardizes new market entities, promoting the prosperity of the circulation and trading ecosystem. By organizing ESG-themed supply and demand matchmaking meetings, the exchange has provided a platform for communication

and transaction negotiations between data suppliers and demanders, further activating the market ecosystem.

Fourth, compliance and security of data transactions. To ensure the compliance and security of data products, the Shanghai Data Exchange issues data product registration certificates, achieving one-code-per-data-product management. Additionally, the exchange has formulated comprehensive supporting institutional norms, establishing the basic principles of "No listing without compliance, no transaction without scenario," ensuring the compliance of data transactions.

Fifth, policy response and market prosperity plan. In response to national data policies, the Shanghai Data Exchange has timely adjusted and improved data trading systems, released a transaction rule system, and strengthened the security, compliance, and privacy protection of data transactions. Through the release of the "Data Factor Market Prosperity Plan" and the establishment of special incentive funds, the exchange has enriched the data merchants ecosystem and invigorated on-exchange transactions.

Sixth, international cooperation and talent cultivation. The Shanghai Data Exchange actively engages in international cooperation and exchanges, enhancing China's influence in the global data trading market. Simultaneously, by hosting educational and training activities, it has increased public awareness of the importance of ESG and cultivated professionals in data trading and analysis.

Section 3: Challenges and Opportunities in the ESG Development of Shanghai's Exchange Market System

I. Challenges in Building Shanghai's ESG Market System

In promoting the construction of the ESG market system, Shanghai faces four core challenges: the lack of unified ESG standards, making information disclosure and ratings among enterprises difficult to compare; significant differences in corporate awareness, leading to low participation from small and medium-sized enterprises and diverse investor needs; inconsistent quality of information disclosure, affecting market trust; and the lag in the development of the carbon market and data trading market, impacting the marketization process of ESG practices. These challenges not only hinder the deepening of corporate ESG practices but also constrain the rapid development and maturity of Shanghai's ESG market.

Firstly, lack of Unified ESG Disclosure and Evaluation Standards. Currently, there are numerous ESG standards globally, with differences across countries, regions, and institutions. The construction of the ESG market system lacks a widely recognized unified reference framework, leading to disparities in ESG information disclosure and ratings among different enterprises. This lack of comparability creates confusion for companies in their ESG practices and affects investors' and other stakeholders' ability to accurately assess corporate ESG performance.

Secondly, uneven awareness and participation among enterprises and stakeholders. Despite certain developments in ESG in recent years, many companies still lack sufficient understanding of the concept and importance of ESG, focusing more on short-term financial performance while neglecting long-term sustainable development capabilities. Especially for SMEs, even if some have awareness of ESG development, their small scale and limited funds make it difficult to bear the costs of systematically training employees and introducing ESG professionals, thereby limiting the promotion and application of ESG within this group. Additionally, differing perceptions and demands regarding ESG among investors and other market participants can impact the development of ESG investments and related products.

Thirdly, need for improvement in the quality of ESG information disclosure. Companies exhibit passivity, incompleteness, and inaccuracy in ESG information disclosure. Some firms engage in superficial disclosure merely for compliance purposes, failing to truly reflect the core content of ESG. Moreover, the collection, analysis, and management of ESG information require professional knowledge and technical support. Currently, the market lacks sufficient professionals in this field, and the application of big data and AI technologies in ESG is not yet widespread. This results in some companies lacking the capability to effectively gather and organize ESG information, affecting the accuracy and completeness of disclosed data.

Fourthly, underdeveloped carbon market and data trading market. Regarding the carbon market, factors such as limited industries participating in trading, a small number of market participants, and a lack of financial derivatives contribute to low liquidity and a noticeable compliance-driven phenomenon. For companies looking to monetize carbon credits generated from ESG practices through trading, the time costs are relatively high. In the data trading market, the definition of data ownership is not as clear as traditional assets; ownership and profit rights of data are hard to delineate, posing fundamental obstacles to data transactions. Additionally, cultivating an active data trading market requires enough market

participants, including data suppliers, data demanders, and data merchants. The ESG field is broad, with a massive demand for diverse data. However, the phenomenon of data silos limits the effective supply and efficient circulation of ESG data, hindering data from playing its proper role in the construction of the ESG system.

II. Opportunities in Building Shanghai's ESG Market System

For the Shanghai Stock Exchange (SSE), in the future, it will focus on the primary task of high-quality development, adhere to stability as a priority while seeking progress, unwaveringly follow the path of developing a modern capital market with Chinese characteristics, gather the strength of all market participants, and jointly build a robust ESG ecosystem.

Firstly, smooth green financing channels. Support and encourage eligible green enterprises to issue stocks for financing. Expand the issuance scale of green bonds and green asset-backed securities, strive to enrich innovative varieties of green bonds, and promote the green upgrade of the real economy.

Secondly, expand innovative green investment products. Actively develop green indices, improve the ESG index system, and develop index-tracking and index-linked products to provide the market with more investment tools that align with long-term value and sustainable development concepts.

Thirdly, guide the formation of a green development industry culture. Actively cultivate green investors. Guide investment institutions to fulfill social responsibilities, gradually forming a positive atmosphere of value investment, long-term investment, and rational investment within the industry.

Fourthly, steadily promote high-level international cooperation in green finance. Actively participate in international ESG policy discussions and rule-making, deepen bilateral exchanges and cooperation with overseas exchanges in green financial products and information, and jointly promote the two-way opening of the green securities market.

For the Shanghai Environment and Energy Exchange, in the future, under the unified deployment of competent authorities, it will steadily expand the industry coverage of the carbon market, enrich trading varieties and methods, thereby enhancing market liquidity, and better leverage carbon pricing to guide enterprises in practicing ESG, especially in low-carbon development. Further improve the carbon pricing mechanism by forming a price mechanism through an efficient carbon market, anchoring benchmark prices for various

carbon financial activities, and helping to form a reasonable carbon asset valuation system. This provides important references for enterprises and investors, aiding them in better carbon asset management and investment decision-making.

Enhance the information disclosure quality of regulated enterprises in the carbon market and jointly research with financial institutions to form a unified ESG evaluation standard. Additionally, the SEEE will, according to relevant provisions in the "Interim Regulations Governing Carbon Emissions Trading," guide key greenhouse gas emission units to publicly disclose relevant information from their annual greenhouse gas emission reports, and improve data credibility through carbon market monitoring, reporting, and verification mechanisms. In terms of building standard systems, the SEEE will collaborate with financial institutions to promote the unification of ESG evaluation standards.

For the Shanghai Equity Exchange, in the future, it should play its role as an important component of the capital market, actively respond to challenges, innovate and develop, assist in building the ESG ecosystem, and promote enterprises' green transformation and sustainable development. On one hand, it will place greater emphasis on improving enterprise quality, focus more on long-term value and ESG performance, and inject vitality and competitiveness into the market. Simultaneously, it will integrate the ESG concept throughout the entire service process, providing financing channels for enterprises while offering guidance and support from environmental, social, and governance dimensions, aiding technological innovation enterprises in achieving sustainable development.

On the other hand, actively participate in formulating unified, clear, and operable ESG standards and disclosure frameworks, refine disclosure requirements, and establish dynamic adjustment mechanisms. Strengthen information review to enhance ESG data quality and enterprise service capabilities. Collect and integrate data, analyze applications, and promote data sharing and exchange, encouraging enterprises to actively participate in ESG practices.

For the Shanghai Data Exchange, in the future, it will be committed to promoting the circulation and trading of ESG data, expanding the variety of ESG data products, optimizing data trading processes around the green and low-carbon field, and assisting in building the ESG system. In December 2023, the National Data Administration and multiple departments jointly released the " 'Data Elements X' Three-Year Action Plan (2024-2026)," which lists green and low-carbon as one of the twelve key areas empowered by data elements. It explicitly mentions optimizing ecological environment governance, promoting energy efficiency improvement, enhancing resource recycling, and facilitating production emission reduction and carbon reduction, pushing society to accelerate the transition toward greening,

low-carbon, and intelligence.

Under the national "Carbon Peaking and Carbon Neutrality" strategic deployment, as the organizer of data product circulation and the leader in the prosperous development of the data merchant ecosystem, the Shanghai Data Exchange will focus on building a service system of "one platform, one space, one market." It will concentrate on the circulation and trading of data in the green and low-carbon field, aggregate carbon emission data, focus on expanding core scenarios such as green finance and carbon emission management, open up the data circulation and trading pathways in the green and low-carbon field, enhance high-quality supply, and provide better platform-based supply and demand docking services driven by value through search matching and intelligent recommendation methods.

Chapter 5: ESG Services Provided by Third-Party Institutions in Shanghai

Third-party professional ESG services refer to a series of services related to ESG—such as consulting, evaluation, certification, and reporting—provided by independent third-party organizations. These services help enterprises enhance their ESG performance, meet the requirements of investors and regulatory agencies, and also assist investors in making more responsible investment decisions. This chapter presents the current development status of professional ESG services provided by third-party institutions in Shanghai from two aspects: third-party professional ESG services and third-party service institutions, and further analyzes the opportunities and challenges they face.

Section 1: Current Status of Third-Party ESG Services in Shanghai

Third-party ESG service institutions in Shanghai offer a diverse range of services, encompassing ESG consulting, rating, verification, report preparation, data services, and training. They provide enterprises with end-to-end services—from ESG strategic planning, information disclosure, rating and evaluation, IT intelligent systems, to continuous improvement. As independent third parties, these professional service organizations offer objective and impartial assessments and recommendations, helping companies optimize ESG performance, reduce ESG risks, comply with laws and regulatory requirements, and enhance investor trust and market competitiveness.

I. ESG Strategic Consulting

ESG strategic consulting primarily assists enterprises in formulating ESG strategic plans, clarifying development directions and goals, and ensuring that corporate strategies align with ESG principles. It involves building a comprehensive ESG management system, including governance structure, policy formulation, process optimization, and risk management, to ensure the effective implementation of ESG strategies.

According to surveys, third-party ESG professional service institutions in Shanghai generally consider the environmental domain as the primary focus for current enterprises

(100%), followed by the corporate governance domain at nearly 80%. Additionally, nearly 70% of consulting institutions have established various social issues that can help enterprises improve. However, relatively speaking, these issues have not become the core of enterprises' consulting needs (see Figure 5.1).

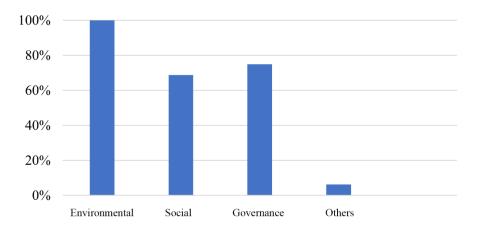


Figure 5.1 Key Areas in Which Shanghai's Third-Party ESG Professional Service Institutions
Provide ESG Services to Enterprises

Source: Data Research Department of Ecovane Environmental Co. Ltd

II. ESG Report Preparation

Primarily assists enterprises in preparing ESG reports that comply with current standards, showcasing the company's management capabilities and performance in ESG aspects. It also ensures the transparency and compliance of corporate ESG information to meet the requirements of regulatory agencies, investors, and other stakeholders.

Over 60% of Shanghai enterprises have sought or plan to seek external ESG consulting services. Among these, the area of greatest concern for companies is the preparation of ESG reports. This indicates that the demand for professional consulting services is mainly concentrated on technical and strategic support. Against the backdrop of increasing complexity and compliance requirements in ESG report preparation, enterprises urgently need to leverage external professional expertise to ensure the accuracy and compliance of their reports.

III. ESG Rating Enhancement

Provides services for evaluating and improving enterprises' ESG performance in terms of ratings. By deeply studying domestic and international mainstream ESG rating systems

and methodologies, and through due diligence and interviews, it offers ESG rating diagnostic services to identify an enterprise's strengths and weaknesses in ESG aspects. It assists companies in analyzing ESG rating results, pinpointing existing issues, formulating specific improvement strategies, and helps enhance their ESG ratings to boost market competitiveness. Additionally, it aids enterprises in establishing communication channels with ESG rating agencies to promptly convey improvements and demands in ESG matters.

IV. ESG Intelligent Systems

Utilizes big data analysis, artificial intelligence, and other technologies to provide enterprises with scientific, efficient, and convenient ESG digital management tools, assisting companies in building a comprehensive ESG management system from the ground up. With technological advancement, Shanghai's third-party ESG services are continually innovating. For example, the application of big data analysis and artificial intelligence technologies has made environmental impact assessments and social impact analyses more precise and efficient. Furthermore, blockchain technology is now being used to enhance the transparency and reliability of ESG data. The adoption of these technologies not only improves service quality but also provides institutions with new business growth opportunities.

V. ESG Report Assurance

Conducts comprehensive review and verification of enterprises' ESG data to ensure data accuracy and reliability. This includes evaluating the management processes and reliability of ESG data within the company, such as statistical standards, data collection processes, and corresponding internal control measures. It also involves assessing the enterprise's ESG-related strategic adjustments, compliance, governance structures, and verifying whether they conform to recognized standards, frameworks, or agreements.

The ESG assurance process may reveal deficiencies in a company's ESG management and reporting, facilitating improvements in ESG management levels and report quality. It can also enhance the transparency of ESG reports, enabling investors and other stakeholders to gain a clearer understanding of the company's non-financial performance. This strengthens public trust in the enterprise's ESG performance, enhances the company's goodwill value, and helps establish a positive brand image.

Section 2: Current Status of ESG Services Provided by Third-Party Institutions in Shanghai

The third-party ESG service market in Shanghai has gradually formed a diversified service ecosystem. From the perspective of the service process of corporate ESG needs, third-party ESG service institutions can be categorized as consulting firms, information disclosure service providers, data service providers, rating agencies, and assurance institutions. Each type of service institution includes both internationally renowned consulting companies and local professional organizations. International consulting firms, leveraging their global experience and technological advantages, usually dominate among large enterprises and multinational corporations. Local institutions, on the other hand, have a better understanding of domestic market demands and policy environments, enabling them to provide customized services for small and medium-sized enterprises. In terms of business scale, third-party ESG service institutions include comprehensive service providers capable of offering holistic ESG solutions, as well as specialized ESG service providers that offer targeted consulting services, such as ESG data and ESG ratings.

With the continuous introduction of ESG policies in Shanghai and the popularization of ESG awareness, an increasing number of third-party service institutions have established headquarters or branches in the city, leading to rapid growth in the number of third-party ESG service providers. These institutions, relying on their professional service capabilities and extensive industry experience, offer enterprises comprehensive ESG solutions. They can provide ESG report preparation and assurance services based on international mainstream standards (such as ISSB, GRI, etc.), ensuring the accuracy and credibility of reports. Simultaneously, through continuous training and technological research and development, they constantly enhance their professional expertise and service quality in the ESG field. Some institutions have leading advantages in ESG ratings, data collection, and analysis, enabling them to provide enterprises with precise and objective ESG evaluation results. Given Shanghai's international status and influence, many third-party ESG service institutions possess international perspectives and resources, capable of providing ESG services that comply with international standards, thereby assisting enterprises in enhancing their competitiveness and influence in the international market.

I. Consulting Firms

Primarily provide enterprises with ESG-related consulting services, specifically including topics such as ESG governance structure and strategic planning, ESG institutional systems, climate change response, carbon neutrality planning and implementation paths, ESG due diligence, ESG rating enhancement, and green finance. Relatively speaking, consulting firms can offer more comprehensive ESG consulting services, covering the main service content of ESG.

In developing ESG service institutions, Shanghai emphasizes both introducing internationally renowned professional organizations to attract them to establish a presence in Shanghai and cultivating local service institutions, supporting them in going global. This approach ensures that services both comply with international standards and are adaptable to China's national conditions. For example, the Big Four accounting firms can provide consulting services on ESG and sustainable development strategies, systems, climate change, and sustainable finance. Simultaneously, leveraging their expertise, they offer professional services in areas such as green certificates and green electricity, ESG assurance, green taxation, and circular economy. Major local ESG consulting service institutions generally cover full-process services, including ESG research and consulting, sustainable branding, and responsible ESG investment.

II. Information Disclosure Service Providers

ESG information disclosure is the primary demand of most enterprises. On one hand, it satisfies regulatory requirements for information disclosure; on the other hand, data service providers and rating agencies need to assess a company's ESG performance based on the ESG information disclosed by the enterprise, facilitating ESG investors in making corresponding investment decisions. Professional information disclosure service providers include comprehensive service institutions like consulting firms, as well as an increasing number of small and medium-sized consulting organizations such as environmental consulting companies, law firms, and research institutions.

Most third-party ESG professional service institutions in Shanghai state that their services are mainly concentrated on ESG reporting, with a technical focus on the environmental domain. They assist enterprises in carbon emission management and environmental risk assessment. Additionally, they provide support in corporate governance,

such as ESG strategy formulation and governance structure optimization. There is relatively less feedback regarding services in the social domain (see Figure 5.2).

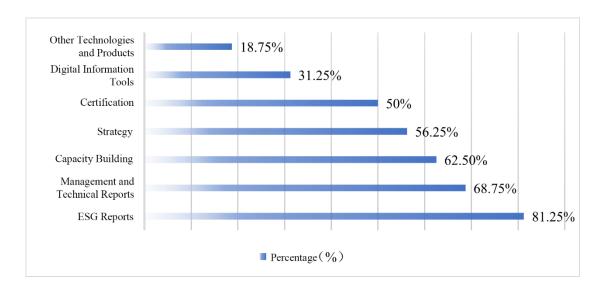


Figure 5.2 Overview of ESG Service Modules Provided by Shanghai's Third-Party ESG Professional Service Institutions to Enterprises

Source: Data Research Department of Ecovane Environmental Co. LTD

III. Data Service Providers

ESG data is non-standardized, encompassing both qualitative and quantitative data, and is less correlated with traditional financial and economic data suppliers' businesses. It requires appropriate transformation and application to adapt to different decision-making directions such as credit, investment, underwriting, and corporate management. The diversity and non-standardization of ESG data mean that enterprises' proactive disclosure cannot be entirely relied upon. The technical challenge lies in mining, processing, and verifying data. Therefore, developing ESG data services is more difficult compared to other data, presenting a certain technical barrier in the industry.

International rating agencies started earlier in ESG evaluation practice and research, forming methodologies and product systems with considerable market influence. International leading rating agencies like MSCI, FTSE Russell, Morningstar, and S&P Dow Jones have their own ESG databases. Data service providers like Bloomberg and Refinitiv have also launched ESG data service systems. Currently, representative ESG data providers in Shanghai include Wind, MioTech, and Shanghai Hundsun JuYuan Data Service Co. Ltd.

Overall, the aforementioned ESG data providers generally refer to internationally recognized ESG disclosure frameworks such as ISSB, ESRS, and GRI, while also

considering domestic regulatory requirements for listed companies and adding localized indicators based on national conditions. ESG databases usually comprise two major parts: one is ESG rating scores and underlying data for sub-indicator ratings, and the other is high-frequency tracking of ESG risk events.

IV. Rating Agencies

Currently, ESG rating agencies in Shanghai are mainly divided into domestic independent ESG rating institutions and branches of international institutions in Shanghai.

Regarding the business of representative domestic ESG rating agencies, the main situations are as follows:

- (1) Domestic institutions have accumulated experience in independently carrying out ESG rating businesses. Each has independently constructed ESG rating systems that have been operating stably for over 3 to 5 years, initially influencing the promotion of ESG investment and aiding corporate sustainable development.
- (2) domestic listed companies are subject to stricter and more standardized ESG information disclosure requirements compared to non-listed enterprises, domestic institutions' ESG ratings cover all A-share listed companies. Each institution also achieves varying degrees of rating coverage for Hong Kong stocks, bonds, and public funds based on their traditional business characteristics.
- (3) Domestic ESG rating agencies generally adhere to the principles of learning from others' strengths and being practice-oriented. The rating methods and topics they use incorporate domestic characteristic issues to varying degrees. On this basis, they have further expanded ESG indices and ESG consulting businesses, contributing to the establishment of the ESG ecosystem.
- (4) It should be noted that domestic ESG rating agencies have shortcomings such as relatively single product types and weaker international influence. Most institutions can only provide ESG and climate change-related rating results, lacking thematic products that include social responsibility dimensions. Additionally, the ESG rating results of domestic institutions have fewer application scenarios among international investors.

For foreign ESG rating agencies, most international ESG rating institutions conduct business by setting up branches domestically. Their ESG business in China has the following characteristics:

(1) The ESG rating business model is relatively mature. For example, in 2022, MSCI's

revenue from ESG and climate data products (excluding ESG index licensing fees) increased by 37% compared to the previous year, showing strong growth momentum.

- (2) Foreign ESG rating agencies offer relatively rich types of ESG products and services, covering ESG basic data processing, ESG ratings, data and research, ESG risk screening management, and ESG portfolio analysis tools and services.
- (3) The ESG products launched by foreign ESG rating agencies have high recognition and influence among international asset management institutions, with a good application foundation.
- (4) Foreign ESG rating agencies face issues in expanding ESG business domestically, such as rating standards insufficiently reflecting Chinese characteristics, independence being easily influenced by foreign politics, and conflicts between commercial ESG rating agencies' profit requirements and long-term business layout.

V. Assurance Institutions

ESG-related certification and assessment include green bond certification, ESG fund certification, ESG report assurance, etc. Currently, there is no unified global standard for the classification of sustainable activities, but standards/guidelines formulated by some professional institutions have gained recognition from various parties. For example, in the field of green bonds, the most commonly used global standards include the "Green Bond Principles (GBP)" formulated by the International Capital Market Association and the "Climate Bond Standard (CBS)" developed by the Climate Bonds Initiative. Accounting firms, ESG certification bodies, and external review agencies provide certification and assessment services according to these standards.

In terms of ESG report assurance, ESG certification bodies and external review agencies provide report review services for enterprises by referring to the AA1000 Assurance Standard compiled by Institute for Social and Ethical Accountability. Additionally, accounting firms can examine selected ESG key performance indicator statistical methods and processes by referring to the ISAE 3000 (Revised), Assurance Engagements Other than Audits or Reviews of Historical Financial Information issued by the International Auditing and Assurance Standards Board. This is to understand whether there is a risk of material misstatement in data disclosure, enabling rating agencies to obtain more accurate and fair ESG data.

Section 3: Challenges and Opportunities for Third-Party ESG Services in Shanghai

I. Challenges in Providing ESG Services

Faced with the growing demand for sustainable development, third-party ESG service institutions in China encounter numerous challenges. These challenges affect not only the operations and development of the service institutions themselves but also their ability to effectively support enterprises in achieving sustainable development goals.

Firstly, uncertainty in policies and regulations poses a significant challenge. Changes in regulatory policies may impact the business models and development directions of service institutions. Although ESG policies in Shanghai and nationwide are gradually improving, uncertainty in policies and frequent regulatory changes remain significant hurdles. Regulatory changes can affect service standards, reporting requirements, and audit processes, placing pressure on the compliance, quality, and efficiency of the services provided.

Secondly, increasing client demands add complexity to service delivery. As Chinese enterprises participate more extensively in international market competition, clients expect ESG service institutions to possess an international perspective and provide evaluations and consulting services that meet global standards. With varying ESG management levels and needs across enterprises, clients hope for customized solutions that address their specific requirements. As clients' understanding of ESG improves, they increasingly demand higher levels of professionalism and accuracy from service providers, expecting them to deliver scientific, objective, and comprehensive evaluations and recommendations.

Thirdly, challenges in data acquisition and information disclosure create barriers to effective ESG services. ESG data acquisition and disclosure form the foundation of ESG evaluations and investments. However, significant issues remain with corporate ESG data disclosure, such as incomplete data and lack of transparency. These issues increase the difficulty and cost of data acquisition and verification for third-party service institutions. ESG reports and evaluations heavily rely on data and information provided by enterprises, and the authenticity and reliability of the data are critical for accurate assessments. However, some enterprises may engage in data falsification or incomplete information disclosure, posing greater challenges for the auditing and evaluation processes of third-party institutions.

Additionally, discrepancies in standards for assessing contributions to societal goals, such as rural revitalization strategies, and subjective evaluation criteria for assessing the

authority, capability, and performance of ESG management departments within enterprises further complicate the process. In response to these issues, the Center for Sustainable Investment at SAIF is collaborating with Alphalio AI Technologies to develop a high-frequency ESG index system using artificial intelligence. This aims to provide reference information for ESG development in enterprises and industries.

Fourthly, data security and privacy risks from emerging IT intelligent products present significant challenges. With the growing application of artificial intelligence and big data technologies, many service institutions are exploring the development of intelligent products. For example, AI is being used to more accurately predict the impact of extreme weather on agriculture or optimize production processes to reduce energy consumption and carbon emissions. However, the collection and analysis of data in these processes carry risks of data breaches and privacy violations. Service institutions must establish robust data security systems to ensure the safety and privacy of client data.

Fifthly, a shortage of ESG professionals limits the ability of institutions to meet market demands. The ESG field spans multiple disciplines, including environmental science, sociology, and corporate governance, creating a high demand for professional talent. However, the growing market demand has exposed a shortage of ESG professionals, which limits the development of service institutions and their ability to improve service quality.

II. Opportunities for Third-Party ESG Services in Shanghai

Despite the challenges third-party service institutions face in promoting ESG practices, a rapidly growing market like Shanghai also provides numerous opportunities. According to surveys, all third-party ESG professional service institutions interviewed in Shanghai hold an optimistic outlook on China's ESG development over the next 3 – 5 years:

12.50% of respondents believe that ESG services will become a mandatory requirement for enterprises, anticipating an explosive growth in demand. 68.75% of respondents stated that the industry will experience healthy development and maintain a positive trajectory. 18.75% acknowledged some uncertainties about the future but expressed cautious optimism (see Figure 5.3).

From policy support to market demand, from national strategies to international collaboration, every aspect presents new growth opportunities and development prospects for these institutions.

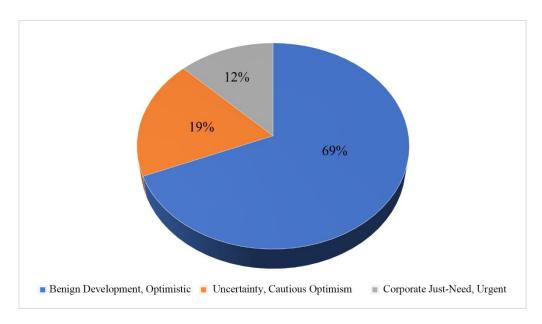


Figure 5.3 Perspectives on the Future Development of ESG Services in China by Shanghai's Third-Party Institutions

Source: Data Research Department of Ecovane Environmental Co. Ltd.

Firstly, policy support and market environment. Shanghai has inherent advantages in promoting ESG development, aligning closely with the national strategy of building the "Five Centers" (economic, financial, trade, shipping, and technological innovation centers). This alignment creates vast opportunities for ESG-related investment, financing, and green finance. The Shanghai Municipal Government has shown strong commitment and support for advancing ESG initiatives. In recent years, multiple policy documents have been issued, increasing support for the ESG sector through incentives, financial subsidies, and enhanced policy guidance. These measures not only help drive the development of the ESG service market but also create numerous business opportunities for service institutions. For instance, the issuance of documents such as the *Action Plan* has provided a favorable policy environment for the growth of third-party ESG service providers.

Additionally, as an international financial center, Shanghai boasts a dynamic capital market and abundant financial resources, facilitating the widespread adoption of ESG principles in investment decisions and providing a conducive market environment for third-party ESG service institutions.

Secondly, rapidly growing market demand. In recent years, with increasing emphasis on ESG, particularly in Shanghai, the third-party professional service market has experienced rapid growth. Government policy support, investors' focus on ESG information, and the public's expectations for corporate social responsibility have fueled demand for professional ESG services.

As investors and the public continue to prioritize ESG issues, corporate demand for ESG services has steadily increased. This is especially true for SMEs and emerging industries, where the need for ESG consulting and services has grown significantly, providing service providers with ample market opportunities. This growth ensures a stable demand and driving force for the expansion of Shanghai's third-party ESG service market.

Thirdly, opportunities driven by the "Dual Carbon" strategy. With the deep implementation of China's "Carbon Peaking and Carbon Neutrality" strategy, ESG investment and corporate sustainable development have gained greater importance. This creates vast development potential and market opportunities for Shanghai's third-party ESG service providers. These institutions can assist enterprises in achieving green and low-carbon transformations by offering ESG consulting, training, and certification services.

For example, the implementation of the *Interim Regulations Governing Carbon Emissions Trading* by the Ministry of Ecology and Environment has encouraged companies to prioritize carbon emission monitoring and reporting, increasing the demand for environmental assessment and carbon auditing services.

Fourthly, international exchange and cooperation opportunities. As China's gateway for international exchange, Shanghai not only provides enterprises with a platform to align with global practices but also offers abundant international cooperation opportunities for third-party ESG service institutions. Shanghai actively integrates ESG initiatives into cooperation mechanisms with regions like Singapore and Hong Kong, drawing on their successful experiences and best practices in the ESG field. This fosters deeper exchanges and collaborations between regional enterprises, industry associations, and professional service institutions.

Such an internationalized cooperation model expands the market scope for ESG service providers, introduces advanced global management concepts and technological tools, and enhances service quality and competitiveness. Moreover, Shanghai's concentration of international professionals provides indispensable global perspectives and expertise, further supporting third-party ESG service institutions in implementing effective ESG practices.

Chapter 6: Shanghai's International ESG Exchanges and Cooperation

This chapter delves deeply into the key progress and significant achievements of Shanghai in international exchanges and cooperation within its ESG ecosystem construction. By leveraging regional ESG standards and policy guidance, Shanghai has successfully attracted global partners and encouraged local enterprises and institutions to "go global," integrating into international ESG practices and significantly enhancing regional ESG capabilities. The localized practices of foreign-funded enterprises have demonstrated high initiative and innovation, forming the "Shanghai Case," providing empirical evidence for global theories on regional ESG differences, and becoming a window for the international dissemination of ESG concepts. In response to the "Belt and Road Initiative", Shanghai promotes capital flow, standard alignment, and cross-border project cooperation to deepen inter-regional ESG cooperation, leading new trends in global ESG innovation and collaboration. Additionally, leveraging its advantages in policies, talent, location, and industrial clusters, Shanghai has demonstrated foresight and action in advancing the internationalization of ESG, laying a solid foundation to become a global ESG development center. This chapter reveals Shanghai's unique experiences and contributions in international ESG exchanges and cooperation, providing valuable insights for global ESG development.

Section 1: Internationalization of Shanghai's ESG Capacity Building

I. Internationalization of ESG Policies and Standards

Shanghai leads with policies, coordinating enterprises and institutions within the region to practice ESG concepts and initiatives, continuously improving the regional ESG ecosystem. In recent years, various levels of Shanghai's departments have benchmarked against international frontiers, formulating and publishing nearly 20 bulletins, regulations, and

documents, reflecting Shanghai's high starting point and global vision in constructing its ESG policy system.

Shanghai's departments at all levels have integrated internationally recognized ESG standards and guidelines into their policy frameworks, learning from advanced international practices, effectively enhancing the overall level of Shanghai's ESG capacity building. The Shanghai Federation of Industrial Economics released two group standards: the *Guidelines for the Preparation of Corporate Environmental, Social and Governance Reports* and the *Corporate ESG (Environmental, Social, Governance) Report Evaluation Criteria*, referencing 13 international ESG guidelines such as the GRI *Sustainability Reporting Standards*. They have constructed an ESG standard system that suits China's national conditions while integrating internationally accepted rules. The Shanghai Municipal Commission of Commerce issued the *Action Plan*, encouraging comprehensive alignment with international ESG standards. In terms of specific ESG work, the policies propose learning from the advanced experiences of Singapore and Hong Kong by promoting exchanges and cooperation to share experiences in ESG development.

II. Internationalization of ESG Ecosystem Construction

Building an internationalized ESG ecosystem is a crucial support for the overall capacity building of ESG. Under the guidance of various sustainable development policies, Shanghai leverages global partners to create international ESG platforms, leading and promoting the dissemination of ESG concepts. Simultaneously, from multiple dimensions such as ESG information disclosure mechanisms, development of ESG professional institutions and infrastructure, and support for ESG product innovation, Shanghai comprehensively advances the internationalization of local ESG development levels. It encourages market participants to connect with international developments, practice ESG concepts, and continuously promote the construction of an ESG ecosystem with international standards.

(I) Global Partners Participating in Shanghai's ESG Projects to Jointly Promote Regional ESG Ecosystem Construction

Firstly, Shanghai attracts domestic and international ESG organizations to establish a presence in the city, building effective channels to understand the development processes of international ESG systems, talent cultivation experiences, and best practices. This makes Shanghai a key window to showcase "Chinese voice" and share "Chinese story." Internationally recognized ESG standard certification bodies such as UESG (China) and the ESG Leaders Organization Forum have chosen Shanghai as their base, serving the entire country and contributing Chinese cases and wisdom to global green sustainable development. The International ESG Center of the Shanghai Sustainable Development Research Association, supported by global partners like the United Nations Human Settlements Programme (UN-Habitat), provides intellectual support and application scenarios for the international development of ESG.

Secondly, Shanghai leverages international conferences and forums to exchange thoughts on sustainable development and share ESG practice experiences. This provides new ideas and experiences for Shanghai enterprises to practice ESG theories and improve international competitiveness, thereby promoting the construction of local and even national ESG ecosystems. For instance, the 34th Shanghai Mayor's International Business Leaders Advisory Council listened to suggestions related to Shanghai's low-carbon transformation. The Shanghai Pudong Foreign Investment Enterprises Association's "ESG Green Supply Chain" CEO Salon discussed how to build a high-quality green supply chain and construct Pudong's ESG ecosystem. The 2023 ESG Global Leaders Conference focused on the core ESG contents related to China's high-quality development and the United Nations Sustainable Development Goals. The 14th Lujiazui Forum, focusing on the financial sector, pointed out that ESG concepts and practices have become the only path for the high-quality sustainable development of the global financial industry. The British Chamber of Commerce Shanghai's third Sustainability and ESG Conference discussed and shared best practices and the latest trends in decarbonization, green finance, and commercial sustainable development.

Thirdly, policies guide international organizations and foreign-funded institutions to

carry out green project cooperation in Shanghai, and initial results have been achieved. The *Implementation Opinions* formulated by the General Office of the Shanghai Municipal People's Government in 2021 require deepening international cooperation in green finance. Specifically: First, it supports overseas financial institutions and international financial organizations in issuing green "Panda Bonds" in Shanghai. The New Development Bank (NDB), the first international financial organization headquartered in Shanghai, successfully issued 6 billion yuan of Panda Bonds, setting a record for the largest five-year bond in the Panda Bond market. Second, it promotes international exchanges in green finance, encouraging foreign-funded financial institutions in Shanghai to introduce technologies and practices from their parent companies in green finance development. In 2023, Shanghai's green technology transaction volume reached 77.7 billion yuan.

(II) Promoting Active Participation of Regional Enterprises and Institutions in International ESG Practices

Firstly, the *Action Plan* provides comprehensive guidance for local enterprises to participate in international ESG practices. It requires strengthening the construction of ESG information disclosure mechanisms, encouraging enterprises to enhance information disclosure, participate in establishing disclosure rules, and submit ESG risk reports when applying for green loans. The policy measures encourage the development of green financial products primarily based on ESG indices, promote ESG investment activities, and cultivate and strengthen ESG professional service institutions that comply with international rules, providing support for professional services in the ESG field.

Secondly, an increasing number of Shanghai institutions have become signatories to the United Nations Principles for Responsible Investment (UN PRI). As of July 2024, a total of 137 Chinese institutions had signed the UN PRI, among which 46 institutions are headquartered in Shanghai, accounting for 33%. Shanghai institutions are continuously entering the international ESG stage, driving the development of ESG concepts and practices nationwide.

Thirdly, local enterprises' ESG governance and evaluation practices have entered the

international ESG ecosystem. In 2022, 188 Shanghai A-share listed companies disclosed ESG reports, with a disclosure rate reaching 55%. The international rating agency MSCI rated 47 of these companies based on its evaluation methodology. Additionally, several domestic ESG rating agencies have emerged, establishing evaluation systems that benchmark international standards while featuring local characteristics. An analysis comparing the ratings of these 47 companies by Prestige and Fortune Fintech (Beijing) Co. Ltd. and the corresponding results from MSCI (see Figure 6.1) shows a similarity of 85% between the two ranges, reflecting the overall consistency and comparability of ESG evaluation conclusions between domestic and international institutions.



Figure 6.1: Comparison of ESG Evaluation Results of Some Shanghai Enterprises in 2022 Source: Prestige and Fortune Fintech (Beijing) Co. Ltd.

Section 2: The Role of Foreign-Invested Enterprises in Promoting International ESG Practices in Shanghai

I. The Leading Role of Multinational Corporations in ESG

As China's economic center and a key gateway for international exchange, Shanghai hosts 962 regional headquarters of multinational companies. In the first half of 2024, Shanghai established 3,007 new foreign-invested enterprises, marking an 18.3% year-on-year increase and consolidating its status as a global hub for investment and business activities²⁰.

Foreign-invested enterprises in Shanghai are actively responding to global sustainable development trends. According to a 2024 survey targeting foreign-invested enterprises in Pudong New Area, over 90% of these companies have set ESG goals, with 75% emphasizing comprehensive development across the environmental, social, and governance dimensions. More than 50% have established ESG compliance requirements for their supply chains and have dedicated ESG management positions. Over 33% have developed comprehensive ESG governance systems and have engaged third-party professional institutions for ESG consulting, auditing, rating, or certification. Nearly 20% have achieved significant ESG innovations, providing practical experience to the market.

Large multinational corporations are pioneers and main actors in global ESG practices and are important promoters of global ESG concepts. Among the *Fortune* Global 500 companies published in 2024, 104 have established their China headquarters in Shanghai. According to ESG evaluation results released by MSCI, nearly half of these enterprises are in leading positions in ESG, showcasing their excellent ESG practices and providing exemplars for Shanghai's ESG development (see Figure 6.2).

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²⁰ Information from the Shanghai Jing'an District People's Government website: *Shanghai Awards Certificates to a New Batch of Regional Headquarters and R&D Centers of Multinational Companies*, 2024.

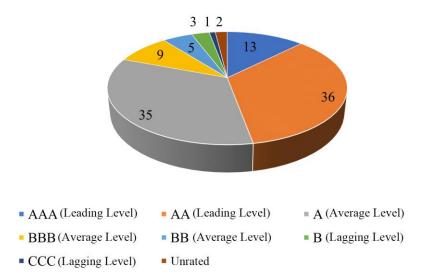


Figure 6.2 Distribution of MSCI ESG Ratings Among 104 Global Fortune 500 Companies Based in Shanghai

Data Source: MSCI, compiled by Prestige and Fortune Fintech (Beijing) Co. Ltd.

II. The Clustering of International Financial Institutions Forms an Advantage in Sustainable Financial Innovation

Over 20% of the global Fortune 500 companies based in Shanghai are financial institutions, bringing significant advantages to the ESG development of Shanghai's financial industry. The concentration of these institutions provides strong funding support and financial service capabilities for Shanghai's ESG initiatives, promoting innovation in green financial products and the sustainable development of financial markets. In the "*Top 100 Chinese Banking List*" published by the China Banking Association in 2024, seven foreign banks were listed—all with their China headquarters in Shanghai—and four received leading ESG ratings from MSCI. For example, HSBC China, through innovative green financial services, has facilitated several first-of-their-kind sustainable-linked and green syndicated loans, injecting more momentum into China's green economic transition and providing case studies and experiences for China's financial industry in practicing ESG.

III. Localization of International Enterprises' ESG Practices in China Provides Typical Cases for Global Theories and Practices on ESG Regional Differences

Multinational corporations need to adjust their sustainable development strategies based on market differences to achieve more effective environmental management and to fulfill social responsibilities aligned with local perspectives. According to the aforementioned survey, 23% of multinational companies have set differentiated goals tailored to the Chinese market in addition to their headquarters' ESG objectives.

As the location of the China headquarters for many foreign multinational corporations, Shanghai can rapidly learn how to integrate international ESG standards with China's specific practices through these companies' activities and information disclosures, thereby promoting improvements in ESG performance with local characteristics. This localization effort not only enhances the understanding and leadership development of domestic market participants in the ESG field but also establishes Shanghai as an important base for global ESG governance practices.

A typical example is Procter & Gamble (P&G), which implements differentiated ESG strategies across different markets. In P&G's 2021 Citizenship Report, the company highlights its global ESG actions and specific cases in China. Environmentally, P&G China focuses on strategic priorities in climate, waste, and water resources, aiming to achieve carbon neutrality and contribute to building a beautiful China. Socially, during the challenges posed by the pandemic, P&G used various unmanned vehicles to deliver meals to frontline workers within communities, demonstrating corporate social responsibility in times of crisis. Additionally, P&G introduced a new parental leave policy, marking an important step toward shared parental childcare and contributing positively to a family-friendly work environment. Educational equality and women's empowerment are also focal points of P&G's ESG initiatives in China. By supporting projects like Project Hope and the "Young Female Directors Program," P&G actively promotes educational equality, provides more development opportunities for women, and cultivates more female leaders for society. This flexible and localized ESG strategy not only helps P&G achieve its global sustainable development goals but also strengthens the company's competitiveness and social influence

in different markets.

In another case, Allianz China Life Insurance, as Allianz Group's life insurance company in China, prominently showcases its ESG practices on its website. Embracing "Social Responsibility" and "Sustainable Development" as core values, the company actively responds to the Chinese banking and insurance industry's call during the "14th Five-Year Plan" period to promote green financial development, serving the national strategies of carbon peaking and carbon neutrality. By fully implementing the "Green Allianz" development concept, the company has enhanced its ESG sustainability performance and made positive contributions to the comprehensive green transformation of economic and social development. In 2022, Allianz China Life initiated a green public welfare campaign, collaborating with environmental public welfare organizations and projects. Through donations for public welfare forests and advocating for environmentally friendly and low-carbon lifestyles, the company promotes the sustainable development concept of green ecological civilization. Given that China's insurance market is expected to become the world's second-largest within the next decade, Allianz Group positions China as a key strategic market, increasing the strategic significance of its business in China. Allianz demonstrates how to innovate green financial products by aligning with local policies and market needs and collaborating with local organizations to achieve dual enhancements in social and commercial value, providing valuable localized ESG practice experience for other multinational financial institutions.

IV. Providing an International Window for Best Practices in ESG Promotion and Communication

All 104 global Fortune 500 companies based in Shanghai have disclosed group-level ESG reports, and 13 have released independent ESG reports specific to China. This reflects the emphasis foreign multinational enterprises place on ESG information disclosure and promotes the recognition of ESG concepts and practices in the Chinese market.

Furthermore, international large enterprises typically establish "Sustainable Development" or "ESG" sections on their Chinese subsidiary websites to describe their

differentiated practices in China, achieving seamless connection and resource sharing of ESG development information. For example, Coca-Cola China uses this model to introduce its achievements in ESG actions, including the "World Without Waste" sustainable packaging public education campaign, water resource protection, and the "Clean Water 24 Hours" emergency drinking water rescue mechanism. This approach not only provides a platform for multinational enterprises in Shanghai to showcase their global ESG achievements but also brings advanced international ESG concepts and practical cases to the domestic market. It helps multinational companies establish a more positive corporate image in China and enhances communication and trust with local stakeholders.

Section 3: Shanghai's ESG Cooperation under the "Belt and Road" Initiative

I. New Opportunities: The Demand for ESG Cooperation under the "Belt and Road" Initiative and Shanghai's Bridging Role

As China's economic center, Shanghai has become an important bridge promoting global ESG cooperation under the "Belt and Road" Initiative. Leveraging its unique geographical location and open economic environment, Shanghai not only fosters economic integration within the region but also contributes new pathways for sustainable development to the international community.

First, the global demand for ESG cooperation has surged. In recent years, the need to balance global economic development with environmental protection and social responsibility has become increasingly prominent. ESG cooperation has emerged as a crucial means to promote sustainable development. As of 2022, global ESG assets have exceeded \$30 trillion, with a compound annual growth rate of 13.02%. The international community's demand for ESG cooperation continues to grow, especially in areas like global supply chains and cross-border investments, where the introduction and implementation of ESG standards have become key to enhancing corporate competitiveness.

Second, Shanghai, as China's economic center and a pivotal city in the "Belt and Road"

Initiative, plays an irreplaceable bridging role in global ESG cooperation. Shanghai's construction of the "Five Centers"—an international economic, financial, trade, shipping, and scientific innovation center—is deeply aligned with the "Belt and Road" Initiative at a strategic level. The establishment of the Shanghai Free Trade Zone provides an important platform for cooperation with countries and regions participating in the "Belt and Road." Serving as a crucial hub in the economic belt, Shanghai not only acts as a vital window for China's opening-up but also expands the scale of regional economic cooperation, laying a solid foundation for deepening regional ESG collaboration.

Third, in the practical promotion of ESG cooperation, Shanghai has demonstrated strong innovation capabilities and leadership. At the government level, a series of policy documents have been issued to promote the construction of green financial service platforms, facilitating the widespread application of green finance in "Belt and Road" cooperation. For example, Shanghai has launched financial instruments such as green bonds and green loans, promoting policy alignment with participating countries and regions in areas like environmental standards and energy efficiency. At the enterprise level, Shanghai companies actively participate in environmental protection and sustainable development projects in "Belt and Road" countries and regions, especially in clean energy and green building sectors. By aligning with international standards, these enterprises have enhanced their global competitiveness and provided robust support for the sustainable development of the "Belt and Road" Initiative. Additionally, Shanghai focuses on cultivating localized talent in "Belt and Road" projects. Through cooperative education and technical training, it supplies ESG professionals to participating countries and regions, promoting the green transformation and upgrading of local economies.

II. Core Center: Shanghai's Strategic Position and Practical Exploration in ESG "Belt and Road" Cooperation

As a major financial and economic center in China, Shanghai has played a key role in promoting the deep integration of the "Belt and Road" Initiative with ESG principles.

First, capital flow and resource allocation. The Shanghai Stock Exchange has

introduced special plans for green bond financing, encouraging and supporting eligible issuers to issue green bonds to support green industries and development projects. At the enterprise level, taking the insurance industry as an example, since 2022, China Export & Credit Insurance Corporation's Shanghai branch has underwritten 22 green projects in "Belt and Road" countries, with insured amounts reaching \$2.44 billion. Shanghai's cooperation in capital flows under the "Belt and Road" Initiative has shown strong development momentum, providing robust financial support and assurance for its construction.

Second, standard alignment and mutual recognition. In May 2024, the launching ceremony for the implementation of Shanghai's Enterprise ESG Standards and the first Urban Sustainable Development North Bund Forum were successfully held. This marked the official implementation of Shanghai's Enterprise ESG Standards, providing solutions to complex issues arising from international differences. Government departments, industry associations, and other stakeholders are promoting the formulation and international mutual recognition of ESG standards through various international forums and exchange activities.

Third, transnational projects and cooperation. The collaboration between Shanghai and "Belt and Road" countries and regions in transnational ESG projects spans multiple areas, including green energy, environmental protection technology, and sustainable development. For instance, the Hunutelu Thermal Power Plant project in Turkey, constructed by Shanghai Electric Power, adopts advanced environmental protection technologies, significantly reducing pollutant emissions and protecting the nesting grounds of endangered green sea turtles. The Thar Coal and Power Integration project in Pakistan, built by Shanghai Electric using an investment-construction-operation model, has established a positive image of Chinese enterprises in sustainable development through extensive community-building activities. In terms of green financing, the 950 MW CSP and PV integrated power plant project in Dubai by Shanghai Electric received loan support from multiple financial institutions, including the Bank of China, setting several world records.

Fourth, policy guidance and exemplary role. The Shanghai Municipal Government, by formulating and implementing a series of policies, guides enterprises and all sectors of society to participate in "Belt and Road" ESG practices. The *Implementation Opinions* issued by the General Office of the Shanghai Municipal Government provide policy guarantees and

financial support for international ESG cooperation. The *Action Plan* emphasizes financial support pathways for enterprises' ESG actions, supporting eligible companies to issue ESG-themed bonds. In December 2023, BOCOM Leasing Management Hong Kong Co. Ltd successfully issued the nation's first ESG Free Trade Zone offshore bond (Mingzhu Bond), representing an innovative attempt in China's capital market within the ESG field.

III. Future Outlook: Leading New Trends in Global ESG Cooperation

It is estimated that by 2030, the global ESG investment scale is expected to exceed \$40 trillion. As China's economic center and an international financial hub, Shanghai, leveraging its unique geographical location, strong economic foundation, and deepening internationalization, is poised to achieve leapfrog development in the ESG field. It aims to become a leader and model city in global ESG practices.

First, continuously injecting vitality and momentum. In promoting ESG development under the "Belt and Road" Initiative, Shanghai's breakthroughs in clean energy, green investment, and green finance not only demonstrate its ambition in green development but also affirm its leading position in the global ESG investment wave. From the demand side of participating countries and regions, challenges such as geopolitical risks, financial regulation, underdeveloped capital markets, and weak industrial bases persist. From the supply side, risks associated with large-scale renewable energy investments, market information asymmetry, and capital market confidence remain primary challenges. By 2030, Shanghai is expected to become a key node and innovation center in global ESG cooperation through advancements in these areas. Currently, efforts should focus on leveraging the leading role of key enterprises, building international platforms for green capacity cooperation, and improving investment and financing service systems and the construction of energy and carbon trading markets oriented toward the "Belt and Road."

Second, deepening international cooperation. As a core city of the "Belt and Road" Initiative, Shanghai is actively enhancing ESG cooperation with participating countries and regions. Benefiting from its status as an international metropolis with abundant financial, technological, and human resources, Shanghai can play a more significant role in promoting

sustainable development. In the coming years, Shanghai is expected to strengthen cooperation with "Belt and Road" countries and international organizations, advancing the implementation of multiple ESG projects. Current efforts should focus on solidifying service foundations: firstly, strengthening comprehensive services for international exhibitions, coordinating enterprise-related resources to provide various "Belt and Road" ESG services, activity support, and bridges between government and enterprises; secondly, enhancing talent mobility and training services by providing ESG education and training platforms for relevant countries and regions; thirdly, reinforcing international arbitration services by exploring diverse cooperation models between overseas and Shanghai arbitration institutions to build an international arbitration service brand. By promoting these cooperative projects, Shanghai can not only facilitate the sustainable development of participating countries and regions but also contribute to the alignment and construction of international ESG standards, creating a more efficient and open international ESG cooperation platform to advance the global ESG agenda.

Third, innovating cooperation models. The ESG cooperation between Shanghai and "Belt and Road" countries and regions is increasingly characterized by diversity and depth. On one hand, as an international financial center, Shanghai actively promotes the innovation and development of green financial products, providing more diversified financing tools for ESG projects. These innovative products help enterprises achieve sustainable development goals more effectively and offer new investment opportunities for global ESG investors. On the other hand, Shanghai seeks to establish closer industrial chain synergies with participating countries and regions. By integrating resources and sharing technology and markets, it aims to jointly build a green and sustainable industrial chain, laying a solid foundation for achieving ESG objectives. Currently, common issues in international ESG cooperation include the lack of mandatory binding force in ESG information disclosure and the coarse granularity of cross-regional enterprise ESG disclosures. The Shanghai Municipal Government should expedite the improvement of relevant standards and evaluation criteria. Shanghai enterprises should plan ahead, strengthening their ESG management capabilities to maintain a competitive edge in an increasingly fierce market.

Fourth, leading new trends in global ESG cooperation. Building on the rich

experience, unique advantages, and significant achievements accumulated through deep cooperation with "Belt and Road" countries and regions, Shanghai is accelerating efforts to connect and integrate into the global ESG market. This includes innovating green financial products and services, researching and promoting clean energy technologies, establishing international ESG information-sharing platforms, and building international green supply chains. The International Sustainability Standards Board's (ISSB) IFRS S1 officially came into effect in 2024. Prior to this, both the European Union and the United States had passed ESG-related legislation. Shanghai should expedite the introduction of local ESG regulations and, in conjunction with its "3+6" industrial system, issue ESG evaluation standards. Strengthening market supervision and law enforcement will help establish a first-mover advantage and resource agglomeration effect in future international ESG cooperation. In the foreseeable future, Shanghai is set to become a global leader in ESG cooperation, making significant contributions to sustainable development and global environmental governance.

Section 4: Advantages of Shanghai Becoming an International ESG Development Center

I. Policy Advantages

By fully referencing and benchmarking international ESG-related policies, Shanghai has taken the lead in announcing policies that influence the Yangtze River Delta and guide the nation, acting as a pioneer for other cities in China to practice ESG concepts and implementations. Looking ahead, as Shanghai further enhances its ESG ecosystem, its policies and practices can benchmark international standards and learn from advanced experiences while exporting "Chinese practices" and "Chinese stories" to provide models for ESG development in other regions globally.

Firstly, based on Shanghai's characteristics and focusing on international development. The *Action Plan* draws on Japan's approach of "primarily voluntary participation and compliance, followed by expanding the scope of applicable policies and regulations," encouraging information disclosure and initially establishing a corporate ESG report preparation and evaluation standard system, thereby continuously enhancing Shanghai's domestic and international influence in ESG work. Simultaneously, learning from the European Union's experience, it emphasizes the role of industry organizations, supporting them to lead in formulating ESG standard systems and regulatory guidelines, guiding enterprises to standardize the preparation of ESG reports, and strengthening ESG capacity building. Moreover, the *Action Plan* particularly emphasizes the role of international open innovation platforms like the Pudong New Area in ESG capacity building, encouraging key areas such as the Hongqiao International Central Business District Management Committee to fully align with international economic and trade rules and ESG international standards, and to introduce relevant policies supporting the ESG development of foreign-related enterprises.

Secondly, demonstrating Chinese characteristics with policy guidance and multi-departmental collaboration to promote ESG ecosystem construction. As the nation's first regional ESG action plan, the *Action Plan* proposes diverse and detailed feasible

measures, which not only empower and enhance the overall development of Shanghai's ESG but also provide ideas for other regions to learn from. Additionally, taking the relevant planning measures of Lujiazui Financial City as an example, the policies focus on key types of institutions within the region, such as professional service agencies and asset management institutions, emphasizing financial openness and innovation, the internationalization of industrial finance, and proposing specific work tasks such as information disclosure, investment, and product research and development. These detailed measures help relevant entities clarify future action directions. Meanwhile, the *Action Plan* specifies the leading units for various key tasks, including nearly 20 municipal government departments such as the State-owned Assets Supervision and Administration Commission, the Securities Regulatory Bureau, and the Federation of Industry and Commerce, as well as all district-level governments, forming a comprehensive and detailed work layout. This demonstrates efforts and determination to break departmental barriers and form a collaborative force.

II. Talent Advantages

China's ESG process is still in a rapidly developing exploratory stage, with different manifestations across various industries and enterprises. Coupled with a certain lag in talent cultivation, regions that first establish ESG talent markets will have advantages and seize opportunities. Shanghai has become a pioneer in the development of the national ESG talent market, taking the lead in establishing "incubators" for talent cultivation such as colleges and research institutions, leveraging the advantages of foreign capital concentration, and continuously attracting and expanding the ESG talent pool.

Firstly, leading in talent cultivation. Shanghai is at the forefront of ESG talent cultivation in China by establishing colleges and research institutions and setting up ESG majors and courses. The Shanghai Advanced Institute of Finance at Shanghai Jiao Tong University, with an international perspective, is the first among domestic business schools to offer a series of professional courses such as ESG, corporate social responsibility, and impact investing. Shanghai universities have jointly established educational platforms with top foreign universities, such as the Shanghai Jiao Tong University–University of Edinburgh Low

Carbon College and the Shanghai University Sydney Institute of Language and Commerce, focusing on cultivating international talents in ESG and sustainable development fields. Master's programs like the Shanghai University—Jean Moulin Lyon 3 University Sustainable Development program and the Fudan University—BI Norwegian Business School International MBA incorporate themes like ESG and sustainable development into their curricula, providing Shanghai with multidisciplinary professionals. Research institutions like the Center for Sustainable Investment at SAIF collaborate with domestic and international academic institutions and enterprises, becoming hubs of academic research and "incubators" for high-end talent cultivation.

Secondly, strong talent attraction. The aggregation of multinational company headquarters, financial institutions, and large enterprises in Shanghai, along with the deepening of their ESG practices in the Chinese market, has led to an influx of ESG talent, increasing Shanghai's attractiveness to professionals in related fields. According to data, from May 2022 to April 2023, the demand for ESG talent is positively correlated with the degree of commercial and financial development in a region. Shanghai ranks first nationwide in both new ESG job postings (see Figure 6.3) and positions receiving applications (see Figure 6.4), indicating its vitality and leading position in the future sustainable development of ESG.

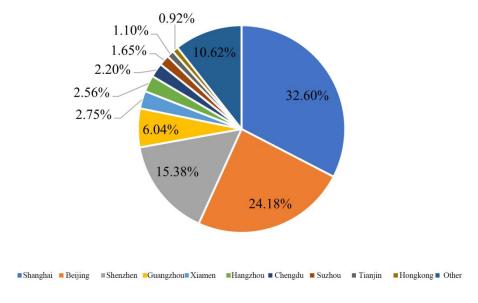


Figure 6.3 Cities with New ESG Job Postings and Their Proportions

Data Source: Yicai Media Group, MSC Consulting, ESG Talent Attraction Insights Report 2023

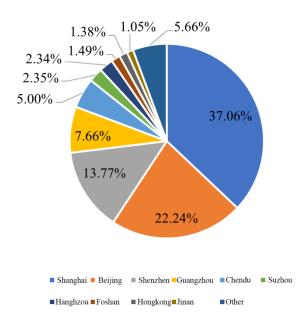


Figure 6.4 Cities Receiving ESG Job Applications and Their Proportions

Data Source: Yicai Media Group, MSC Consulting, ESG Talent Attraction Insights Report 2023

III. Location Advantages

Firstly, innate geographical advantages and well-developed infrastructure. Shanghai is located in the Yangtze River Delta region, connecting more than 40 cities, with well-developed transportation infrastructure that facilitates rapid personnel flow, strengthens international business activities and cooperation, and provides a solid foundation for ESG talent to gather in Shanghai. The latest data shows that in the 2019 IESE Cities in Motion Index, Shanghai ranks first globally in "Mobility and Transportation."²¹

Secondly, leading level of internationalization and openness. Shanghai's high degree of internationalization and open environment provide fertile ground for the introduction and growth of new ideas and practices. Taking Lujiazui as an example, by the end of 2022, there were 140 regional headquarters of multinational companies recognized by the Municipal Commission of Commerce, accounting for one-sixth of the city's total, making it a hub for foreign capital aggregation in Shanghai. The international and open environment attracts international ESG-related institutions to carry out activities in the region, empowering high-quality and international development, thereby producing a radiating effect on the entire country. The China headquarters of the International Council of Inspection, Testing, and

²¹ Ernst & Young (EY) and Urban Land Institute (ULI). The Attractiveness of Global Business Districts Report, 2020.

Certification chose to settle in Lujiazui Financial City and established four professional working groups, including ESG.

Thirdly, aggregation of high-quality foreign enterprises and institutions. A large number of high-quality foreign enterprises and institutions are concentrated in Shanghai, becoming key windows and channels for promoting foreign ESG concepts and principles, helping domestic enterprises quickly understand ESG development trends and advanced cases. For example, in Lujiazui Financial City, foreign-funded corporate banks such as HSBC, Citibank, and Standard Chartered are clustered, accounting for 40% of the national total. The aggregation of global asset management institutions builds a leading advantage, with 110 various foreign asset management companies in the region, accounting for over 90% of the national total. Regarding professional service institutions, there are more than 340 institutions invested and established by Fortune Global 500 companies, and over half of the "world's top renowned brands" have branches in Shanghai (see Figure 6.5), covering areas including finance, law, management consulting, human resources, financial information, and index rating.

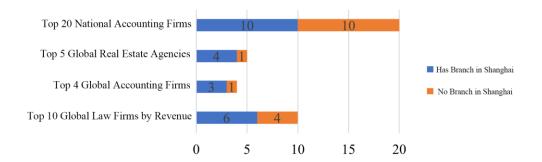


Figure 6.5 Aggregation of High-Quality Professional Institutions in Lujiazui Financial City Data Source: Prestige and Fortune Fintech (Beijing) Co. Ltd.

Chapter 7: Shanghai's ESG Ecosystem

The continuous optimization and improvement of Shanghai's ESG ecosystem construction benefit not only from forward-looking, guiding, and facilitative institutional measures formulated by government departments but also from the joint participation of various entities such as industry organizations, educational institutions, media, and the public. Each participant plays a unique and crucial role: government departments strengthen top-level planning and policy guidance; industry organizations promote standard formulation, international cooperation, and training exchanges; educational institutions enhance professional talent cultivation; media amplify publicity efforts; and the public increases industry awareness and participation. Together, they advance the deep practice and ecological construction of ESG concepts.

Section 1: Governments and Agencies in Shanghai

I. ESG Policies, Regulations, and Their Impact

(I) Overview of Recent ESG Policies in Shanghai and Its Districts

At the municipal government level, in August 2021, the Shanghai Municipal People's Government issued the 14th Five-Year Plan for the Shanghai International Financial Center, proposing that by 2025, its status as an international financial center will be significantly enhanced, with explorations into green financial reform and innovation, development of the carbon finance market, and innovation of green financial products. In October 2021, the General Office of the Shanghai Municipal People's Government released the Implementation Opinions, presenting 24 measures across seven areas, including strengthening the construction of the green financial market system, innovating green financial products and services, and improving the green financial organizational system. The document aims for Shanghai's green financial market capacity to be significantly enhanced by 2025, forming a world-class green financial development environment.

In March 2024, the General Office of the Shanghai Municipal Government issued the *Action Plan of Shanghai on Accelerating the Establishment of the Product Carbon Footprint Management System*, which includes 20 specific tasks across four areas: high-level construction of a product carbon footprint management system, multi-dimensional enrichment of product carbon footprint application scenarios, comprehensive promotion of green and low-carbon transformation in key supply chain links, and safeguard measures. The plan aims to fully establish a comprehensive product carbon footprint service platform system by 2030, forming a market-driven, well-functioning green and low-carbon supply chain.

In August 2024, the Shanghai Municipal People's Government released the Shanghai Action plan for Accelerating Green and Low-carbon Transition (2024–2027). The plan identifies five key areas for green and low-carbon transformation: energy, industry, transportation, construction, and circular economy. It proposes eight aspects of mechanism innovation and safeguard measures, including improving technological innovation mechanisms, strengthening financial support mechanisms, enhancing energy market mechanisms, optimizing carbon pricing mechanisms, improving fiscal guarantees and pricing mechanisms, refining industry cultivation mechanisms, strengthening green and low-carbon management mechanisms, and enhancing social participation mechanisms.

At the level of relevant municipal departments and districts, in 2023, the Shanghai State-owned Assets Supervision and Administration Commission issued the *Three-Year Action Plan for ESG Construction of Shanghai State-Controlled Companies (2023–2025)*. The plan aims to:

- Establish an ESG evaluation standard and indicator system.
- Initially set up an ESG evaluation mechanism within the municipal state-owned assets system.
- Cultivate a group of municipal state-controlled listed companies with outstanding ESG management performance.
- Demonstrate the leading and open nature of Shanghai's state-owned assets, actively radiate coordinated ESG development in the Yangtze River Delta, and create a regional ESG shared ecosystem.

The Action Plan issued by the Municipal Commission of Commerce proposes that by

2026, Shanghai will have basically formed an ESG ecosystem involving government, industry organizations, foreign-related enterprises, and professional service institutions participating and developing collaboratively. In June 2022, the *Provisions of Pudong New Area of Shanghai Municipality on Promoting the Green Finance Development*, released by the Pudong New Area Government, was approved by the Standing Committee of the Shanghai Municipal People's Congress. This provides legal protection for promoting green financial innovation and development in Pudong New Area and marks a significant breakthrough in advancing the construction of the core area of the international financial center and promoting comprehensive green transformation.

(II) Key Points and Pioneering Aspects of ESG Policy Development in Shanghai and Its Districts

Combining Policy Guidance with Market Participation. Shanghai strengthens policy support and overall coordination to mobilize market enthusiasm, promoting the establishment of an ESG promotion mechanism involving all parties.

Integrating International Benchmarking with Local Practice. Shanghai actively participates in international standard-setting to align ESG development with global practices while focusing on building a corporate ESG standard system that reflects Chinese characteristics.

Merging Top-Level Design with Systematic Advancement. Shanghai emphasizes top-level design, focusing on key areas such as foreign investment, overseas contracting projects, and import-export trade. It promotes foreign-related enterprises to practice ESG concepts in phases and levels, constructing a corporate ESG ecosystem. Leveraging the Pudong New Area and the Lingang New Area of the Free Trade Zone, Shanghai plays a pioneering role in promoting high-level, international ESG capacity building. Districts are encouraged to develop ESG capabilities based on their unique advantages and industry characteristics. Financial means are used to support ESG practices, promoting the aggregation of green venture capital, entrepreneurship investment, and private equity investment enterprises, and supporting the research, development, and promotion of green

low-carbon technologies.

Aligning Ecosystem Construction with Practical Application. Shanghai is committed to innovating ESG financial services and products, promoting the development of local ESG professional service institutions, and strengthening the exchange between rating agencies and foreign-related enterprises to enhance ESG service capabilities. ESG work is incorporated into the Shanghai-Singapore and Shanghai-Hong Kong cooperation frameworks, drawing on experiences from Singapore and Hong Kong in ESG capacity building. The Pudong New Area and the Lingang New Area are emphasized for pioneering trials. By strengthening international cooperation, Shanghai enhances the influence of its ESG initiatives. The city also focuses on applying ESG in the transnational business of foreign-related enterprises, making ESG information reports an important guide for investment decisions.

Combining Capacity Enhancement with Talent Cultivation. Shanghai emphasizes enhancing the leading role of state-owned enterprises in ESG, supports the ESG practices of private and foreign enterprises, and strengthens ESG applications in the transnational business of foreign-related enterprises. By leveraging universities, think tanks and academic institutions, Shanghai encourages capable universities and research institutes to conduct scientific research, talent cultivation and social services in ESG-related fields. The city promotes the inclusion of ESG courses in higher education to cultivate ESG professionals with interdisciplinary backgrounds.

II. The Role and Functions of Regulatory Agencies in Building Shanghai's ESG Ecosystem

Establishing a Collaborative Working System to Enhance Policy Guidance and Support. Regulatory agencies strengthen overall coordination and policy support, mobilizing market enthusiasm to promote an ESG promotion mechanism involving all parties. This approach stimulates the intrinsic motivation of enterprises and various entities to enhance ESG capabilities. Agencies optimize and coordinate financial support, encourage foreign-related enterprises to publish ESG reports and host ESG-related activities, and provide public welfare training for professional service institutions.

Improving Top-Level Design and Planning to Create Exemplary Benchmarks. Agencies formulate medium- and long-term plans and action schemes for urban ESG work, integrating ESG concepts into the entire process of economic, social, and urban governance. They explore leveraging the pioneering roles of the Pudong New Area and the Lingang New Area to promote high-level, international ESG capacity building.

Promoting International Exchange and Cooperation to Enhance Financial Service Levels. Agencies support industry organizations in participating in the formulation and promotion of international ESG standards and rules, strengthening exchanges and cooperation with international organizations and institutions. Financial institutions are encouraged to actively practice ESG concepts, innovate financial products and services, offer preferential conditions to enterprises with high ESG ratings, and support the issuance of ESG-themed bonds and company listings.

Enhancing Concept Promotion and Education to Cultivate Professional Institutions and Talent. Agencies support professional service institutions in expanding ESG service scopes and enhancing service capabilities. They introduce and cultivate well-known domestic and international ESG professional service institutions. Universities are encouraged to offer ESG-related courses to cultivate ESG professionals with interdisciplinary backgrounds, providing intellectual support for ESG development.

Section 2: Industry Organizations in Shanghai

I. Practical Actions of Industry Organizations in the Process of ESG Development

The industry organizations involved in the construction of Shanghai's ESG ecosystem and related policies include the Shanghai Federation of Industry and Commerce, the Shanghai Association of Foreign Investment, the Shanghai Federation of Industrial Economics, the Shanghai Modern Service Industry Association, the Shanghai Council for the Promotion of International Trade, the Shanghai Financial Industry Federation, the Shanghai Banking Association, and the Shanghai Asset Management Association, among others. These organizations mainly consist of intermediary and quasi-governmental bodies.

In terms of policy guidance and standard formulation, the Shanghai Federation of Industrial Economics released the ESG Reporting Guidelines and the Corporate ESG Reporting Standards to help enterprises establish an information disclosure framework and clarify core disclosure indicators. The Shanghai Modern Service Industry Association initiated the development of the group standard General ESG Enterprise Evaluation Specification, aiming to construct a standardized system for general ESG enterprise evaluation.

Regarding building exchange and cooperation platforms, the Shanghai Association of Foreign Investment organizes ESG forums and seminars, bringing together various parties to discuss global ESG trends and share corporate practical experiences. The Shanghai Council for the Promotion of International Trade hosts the International Carbon Neutrality Expo and the Green Technology Cooperation Forum to showcase low-carbon technologies and products, promoting cooperation in green development.

In training and capacity building, the Shanghai Financial Industry Federation organizes visits to enterprises with ESG best practices, promoting green transformation and talent cultivation in the financial industry. The Shanghai Asset Management Association holds specialized lectures to help member units understand the current global development of ESG funds and the practices of asset management institutions.

For report publication and information disclosure, the Shanghai Banking Association releases the *Yangtze River Delta Banking Industry Green Finance Sustainable Development Report* and the *2023 Shanghai Banking Industry Social Responsibility Report*, showcasing the diversity and innovation of the banking industry's efforts in green finance and social responsibility.

In terms of technical support and innovation, the Shanghai Council for the Promotion of International Trade launched a full life-cycle carbon emission technology roadmap to display low-carbon technologies and products, promoting technological innovation and low-carbon transformation among enterprises.

II. The Role and Functions of Industry Organizations in Building Shanghai's ESG Ecosystem

First, participating in international exchanges and significant cooperation in the ESG field. Industry organizations can engage in standard formulation, provide professional services, and strengthen international exchanges and cooperation. Facing the challenge that international ESG indicator systems may not fully adapt to China's specific conditions, industry organizations, governments, and enterprises need to work together to promote the formation of localized ESG indicators, achieving ESG localization.

Second, promoting the dissemination and promotion of ESG concepts. Industry organizations guide more enterprises to pay attention to ESG work and practice ESG concepts by hosting various ESG activities and conducting training, creating ESG brand events with international influence. For example, the Shanghai Adream Charitable Foundation enhanced organizational transparency and credibility by releasing the industry's first ESG (Environmental, Social, and Governance) Report.

Third, enhancing the synergistic effects of ESG practices among enterprises. Through cooperation with different stakeholders, industry organizations enhance their own ESG practices, participate in industry-specific initiatives, and promote foreign-funded enterprises to improve their ESG performance in areas such as environmental management, resource consumption, pollutant emissions, and climate change. Simultaneously, they consider the impact on social dimensions like employee rights, product and service management, and supply chain management, contributing to the sustainable development of Shanghai and China as a whole.

Section 3: Educational Institutions in Shanghai

With the deepening of sustainable development concepts, society's demand for talents in sustainable finance is becoming increasingly urgent. These professionals need to possess diverse knowledge backgrounds, strong interdisciplinary capabilities, and continuous innovation spirit. Educational institutions play a crucial role in cultivating such talents;

therefore, there is an urgent need to establish a comprehensive sustainable finance education system to meet the demand for specialized personnel.

I. Current Status of Talent Demand and Educational Institutions

In recent years, the demand for professionals equipped with knowledge and skills in sustainable finance has grown rapidly. These talents need not only to master traditional financial theories and practical operations but also to deeply understand the core concepts of sustainable development, especially standards related to environmental protection, social responsibility, and corporate governance. Additionally, they need the ability to assess and manage environmental and social risks. These professionals will act as bridges among financial institutions, enterprises, governments, and non-governmental organizations, directing funds toward low-carbon, environmentally friendly, and socially beneficial projects, thereby assisting the economy's green transformation.

However, many educational institutions have not fully kept pace with society's demand for sustainable finance talents. The existing education system needs to be strengthened in curriculum design, faculty strength, and practical opportunities in the field of sustainable finance. Therefore, educational institutions urgently need to accelerate the construction of a sustainable finance education system that aligns with market demands, cultivating composite talents capable of advancing social sustainable development.

(I) Analysis of Current Talent Demand

Data from recruitment platforms indicate that from January 2014 to March 2024, among over 2,000 listed companies, the demand for positions related to sustainability has continued to grow. From a regional perspective, the demand for sustainable positions in the Yangtze River Delta region has maintained a leading position since 2014, with demand significantly higher than in the Beijing-Tianjin-Hebei and Pearl River Delta regions (see Figure 7.1).

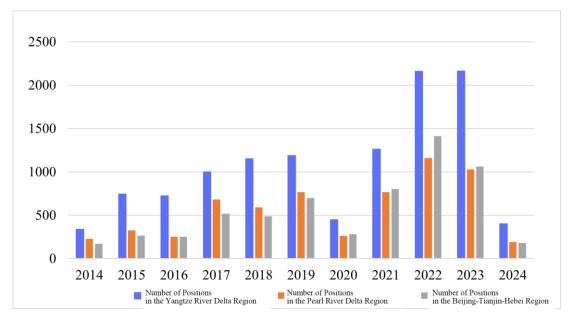


Figure 7.1 Distribution of ESG-Related Positions in China's Three Major Urban Agglomerations

Data Source: Shanghai Advanced Institute of Finance at Shanghai Jiao Tong University

From the perspective of industry demand, professional talent in corporate governance ranks first in most industries, followed by environmental protection talents. In the information technology industry, demand for governance positions has risen sharply after 2021, indicating a focus on data privacy and compliance. In the industrial and energy sectors, demand for environmental positions has increased dramatically, reflecting enterprises' pressure from environmental protection policies and requirements for green transformation. Meanwhile, the demand for social positions in the daily consumer goods and healthcare industries has risen, reflecting concerns about consumer rights and employee welfare. Additionally, among all industries, industrial enterprises have the strongest demand for sustainability-related talents, with demand nearly twice that of the second-ranking information technology enterprises (see Figure 7.2).

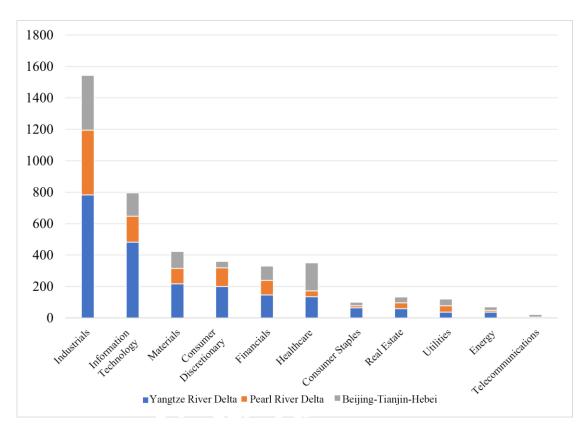


Figure 7.2 Comparison of ESG-Related Job Recruitment Numbers Across Industries in China's Three Major Urban Agglomerations

Data Source: Shanghai Advanced Institute of Finance at Shanghai Jiao Tong University

Analyzing from the perspective of enterprise nature, private enterprises dominate the national demand for sustainable talents, especially in the Yangtze River Delta and Pearl River Delta regions. The activity of private enterprises reflects their rapid response and proactive implementation of sustainable concepts. However, in the Beijing-Tianjin-Hebei region, particularly Beijing, central and local state-owned enterprises' demand for sustainable talents exceeds that of private enterprises.

Recruitment data show that from 2014 to 2024, salaries for sustainability-related positions have continued to rise. In the four first-tier cities of Beijing, Shanghai, Guangzhou, and Shenzhen, the average salary has exceeded 10,000 yuan since 2018, with Shanghai maintaining the highest salary level in the past three years (see Figure 7.3).

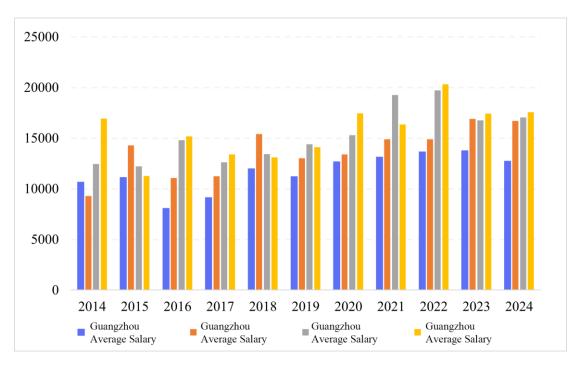


Figure 7.3 Salary Distribution of ESG-Related Positions in China's Four First-Tier Cities

Data Source: Shanghai Advanced Institute of Finance at Shanghai Jiao Tong University

At the national level, the 2023 salary distribution shows that positions with salaries over 10,000 yuan account for more than half. Enterprises are willing to invest more resources to attract high-quality talents with sustainable development backgrounds, and the market's demand for professional knowledge and practical experience in the sustainable field continues to grow.

From the perspective of sustainability position levels, over 90% of sustainability-related positions are concentrated in middle-level and senior management positions. Simultaneously, requirements for work experience are becoming increasingly stringent. Since 2019, the proportion of positions requiring at least one year of work experience has exceeded 80%. This indicates a growing market demand for experienced and practically capable sustainable talents. Especially as enterprises face increasingly strict environmental regulations, sustainable supply chain management, and carbon neutrality goals, professionals with industry experience are more attractive than new entrants.

(II) Analysis of the Current Status of Educational Institutions

Facing the continuously growing market demand for sustainable development talents, Shanghai's educational institutions are taking concrete actions. The Shanghai Advanced Institute of Finance at Shanghai Jiao Tong University has launched a sustainable finance curriculum system covering the Sustainable Development Goals (SDGs) and co-established the Center for Sustainable Investment at SAIF with global partners. Additionally, the Shanghai University of Finance and Economics has established the Dishui Lake School of Finance, adding an ESG learning branch to its Master's in Finance program and offering courses such as "Carbon Finance Products and Markets." The School of Economics and the School of Management at Fudan University have held multiple ESG-related special courses and lectures covering topics like carbon peaking and carbon neutrality, carbon markets and carbon finance, and dual-carbon development. These diversified actions demonstrate the proactive efforts of Shanghai's educational institutions in cultivating future sustainable development talents. Despite significant achievements, the current education system still faces many practical challenges.

First, the prevalence of sustainable finance-related education is significantly insufficient. An analysis of sustainable finance-related courses offered by 14 business schools in China shows that only 156 courses directly related to sustainable finance have been offered in total (see Figure 7.4). Taking SAIF at Shanghai Jiao Tong University as an example, the institute offers 105 courses, among which sustainable finance-related courses—including "Clean Energy and Dual-Carbon Goals"—number six, accounting for 5.7% of the total courses and 2.5% of the teaching classes.

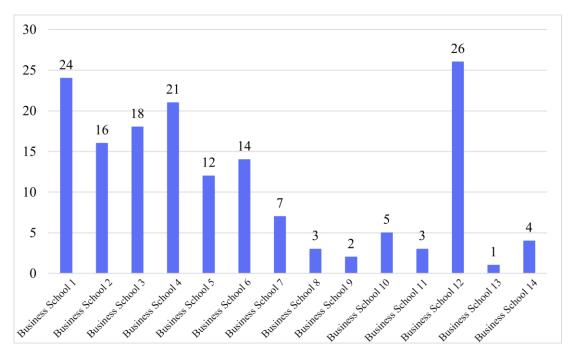


Figure 7.4 Number of Sustainable Finance-Related Courses Offered by 14 Key Universities in China Data Source: Shanghai Advanced Institute of Finance at Shanghai Jiao Tong University

Second, a mismatch between the supply and demand of sustainable finance-related education. Middle and senior managers are key forces in promoting sustainable development, yet there is a significant lack of courses in EMBA and executive training programs. This limitation not only restricts the dissemination and application of sustainable finance knowledge but also hinders enterprises' potential in sustainable development (see Figure 7.5).

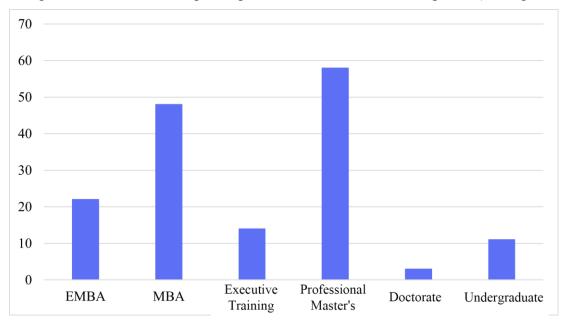


Figure 7.5 Number of Sustainable Finance-Related Courses Offered in Various Degree and Training Programs in China

Data Source: Shanghai Advanced Institute of Finance at Shanghai Jiao Tong University

Third, a mismatch between the focus areas and objectives of existing courses. Analysis of

survey data shows that although universities offer a variety of sustainable finance-related courses, the allocation of specific course numbers does not fully reflect a concentrated focus on the core issues of reducing carbon emissions and climate risks (see Figure 7.6).

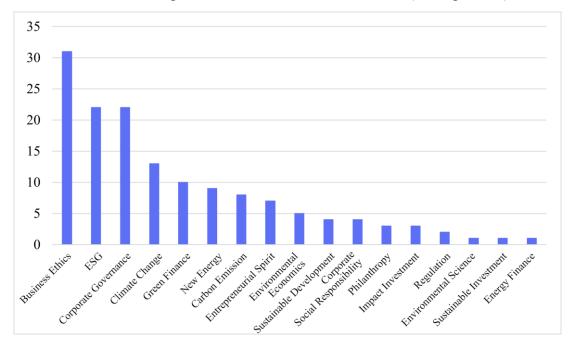


Figure 7.6 Distribution of Sustainable Finance-Related Courses Across Various Subfields in Chinese Universities

Data Source: Shanghai Advanced Institute of Finance at Shanghai Jiao Tong University

II. Cultivating Sustainable Finance Talents from an Educational Perspective

Guided by China's sustainable development strategy, the education and training system for sustainable finance needs to play three roles while fulfilling four core functions: establishing awareness of environmental protection and improvement, popularizing laws and regulations related to sustainable development, fostering the dominant values of sustainable development, and mastering financial measures and tools that support sustainable development. This approach constructs the foundation for cultivating sustainable finance talents.

(I) Roles of Educational Institutions in Constructing Sustainable Finance Education

First, as providers of education and guarantors of quality. Educational institutions need to commit to building a faculty team with profound professional knowledge and rich

practical experience to ensure high-quality teaching outcomes. Schools should strengthen professional training for teachers, regularly organize industry lectures and seminars to promote teachers' understanding of the latest financial developments and sustainable finance trends. Additionally, encouraging teachers to participate in practical projects combines theory with practice, enriching teaching content and making classroom knowledge more applicable. Establishing robust academic exchange platforms to facilitate experience sharing and collaboration among teachers can further enhance overall teaching standards.

Second, as curriculum planners and developers. Educational institutions must design priority training targeting the needs of senior managers to address the urgent demand for sustainable finance knowledge. For example, EMBA program participants can directly connect with the industry; tailored courses can enable them to quickly grasp the core concepts of sustainable finance and apply them in practice, thereby promoting the sustainable development of finance. Meanwhile, Master's programs in finance aim to cultivate future talent reserves, providing systematic education in sustainable finance theory and practice. This dual-track strategy not only meets current market demands but also lays a solid talent foundation for the future financial industry.

Third, as global perspective cultivators. Financial institutions should strengthen cooperation with internationally renowned academic institutions to jointly explore new paths in sustainable finance. This collaboration can introduce advanced educational concepts and practical experiences, providing students with a broader learning platform. Through innovative education models such as online courses, international seminars, and field studies, students can access the latest global developments and case studies in sustainable finance. Additionally, interdisciplinary integration is an important pathway for cultivating high-quality talents. By combining finance with environmental science, sociology, policy studies, and other fields, students can fully understand the complexity of sustainable finance and stimulate their innovation abilities and problem-solving skills. This cultivation model will help students possess stronger competitiveness and adaptability in a globalized context, contributing to the development of sustainable finance.

(II) Core Functions of Educational Institutions in Cultivating Sustainable Finance

First, establishing environmental awareness. Through case studies, students can intuitively grasp the severity of environmental issues and recognize the key role of sustainable finance. Integrating interdisciplinary knowledge from environmental science, ecology, and other fields enables students to understand the interactions among the environment, economy, and finance. This educational model not only enhances the practicality of theoretical knowledge but also lays a solid foundation for cultivating professional talents in the future financial sector.

Second, popularizing policies and regulations. Since 2010, China has made significant progress in constructing a green financial system. These continuously evolving policies are important drivers for sustainable finance education and training. Without an in-depth understanding and correct interpretation of these policies and laws, the curriculum system will lose its internal logic, and its application will lack specificity. Therefore, the curriculum design must closely revolve around these laws and regulations to ensure that students can fully understand and effectively apply this knowledge, thereby promoting the development of sustainable finance.

Third, cultivating financial ethics. By setting up modules on ethics and social responsibility, the curriculum explores moral choices and social impacts in financial activities. Through interactive teaching methods like case analysis, students can understand the ethical considerations and social responsibilities behind financial decisions. Additionally, inviting industry experts and scholars to share practical experiences and insights in the field of sustainable finance provides students with vivid industry perspectives and inspiration.

Fourth, mastering financial tools. The curriculum will cover financial instruments such as green bonds, socially responsible investment funds, and sustainability-linked loans, and include application modules to help students understand how these tools promote environmental sustainability and social equity. Students will experience firsthand the design, issuance, and management processes of sustainable financial products. Furthermore, educational institutions need to establish cooperative relationships with enterprises and financial institutions to provide students with internship bases and practical opportunities.

Section 4: National and Shanghai Media and the Public

Relying on the statistical database of self-built media by Sina Finance and a public ESG awareness and social participation questionnaire released to society, this section statistically analyzes media dissemination trends in the ESG field, public ESG awareness and participation. Based on the above research, it further proposes the positioning and role of media in the construction of Shanghai's ESG ecosystem.

I. Trends in Media ESG Dissemination Volume Nationwide and in Shanghai

According to statistics²², in 2024, there are 40 mainstream media outlets active in the ESG field (see Figure 7.7). Through practices such as establishing ESG columns, setting up ESG awards and case studies, actively organizing large-scale ESG conferences, conducting in-depth frontline enterprise research, and building ESG think tanks, these media have formed significant dissemination volume (see Figure 7.8).

²² Sina Finance, leveraging its self-built media statistical database, conducted research and statistical analysis on the ESG dissemination practices of mainstream media active in China's ESG field.

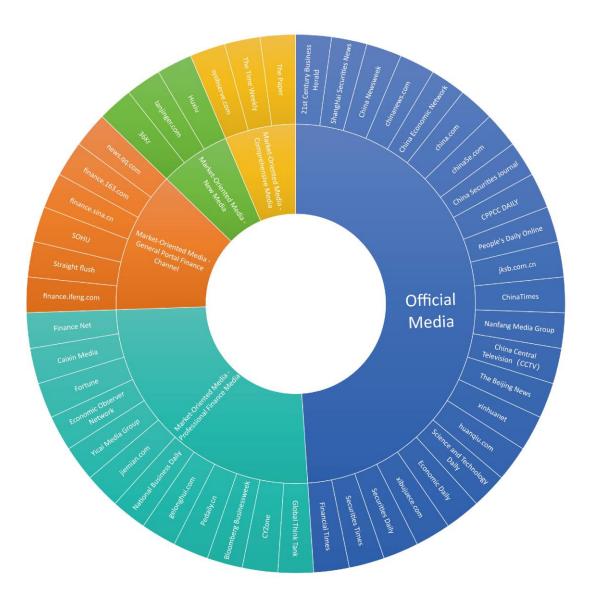


Figure 7.7 Overview of Mainstream Media Active in China's ESG Field and Their Categories

Source: Sina Finance Media Statistical Database

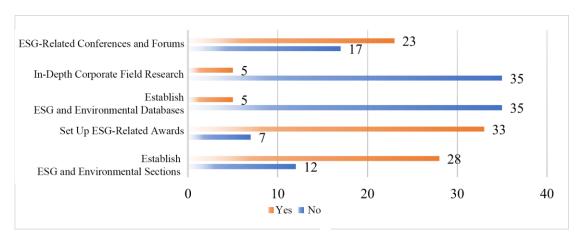


Figure 7.8 Practice Trends of Active Media in the ESG Field

Source: Sina Finance Media Statistical Database

Establishing ESG or Environmental Columns: Twenty-eight media outlets have dedicated ESG or environment-related columns (over 70%), including four based in Shanghai. Among these 28, official media account for nearly half. The establishment of CCTV's Eco-Environment and ESG China Observation channels marks that ESG topics have entered the key focus of official media.

Publishing ESG Awards and Case Studies: Thirty-three mainstream media outlets (83%) have set up ESG-related awards or case collection activities. Examples include Sina Finance's ESG "Golden Responsibility Award," CCTV's "China ESG Listed Companies Pioneer 100," and Jiemian News's "ESG Pioneer 60." However, given the numerous ESG awards, media need to optimize the fairness, objectivity, and scientific nature of evaluation methods to ensure the credibility and influence of the awards.

In-Depth ESG Research at the Enterprise Frontline: To understand the real development of enterprises' ESG practices, five media outlets have formed expert teams to conduct special research and visits to enterprises (see Table 7.1).

Table 7.1 Frontline Media's ESG Enterprise Research Activities

ESG Enterprise Research Activity	Initiating Organization	Content Description
"ESG Empowers Good Chinese Companies" Series Visits	Sina Finance, Orient Securities	Investigate and visit enterprises with outstanding performance in ESG to uncover the experiences behind them, aiming to set benchmarks for the industry.
ESG China Observation	CCTV	Through on-site visits and in-depth analysis, present the real state and significant achievements of Chinese enterprises in ESG practices to the public.
"ESG Leaders" High-End Interview Series	The Paper	Engage with ESG-leading enterprises to promote the construction of a sustainable investment value system between enterprises and investors.
High-End Think Tanks Observe Development: Visiting 100 ESG Pioneers	21st Century Business Herald	Provide enterprises with ESG practical experiences and theoretical insights, promoting exchange and cooperation in the ESG field among enterprises.
ESG+20 Sustainable Development Leadership Interview Series	Yicai Media Group, United Nations Global Compact	Dialogue with pioneering Chinese entrepreneurs in the field of sustainable development, combined with field visits, to explore insights, achievements, and leadership in sustainability.

Data Source: Collected and compiled from public information by Sina Finance

Building ESG Think Tanks: Five media outlets have established ESG think tank organizations to provide policy recommendations. In recent years, some media have formed professional ESG research teams, expanding to provide ESG data and ESG consulting services.

II. Public ESG Awareness and Social Participation Nationwide and in Shanghai

(I) A Solid Foundation for Public ESG Awareness

According to Sina Finance's 2024 Public ESG Awareness and Social Participation Survey Questionnaire, overall, over half of the public have some understanding or deep understanding of ESG concepts, with only 12% completely unaware. Based on the ESG Awareness Index Model calculation²³, excluding provinces with fewer than 50 valid questionnaires, the top five provinces in ESG awareness are Shanghai, Beijing, Jiangsu,

²³ The ESG Awareness Index is calculated by Sina Finance by assigning weighted values to underlying indicators under the indicator of the public's understanding level of ESG concepts across provinces nationwide.

Henan, and Anhui. Shanghai samples showed the highest level of ESG concept awareness (see Figure 7.9). Furthermore, Shanghai respondents also displayed a higher frequency of attention to ESG information, with nearly 20% closely following and actively seeking ESG-related information, higher than the national average of 11.95% (see Figure 7.10).

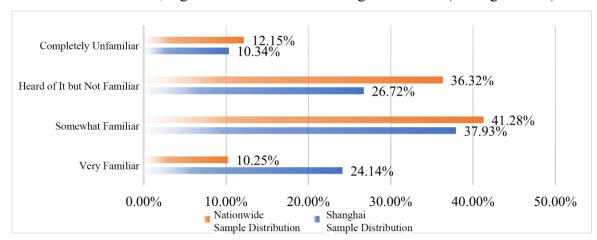


Figure 7.9 Public Understanding of ESG Concepts in Shanghai and Nationwide Samples Source: Sina Finance 2024 Public ESG Awareness and Social Participation Survey

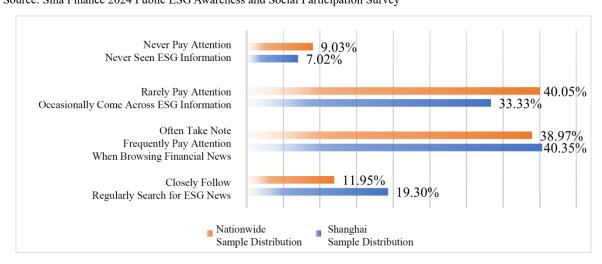


Figure 7.10 Frequency Distribution of Attention to ESG Information in Shanghai and Nationwide Samples

Source: Sina Finance 2024 Public ESG Awareness and Social Participation Survey

In terms of attention level, over half of the respondents often pay attention to or closely follow ESG-related information, and are even familiar with relevant international organizations and initiatives. Among them, the Sustainable Development Goals (SDGs) and the United Nations Development Programme (UNDP) are the initiatives and organizations most familiar to the public (see Figure 7.11). Notably, Shanghai respondents' understanding of ESG-related international initiatives and organizations far exceeds the national average (see Figure 7.12).

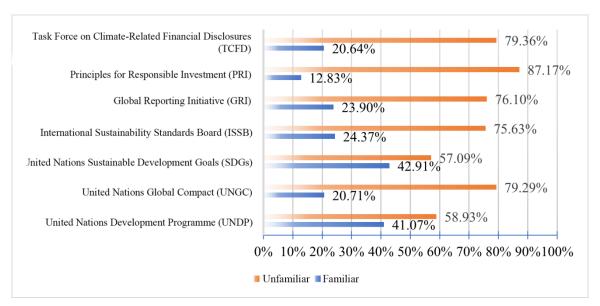


Figure 7.11 Public Understanding of ESG-Related International Organizations and Initiatives
Source: Sina Finance 2024 Public ESG Awareness and Social Participation Survey

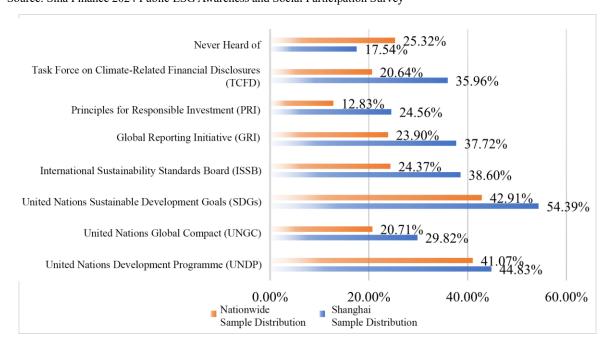


Figure 7.12 Understanding of ESG-Related International Organizations and Initiatives among Shanghai and Nationwide Samples

Source: Sina Finance 2024 Public ESG Awareness and Social Participation Survey

From a trend perspective, 2024 became the year when the public's perception of ESG concepts was most noticeable. About 24% of respondents believed that they began to have a significant perception of ESG this year, and approximately 60% of respondents felt that their attention to ESG has increased or significantly increased this year.

(II) Gradual Deepening of Public ESG Corporate Governance and Investment Concepts

Regarding corporate governance, the public has generally recognized the importance of ESG to the long-term development of enterprises. Over 85% of respondents believe that corporate ESG strategies are very important or relatively important to their brand image and long-term development capabilities. Nearly 80% of respondents have some understanding of the concept of ESG ratings and wish to use corporate ESG ratings as a reference factor in their investment decisions ²⁴ (see Figure 7.13). Specifically, Shanghai respondents' understanding of ESG ratings far exceeds the national level, with 19.30% and 40.35% being very familiar or somewhat familiar with ESG ratings, compared to 9.10% and 34.69% in the national sample (see Figure 7.14).

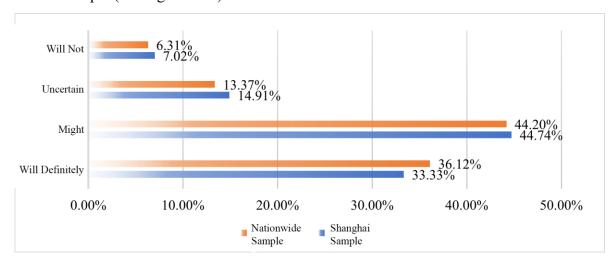


Figure 7.13 Whether Respondents Will Use Corporate ESG Ratings as a Reference Factor in Investment Decisions

Source: Sina Finance 2024 Public ESG Awareness and Social Participation Survey

²⁴ The ESG Awareness Index is calculated by Sina Finance by assigning weighted values to underlying indicators under the indicator of the public's understanding level of ESG concepts across provinces nationwide.

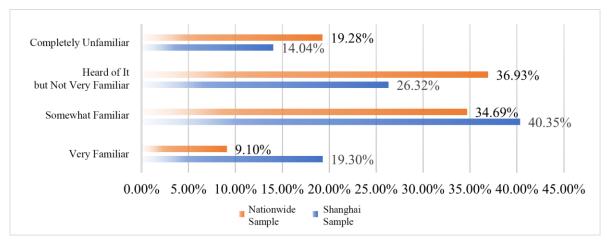


Figure 7.14 Degree of Understanding of the Concept of ESG Ratings Among Respondents Source: Sina Finance 2024 Public ESG Awareness and Social Participation Survey

From the perspective of investment decisions, the concept of sustainable investment has emerged among the public. Twenty-eight percent of respondents have invested in sustainable development/ESG fund products, mainly because they are optimistic about long-term investment logic or support green and sustainable development initiatives (45.29% and 48.95%, respectively), with only a minority driven by short-term speculative considerations (16.00%).

(III) Sustainable/Green Consumption Prevails in Society

Regarding types of sustainable consumption, purchasing energy-efficient appliances, using clean energy, buying biodegradable/recyclable packaging products, and choosing new energy vehicles and other low-carbon travel methods are the top four sustainable consumption areas most concerned by the public (74.27%, 59.10%, 59.00%, and 47.59%, respectively). Specifically, in terms of energy-efficient appliances, 28.77% and 57.11% of respondents indicated they would entirely or mostly use energy-saving appliances.

From the perspective of sustainable consumption awareness, respondents generally believe that low-carbon living and sustainable consumption are very important for environmental protection (with 54.5% considering it very important and 32.74% relatively important). However, certain pain points still exist in sustainable consumption. The top three factors hindering consumers from purchasing green products are higher prices, unstable quality, and limited product choices (46.76%, 43.41%, and 35.46%, respectively).

III. The Role and Functions of Media and Others in Building Shanghai's ESG Ecosystem

Promoting the Improvement of Market Mechanisms: On one hand, by disseminating the excellent ESG practices of Shanghai enterprises, media can enhance public attention and participation. On the other hand, by exposing violations, they can encourage enterprises to improve ESG performance. Utilizing public opinion systems and data supports ESG evaluation systems, providing real-time information and early warnings for government and enterprise decision-making.

Assisting in the Construction of Shanghai's International Financial Center: Support media in hosting international ESG conferences to establish global exchange and capital cooperation platforms, strengthening Shanghai's status as an international financial center. Encourage the planning of supporting ESG exhibitions to promote project applications and capital flows. Collaborate with financial institutions to promote ESG investor education, strengthen market concept promotion, guide capital to flow toward enterprises that meet ESG standards, and promote the development of sustainable investment.

Encouraging Public Participation: Support major media organizations in leveraging their dissemination roles, using new media to release ESG-related news about Shanghai enterprises, and spreading excellent ESG practices of Shanghai enterprises nationwide and internationally. Strengthen media publicity of Shanghai's various carbon-inclusive platforms, encouraging citizens to fully participate in low-carbon emission reduction. Support conducting ESG education for citizens through media platforms and applications, releasing relevant questionnaires to enhance citizens' understanding, perception, and participation in ESG.

Guiding Corporate ESG Practices: Encourage media to uphold principles of science and fairness by promoting Shanghai enterprises' ESG practices through releasing ESG awards and evaluations. Additionally, compared to rating systems, media institutions have advantages in market information and public opinion data. Encourage media to act as market forces and transform into professional ESG intelligent information and consulting service providers.

Section 5: Shanghai's Urban and Regional Sustainable Development

As the broader backdrop for Shanghai's ESG development, the city's and region's sustainable development initiatives provide fundamental support for all stakeholders, including enterprises, investors, and consumers. On one hand, as the main entities of regional economic activities, enterprises implementing ESG governance and enhancing their sustainable development capabilities are prerequisites and necessary measures for achieving urban and regional sustainability. On the other hand, urban and regional sustainable development not only offers strategic guidance for enterprises but also provides external support for their ESG development in terms of policies, infrastructure, and public opinion environments.

I. Current Status of Shanghai's Urban and Regional ESG Levels

In recent years, Shanghai has actively promoted sustainable development in urban construction and governance, achieving positive and effective practical results in the Environmental, Social, and Governance dimensions. The city consistently remains at the forefront of China's urban and regional ESG initiatives.

(I) ESG Performance at the City Level

1. Environmental Dimension

In pollutant control, Shanghai has effectively reduced the concentrations of PM2.5 and other major pollutants by establishing stricter emission standards and monitoring mechanisms. The number of days with good air quality has exceeded expectations, and both forest coverage and per capita public green space have increased year by year, rising from 16.2% and 8.1 square meters in 2017 to 18.81% and 9 square meters in 2023, respectively. The city's annual average PM2.5 concentration decreased from 53 micrograms per cubic meter in 2015 to 25 micrograms per cubic meter in 2022, reaching the lowest value since records began.

In water system management, Shanghai has strengthened governance of key urban water bodies such as the Huangpu River and Suzhou Creek. The city has implemented water environment management projects and promoted the construction of a water-saving city. The progress of the indicator for the proportion of surface water reaching or better than Class III exceeded expectations. In 2023, among Shanghai's 273 assessed surface water sections, the proportion rated as excellent reached 97.8%, and among the 40 national control sections, the excellent rate was 97.5%, both hitting historical highs. Starting from water environment improvement, Shanghai integrated environmental protection, ecological restoration, recreational space construction, and coastal urban renewal, promoting the open connection of public shorelines along the "One River and One Creek," reflecting the ecological and people-centric nature of urban development.

In green ecological urban area construction, by the end of 2022, Shanghai had successfully established 26 green ecological urban areas, covering a total area of approximately 72.6 square kilometers. In 2022, the city's installed capacities for wind power, photovoltaic, and biomass energy were two, nine, and four times those of 2015, respectively. Energy consumption per ten thousand yuan of GDP and per ten thousand yuan of industrial added value were reduced to 0.26 and 0.5 standard tons of coal, decreasing by 30% and 22% compared to 2017. The ratio of energy consumption per unit of industrial added value to energy consumption per unit of GDP increased from 1.73 in 2017 to 1.92 in 2022.

In solid waste treatment and resource utilization, Shanghai has fully achieved the goals of zero landfill of primary domestic waste and a 100% harmless treatment rate of domestic waste. The recycling rate of domestic waste increased from 34.29% in 2019 to 42.78% in 2022.

2. Social Dimension

In talent attraction, Shanghai has continuously intensified efforts to introduce high-level and key sector talents, strengthening the aggregation of population and talents in key areas. From 2017 to 2022, Shanghai cumulatively introduced over 135,000 overseas returnees. The proportion of the population with higher education among the main labor force

(aged 20 - 59) increased from 35.9% at the end of 2017 to 55.3% in 2022, slightly below Beijing's 56.18%.

In enhancing medical and health services, Shanghai has comprehensively promoted reforms in public health and medical fields, continuously advancing in depth and elevating the construction level of an international first-class medical center city. In recent years, the health security of Shanghai's citizens has been continuously strengthened, with major health indicators consistently maintaining the levels of developed countries. The average life expectancy of registered residents reached 83.67 years. The infant mortality rate and maternal mortality rate were 2.66% and 3.66 per 100,000, respectively. The city's average emergency response time was shortened to within 12 minutes, and the health literacy level of citizens reached 35.57%, higher than the national average.

In ensuring educational and cultural development, Shanghai has basically formed a pattern of high-quality and balanced development in compulsory education and proposed the goal of building the "Shanghai Culture" brand to create landmarks of Haipai (Shanghai-style) culture. The construction of international cultural facilities such as the East Hall of the Shanghai Museum, the East Hall of the Shanghai Library, and the Shanghai Grand Opera House is progressing orderly. The "One River and One Creek" have become important spatial carriers bearing the core functions of Shanghai as an international cultural metropolis, and grassroots cultural density is increasing.

In improving the social security system, including pension insurance, medical insurance, and minimum living security, Shanghai has further enhanced citizens' sense of happiness and gain. The construction of 15-minute community life circles has been fully promoted, with the 15-minute walking coverage rate of community public service facilities increasing from 65% in 2017 to 83% in 2022.

3. Governance Dimension

Shanghai aims to become a Chinese model of refined management for megacities with international influence. The city has launched multiple rounds of three-year action plans for urban refinement, focusing on enhancing residents' sense of gain and happiness. In June 2021,

China's first digital vital signs system for megacity operations—the Shanghai Urban Operation Digital Vital Signs Version 1.0—was officially launched. It has been iteratively upgraded to form a city-wide neuronal system, providing "all-time intelligent check-ups" for the city's operations.

The Shanghai municipal government has continuously improved information disclosure and transparency. By the end of 2023, the Shanghai Administrative Normative Document Management Platform, open to the public, included 2,764 effective administrative normative documents. Over 4,000 public data sets have been made available, promoting the construction of 11 public data open application pilot projects, including inclusive finance and intelligent transportation.

Shanghai regards the construction of a smart city and the development of artificial intelligence as the foundation for building an international science and technology innovation center. The city has successively achieved national leadership in digital infrastructure construction and has continuously enhanced its position as an international information and communication hub. Digital empowerment has significantly improved urban governance effectiveness. For example, the promotion of the "One-stop Service" for government services enabled 3,326 administrative matters to be handled entirely online by the end of 2023. A unified city-wide community basic information database and "Community Cloud" platform have been established, along with the smart medical "Health Cloud" platform.

(II) ESG Practices at the Local Grassroots Level

The current state of Shanghai's urban ESG development is driven by ESG practices tailored to local conditions by various grassroots administrative districts. Each district formulates policies based on its own economic and social development characteristics and ESG development realities, proceeding step by step with different focuses, achieving harmony without uniformity. Among them, Huangpu District, Jing'an District, and Jinshan District have made distinctive ESG practice explorations.

Huangpu District has seized the dual development focuses of the city's central activity zone and the Bund financial cluster to carry out targeted ESG practices in near-zero carbon emissions and green finance. In urban carbon emissions, Huangpu District took the lead in demonstrating the construction of the "First Congress Site - Xintiandi" municipal near-zero carbon emission adaptive area and established Shanghai's first district-level carbon-inclusive platform. Simultaneously, combining with the development of the Bund financial cluster, it has built a hub-oriented and radiative characteristic platform for ESG investment and green financial services. Overall, Huangpu District is proactively laying out zero-carbon city and green finance industry tracks, striving to become a model district for practicing ESG concepts.

Jing'an District, adhering to the development positioning of "International Jing'an, Exceptional Urban Area," responds to Shanghai's policy of enhancing foreign-related enterprises' ESG capabilities. Leveraging characteristic policies like the "Global Service Provider Plan," it constructs an ESG system that matches international standards. As a representative of Shanghai's "building economy," Jing'an District implements building energy-saving and carbon reduction goals using digital and intelligent means. Additionally, by leveraging the "West Nanjing Road Carbon Neutral Street" mechanism, it promotes the green and low-carbon transformation of the building economy, creating a mature ESG business environment. Jing'an District also considers digital governance a key pathway, deeply advancing the digital transformation of the regional ecological environment, exploring intelligent environmental governance and high-quality urban renewal, and has basically achieved regional environmental digital twin management.

Jinshan District issued the Action Plan for Promoting ESG (Environmental, Social, and Governance) System Capability Enhancement (2024-2026) in June 2024, becoming the first district in Shanghai to introduce a district-level ESG construction action plan. The district plans to form an ESG capacity-building ecosystem jointly participated in by the government, industry organizations, key enterprises, and professional service institutions. It proposes relevant policy arrangements for energy saving, carbon reduction, and systematic pollution control in chemical parks and towns, accelerating the improvement of ESG capabilities and levels of enterprises and the government within the district.

II. Mutual Promotion Between Shanghai's Urban and Regional ESG Construction and Enterprises' ESG Development

As an international center for economics, finance, trade, shipping, and technological innovation, Shanghai's urban and regional ESG construction and enterprises' ESG development have a close interactive relationship, evident in environmental protection, social governance, economic development, and other areas.

(I) Mutual Promotion in Environmental Protection

In environmental protection, enterprises' ESG performance is part of the city's ESG development. The Shanghai municipal government, through higher-standard environmental protection policies, promotes enterprises to invest in and innovate clean production technologies and management. This not only achieves continuous improvement in regional environmental quality but also encourages enterprises and society to realize a green and low-carbon transformation. For example, under Shanghai's vigorous promotion of new energy vehicle policies, the city's new energy vehicle ownership reached 1.288 million in 2023, an increase of 28.8% compared to 2022, ranking first among global cities. The development of the new energy vehicle industry has not only propelled industry enterprises and gained widespread acceptance among residents but also significantly reduced the city's energy consumption and carbon emissions, improving air quality and becoming an important support for Shanghai's sustainable urban development.

(II) Mutual Promotion in Social Governance

Enterprises' social responsibility activities are vital components of urban social governance. By fulfilling social responsibilities and actively participating in community construction and public services, enterprises directly improve social welfare within the region. For instance, Shanghai's urban social governance policies, such as smart city construction and the enhancement of public health services, create a stable and efficient social environment for enterprises, improving production efficiency and employee satisfaction. Many enterprises'

investments in education, healthcare, and poverty alleviation have enhanced community residents' quality of life, further promoting social harmony. The implementation of Shanghai's "One-stop Service" project, which allows individuals and enterprises to handle administrative licensing matters entirely online via mobile devices, has significantly reduced the difficulty and time for administrative procedures, effectively improving operational efficiency and reducing costs for enterprises.

(III) Mutual Promotion in Economic Development

In economic development, Shanghai's policy system for urban low-carbon green transformation encourages enterprises' industrial transformation and green development, creating a favorable environment for sustainable business growth. As policy executors, enterprises promote high-quality regional economic development through innovation and transformation. For example, technological innovation policies in Shanghai and surrounding cities like Suzhou have cultivated a globally significant technological innovation ecosystem. In the *Global Innovation Index 2023* released by the World Intellectual Property Organization, the Shanghai-Suzhou technological innovation cluster rose to 5th place globally. Enterprises, as innovation entities, have continuously enhanced their innovation momentum. Shanghai's STAR Market (Sci-Tech Innovation Board) has 89 listed companies, ranking second nationwide in number, first in total market value, and first in cumulative initial fundraising.

The success of enterprise clusters also propels the sustainable development of the urban economy, directly supporting economic growth through job creation, taxation, and industrial chain enhancement, and driving overall development of industrial chains or clusters. For example, the contributions of numerous domestic and foreign financial enterprises to regional financial services have promoted the construction of Shanghai's international financial center. In 2022, the total transaction value of Shanghai's financial market reached \(\frac{1}{2}\) 293.21 trillion. Shanghai's ranking in the Global Financial Centers Index (GFCI) rose from 13th in 2017 to 6th in 2022 (previously reaching 3rd in 2020 and 2021).

(IV) Comprehensive Effect

The inherent consistency between Shanghai's urban and regional sustainable development and ESG construction holds significant strategic importance for the city's goal of building the "Five Centers." This drives Shanghai to continuously improve a green and low-carbon transformation policy system oriented toward citizens, enterprises, and the government. Rooted in Shanghai's outward-oriented economic characteristics, the city released the *Action Plan for Accelerating the Improvement of Environmental, Social, and Governance (ESG) Capabilities of Foreign-related Enterprises in Shanghai (2024 – 2026)* in March 2024—the nation's first regional ESG action plan—effectively coordinating the internal logic and action plans between urban ESG and enterprises' ESG development.

Shanghai's advocacy of urban ESG policies has deepened the understanding and emphasis on ESG among enterprise owners, investors, employees, and consumers. In actively responding to and implementing macro policies, enterprises have not only achieved their own sustainable development goals but also provided support and assurance for the city's and region's ESG construction. This interactive city-enterprise model facilitates joint development of the city and enterprises, enhancing the overall sustainable development level of society.

III. Shanghai's Contribution and Value to China's Urban and Regional ESG Practices

(I) Shanghai's Ranking in China's Urban and Regional ESG Systems

Currently, China still has a gap compared to internationally leading cities in urban ESG practices, but significant progress has been made domestically in ESG evaluation and ranking at the urban level. In 2021, Securities Times released the 2021 ESG Ranking of Mainland Chinese Cities, in which Guangdong, Beijing, and Shanghai performed excellently among all provinces and cities. The Institute for Sustainable Development Goals of Tsinghua University published the Research Report on ESG Rating Indicator System for Chinese Local Governments in both 2022 and 2023, showing that Shanghai has consistently remained in the first tier of ESG development among provincial-level administrative regions since 2016 (see Table 7.2). A joint evaluation by the Chinese University of Hong Kong (Shenzhen) and

Shanghai Jiao Tong University on the ESG performance of 39 domestic cities from 2009 to 2019 also placed Shanghai at the forefront of China's urban ESG rankings.

Table 7.2 Comprehensive ESG Rating Results of Provinces (Municipalities, Autonomous Regions) from 2016 to 2020

Rating	2016	2017	2018	2019	2020
AAA				Beijing	Beijing
AA	Beijing, Jiangsu	Beijing, Guangdong, Jiangsu, Shanghai, Zhejiang	Beijing, Shanghai, Zhejiang, Guangdong, Jiangsu	Beijing, Guangdong, Jiangsu, Shanghai, Zhejiang	Guangdong, Jiangsu, Shanghai, Zhejiang
A	Guangdong, Shandong, Shanghai, Zhejiang	Shandong, Fujian, Hubei, Tianjin, Anhui, Henan, Hunan, Liaoning, Sichuan, Chongqing	Shandong, Anhui, Fujian, Hubei, Tianjin, Hebei, Henan, Liaoning, Sichuan, Chongqing	Anhui, Henan, Hunan, Shandong, Tianjin	Anhui, Fujian, Hebei, Henan, Hubei, Hunan, Jiangxi, Shandong, Shaanxi, Shanxi, Sichuan, Tianjin
BBB	Anhui, Fujian, Hebei, Hunan, Hubei, Liaoning, Shaanxi, Tianjin, Henan, Heilongjiang, Jilin, Shanxi, Sichuan, Inner Mongolia, Chongqing, Ningxia	Hebei, Shanxi, Shaanxi, Gansu, Guizhou, Jiangxi, Heilongjiang, Jilin, Inner Mongolia	Hunan, Jiangxi, Shanxi, Shaanxi, Gansu, Guizhou, Jilin, Inner Mongolia, Guangxi, Heilongjiang, Yunnan, Ningxia	Inner Mongolia, Ningxia, Liaoning, Heilongjiang, Jilin, Jiangxi, Fujian, Gansu, Hainan, Sichuan, Shanxi, Shaanxi, Yunnan, Chongqing, Hebei, Hubei	Gansu, Guangxi, Guizhou, Hainan, Heilongjiang, Ningxia, Inner Mongolia, Jilin, Liaoning, Qinghai, Chongqing
BB	Gansu, Guangxi, Guizhou, Jiangxi, Yunnan, Hainan, Xinjiang, Qinghai	Guangxi, Yunnan, Hainan, Xinjiang, Ningxia, Qinghai	Hainan, Xinjiang, Qinghai	Qinghai, Xinjiang, Guangxi, Guizhou	Xinjiang, Yunnan
В					
CCC					

Source: Institute for Sustainable Development Goals, Tsinghua University, Research Report on ESG Rating Indicator System for Chinese Local Governments (2023)

(II) Shanghai's Value in China's Urban and Regional ESG Development

Cities like Beijing, Guangzhou, and Shenzhen have also carried out extensive urban ESG practices, showcasing the diversity of China's urban ESG policy innovations and practices. However, Shanghai holds irreplaceable value and contribution among them.

Shanghai's urban ESG construction aligns with urban sustainable development, continuously deepening development strategies of low-carbon transformation and innovation-driven growth from an international perspective. It consistently maintains its position as a model city integrating global urban sustainable development and ESG. Especially in policy innovation, Shanghai actively explores policy innovations in areas like green finance and carbon trading, establishing and improving a green, low-carbon, and circular economic development system through both policy incentives and market adjustments. This promotes Shanghai's continued global leadership and demonstration role in urban sustainable development and ESG construction.

Compared to other cities, Shanghai, as China's most influential and representative global city, more proactively explores establishing "Chinese standards" in the field of international urban sustainable development, embodying the "Shanghai voice." After the 2010 Shanghai World Expo, to inherit and promote the concept "Better City, Better Life," the Chinese government and the United Nations jointly initiated "World Cities Day," established the United Nations' high-level award in urban sustainable development—the Shanghai Award, released the important knowledge product of World Cities Day—the *Shanghai Manual*, and explored setting up the United Nations' first urban sustainable development index system based on the "Five-in-One" framework of economy, society, culture, environment, and governance—the "Shanghai Index."

The "Shanghai Index" is inherently aligned with the concept of urban ESG construction. Currently, it is being piloted in cities of different levels globally, with plans to form a global urban sustainable development knowledge-sharing and cooperation network centered on Shanghai by 2030.

Under this goal, Shanghai, as a representative of China's urban sustainable development, consistently focuses on international engagement and domestic leadership, promoting

experience sharing, model exporting, and coordinated development. Internationally, besides the aforementioned measures, Shanghai strengthens exchanges and promotion of sustainable development experiences with major international cities through events like the Metropolitan Planning International Consultation (MPIC), the Global Conference on Urban Sustainable Development, and the Smart City Expo Shanghai. Domestically, focusing on coordinated development in the Yangtze River Delta region, Shanghai actively promotes and participates in multidimensional coordinated development in environment, society, and governance. For example, in January 2022, the Shanghai Municipal People's Government, Jiangsu Provincial People's Government, and Zhejiang Provincial People's Government jointly issued the Shanghai Metropolitan Area Spatial Coordination Plan, the nation's first cross-provincial metropolitan area territorial spatial plan. Through equal consultation, deepened consensus, and collective efforts, they jointly mapped out a blueprint, highlighting the strategic coordination of urban and metropolitan sustainable development. The Yangtze River Delta Integration Demonstration Zone, jointly constructed by Shanghai, Zhejiang, and Jiangsu, has become a model for cross-regional sustainable coordinated development in China, with distinct policy guidance and demonstration effects.

IV. Challenges and Opportunities in ESG Practices in Shanghai's Urban Construction and Governance

ESG practices in Shanghai's urban construction and governance not only reflect opportunities such as policy support, capital market openness, and technological progress but also expose challenges faced by Chinese cities in ESG awareness levels, data and research capabilities, investment market scale, and environmental pressures. In the future, it is necessary to further integrate resources and clarify directions to achieve long-term sustainable development goals.

(I) Challenges

The challenges in ESG practices in Shanghai's urban construction and governance mainly manifest in pressures related to environmental protection, social governance, economic transformation, and policy coordination.

In environmental protection, when promoting industrial emission reduction and energy structure reform, Shanghai needs to balance environmental protection with economic development and face challenges of water and soil resource shortages and energy supply and demand as a megacity.

In social governance, governance pressures arising from high population density, aging population, and increased housing demand require Shanghai to enhance its attractiveness to the youth and adapt to changes in population structure.

In economic transformation, although promoting high-tech and green industries, Shanghai still needs to address issues of traditional industry transformation and employment structure adjustment, while strengthening the linkage between technological innovation and advanced manufacturing.

In policy coordination, ESG practices require improving the effectiveness of cross-departmental policy implementation, perfecting policy execution supervision mechanisms, continuously enhancing public participation and policy transparency, and increasing citizens' trust in government decisions.

(II) Opportunities

Facing 2035, Shanghai plans to build an outstanding global city and a modern socialist international metropolis with world influence. Urban sustainable development and ESG construction will become important supports to assist in achieving this development goal.

Shanghai will continue to promote green and low-carbon transformation and resilient security construction. In the future, Shanghai will adapt to challenges brought by climate change and energy crises, strengthen guarantees for major resources and environments such as ecological spaces, energy resources, and water resources, shape green, low-carbon, and livable urban and rural spaces, and build intelligent, safe, and reliable urban lifelines, becoming a sample of global sustainable development cities.

Shanghai will continue to promote industrial innovation and technological progress. The city will focus on developing strategic emerging industries and modern service industries,

continuously increasing investment in future technologies like low-carbon green and artificial intelligence, enhancing global resource allocation capabilities, technological innovation sources, and leading capabilities in high-end industries. This will provide strong support for Shanghai to build a source of scientific and technological innovation, a gathering place for high-end industries, and a pioneer in Chinese-style modernization.

Shanghai will continue to promote social governance innovation and policy mechanism coordination. The city will fully adapt to people's multi-level and diversified development needs, promote precise allocation of social governance policies in key areas such as education, healthcare, and elderly care, advance adaptive changes in urban social and spatial environments, and become a Chinese model of refined governance and precise services for megacities.

Chapter 8: Policy Recommendations and Future Outlook

Section 1: Policy Recommendations

As the world places increasing emphasis on sustainable development, Shanghai, as a pioneer city in China's ESG development, imparts significant meaning to each step of its ESG practices. This report not only showcases Shanghai's profound experience and remarkable achievements in the ESG field but also outlines a blueprint full of hope and challenges for the future. As China's economic center and international financial hub, Shanghai's ESG development is not only crucial for its own green transformation and sustainable development but also has a far-reaching impact on national and even global ESG standard-setting, financial innovation, and ecosystem construction. Looking ahead, Shanghai is expected to play a more important role on the global stage. Through policy guidance, market cultivation, financial innovation, and international cooperation, it aims to promote a more comprehensive ESG governance system, contributing "Shanghai wisdom" and "Shanghai solutions" to global sustainable development.

At the policy system level, although Shanghai has made certain progress in constructing its ESG policy framework, there are still areas that require further refinement and improvement to better promote sustainable development and enhance market transparency. First, the existing ESG regulatory policies and standard systems need to be detailed to ensure effective policy guidance and incentives. Second, the transparency and standardization level of ESG information disclosure need to be improved; specific disclosure content and indicators should be further clarified to ensure the comprehensiveness and comparability of disclosed information, providing investors with more comprehensive and accurate decision-making bases. Third, there is still room for optimization in ESG-related tax incentives and financial subsidy policies. Shanghai can further strengthen policy support, enhance financial incentives for green technology research and development, and establish effective performance evaluation mechanisms to better stimulate enterprises' enthusiasm for improving ESG practices.

At the enterprise ESG practice level, although more and more enterprises are beginning to focus on and practice ESG, shortcomings still exist in aspects such as ESG information disclosure, strategy formulation, and implementation. Issues include incomplete or inaccurate disclosure of information, untimely disclosures, poor comparability of information, lack of standardization and normalization, and absence of independent audits and verifications, leading to suboptimal effects of ESG practices. To enhance the quality and level of enterprises' ESG practices, Shanghai needs to strengthen guidance and support for enterprises, promote exchange and cooperation among enterprises in ESG practices, and encourage enterprises to establish sound ESG management systems and governance mechanisms, thereby improving their ESG governance capabilities and information disclosure levels.

At the level of ESG services provided by financial institutions, although Shanghai's financial institutions have made significant progress, challenges cannot be ignored. These include insufficient understanding of ESG concepts, imperfect management systems, the need to improve the quality of information disclosure, and insufficient integration of risk management with business processes. To enhance the quality of ESG services provided by financial institutions, we recommend:

- Enhancing the diversity and innovation of ESG financial products to meet the growing and diversified market demands.
- Strengthening the construction of ESG professional talent teams to promote the further development of ESG financial businesses.
- Improving ESG risk management and assessment to ensure the safety and effective allocation of funds.

At the ESG market system level, the mechanisms for ESG data collection, integration, and sharing are not yet perfect, leading to prominent issues of information asymmetry in the process of ESG evaluation and decision-making. To improve the construction of the ESG market system, it is recommended to strengthen international cooperation and gradually improve ESG indices and rating systems to enhance their credibility and influence in the global market. Additionally, there is a need to strengthen the construction of green finance and sustainable investment markets, providing more capital and channels for ESG

investment.

In the construction of Shanghai's ESG ecosystem, various participants—including the government, industry organizations, educational institutions, media, and the public—play important roles. However, differences exist among these participants in terms of their understanding of ESG concepts and practices and the intensity of their actions. It is necessary to further strengthen communication and collaboration to jointly promote the popularization and in-depth development of ESG concepts. Specifically, a multi-level communication and collaboration mechanism can be established to promote information sharing and resource integration; the cultivation and introduction of ESG professionals should be strengthened to meet the rapidly growing market demand; efforts to publicize and promote ESG concepts should be increased to enhance society-wide awareness and participation.

Section 2: Future Outlook

Looking ahead, the internalization of ESG business activities, standardization of ESG information disclosure, systematization of ESG evaluation systems, and concretization of ESG value realization—collectively referred to as the "Four Transformations" of ESG—are the difficulties, key points, and highlights of ESG development in Shanghai and even the whole country. This is not only a critical task for the sustainable development of ESG in Shanghai but also an important measure to promote the global sustainable development process.

Internalization of ESG business activities means that enterprises need to deeply integrate the concept of sustainable development into every aspect of their daily operations, ensuring that business activities are aligned with environmental and social responsibilities. This process involves not only adjustments to internal management mechanisms but also fundamental changes in corporate culture and values, thereby enhancing enterprises' understanding and practical ability regarding sustainable development goals.

Standardization of ESG disclosure reports guides enterprises to disclose ESG information in a unified and standardized manner. Although the International Sustainability Standards Board (ISSB) has proposed global standards such as IFRS S1 and IFRS S2,

effectively combining these international standards with the specific situations of various regions remains a significant challenge in practice. Standardized information disclosure needs to ensure the comparability and transparency of information while taking into account differences in economic development levels, cultural backgrounds, and legal environments of different regions to ensure the relevance and practicality of the information. This requires retaining a certain degree of flexibility based on adopting global benchmarks and achieving it through broad stakeholder participation and continuous improvement mechanisms.

Systematization of ESG evaluation systems aims to construct a comprehensive and scientific assessment mechanism to accurately measure enterprises' performance in various ESG dimensions. A systematic evaluation system will provide reliable reference bases for regulatory agencies, investors, and other stakeholders, promoting effective supervision and development of ESG practices.

Concretization of ESG value realization refers to transforming ESG concepts into actual social and economic benefits. This means that attention should not only be paid to ESG activities themselves but also to their substantive effects, ensuring that enterprises' sustainable development strategies can bring quantifiable positive impacts. By quantifying ESG outcomes, more enterprises can be motivated to participate in ESG practices, forming a virtuous cycle.

The construction of the "Four Modernizations" of ESG will not only help Shanghai build a model city of sustainable development but also provide valuable experiences for China and even the world. With the gradual implementation of these measures, Shanghai is expected to play a greater role on the international stage, leading new trends in global ESG development.

Appendix I: Distribution of Public ESG Awareness and Social Participation Survey Results - Shanghai vs. National Sample

Age Distribution of Sample Group	Shanghai Sample Distribution	National Sample Distribution
Under 18	0.00%	0.81%
18-24 years old	5.26%	7.74%
25-34 years old	21.93%	17.65%
35-44 years old	28.95%	28.85%
45-60 years old	34.21%	37.41%
Over 60	9.65%	7.54%
Education Level	Shanghai Sample Distribution	National Sample Distribution
High School or Below	14.04%	14.39%
Associate Degree	11.40%	24.71%
Bachelor's Degree	41.23%	44.94%
Master's Degree or Above	33.33%	15.95%
Occupation	Shanghai Sample Distribution	National Sample Distribution
Student	0.88%	5.84%
Company Employee	52.63%	40.12%
Freelancer	14.04%	19.89%
Government/Public Sector	8.77%	11.27%
Research/Academic Personnel	7.89%	6.25%
Other	15.79%	16.63%
Awareness of ESG Concept	Shanghai Sample Distribution	National Sample Distribution
Very Familiar	24.56%	10.25%
Somewhat Familiar	38.60%	41.28%
Heard of but Not Familiar	27.19%	36.32%
Completely Unfamiliar	9.65%	12.15%
Sources of ESG Information	Shanghai Sample Distribution	National Sample Distribution
Media News Reports	77.19%	75.56%
Attending Industry Conferences	37.72%	24.30%
ESG Policies and Regulations by Departments	42.98%	32.65%

Academic Research/Reports	32.46%	19.08%
Corporate Annual Reports/Social Responsibility	40.35%	24.92%
Reports/ESG Reports	10.00	2.11,9.27,0
Discussions with Friends/Family	11.40%	9.44%
Other	8.77%	12.22%
Frequency of Paying Attention to ESG	Shanghai Sample	National Sample
Information	Distribution	Distribution
Closely Follow, Often Actively Search for ESG News	19.30%	11.95%
Occasionally Pay Attention, Often Notice While	40.000	• • • • • • • • • • • • • • • • • • • •
Browsing Financial News	40.35%	38.97%
Rarely Pay Attention, Only Occasionally See ESG	22.224	40.050
Information	33.33%	40.05%
Never Pay Attention, Have Never Seen ESG	7.000/	0.020/
Information	7.02%	9.03%
Understanding of ESG-Related International	Shanghai Sample	National Sample
Organizations or Initiatives	Distribution	Distribution
United Nations Development Programme (UNDP)	0.00%	0.00%
United Nations Global Compact (UNGC)	29.82%	20.71%
United Nations Sustainable Development Goals	54.39%	42.91%
(SDGs)	J4.J770	42.9170
International Sustainability Standards Board (ISSB)	38.60%	24.37%
Global Reporting Initiative (GRI)	37.72%	23.90%
Principles for Responsible Investment (PRI)	24.56%	12.83%
Task Force on Climate-related Financial Disclosures	35.96%	20.64%
(TCFD)	33.7070	20.0470
Never Heard of	17.54%	25.32%
Sample Group	Shanghai Sample	National Sample
	Distribution	Distribution
Before 2020	21.05%	20.30%
2021	23.68%	18.26%
2022	15.79%	18.87%
2023	21.05%	18.94%
2024	18.42%	23.63%
	GL LIG	N 4 10
Changes in Sample Group's Attention to ESG	Shanghai Sample	National Sample
Cincificands Incomed	Distribution	Distribution 20,640/
Significantly Increased	21.05%	20.64%
Slightly Increased	38.60%	42.50%
Remained Unchanged	28.95%	26.88%
Slightly Decreased	6.14%	4.82%

5.26%	5.16%
Shanghai Sample Distribution	National Sample Distribution
46 49%	44.13%
	42.84%
	8.76%
	4.28%
3.2070	4.2070
Shanghai Sample	National Sample
Distribution	Distribution
19.30%	9.10%
40.35%	34.69%
26.32%	36.93%
14.04%	19.28%
	National Sample
Distribution	Distribution
70.18%	73.52%
73.68%	69.04%
56.14%	49.08%
6.14%	7.60%
Shanghai Sample	National Sample Distribution
	39.10%
	41.55%
	12.70%
	3.05%
	3.60%
2.22.3	2.22.70
Shanghai Sample Distribution	National Sample Distribution
33.33%	36.12%
33.33% 44.74%	36.12% 44.20%
33.33% 44.74% 14.91%	36.12% 44.20% 13.37%
	Shanghai Sample Distribution 46.49% 35.96% 12.28% 5.26% Shanghai Sample Distribution 19.30% 40.35% 26.32% 14.04% Shanghai Sample Distribution 70.18% 73.68% 56.14% 6.14% Shanghai Sample Distribution 35.09% 42.98% 16.67% 1.75% 3.51% Shanghai Sample

Has the sample group ever been aware of or	g. 1.1g. 1	N. d. I.G. I
invested in ESG/sustainability-related fund	Shanghai Sample	National Sample
products	Distribution	Distribution
Invested and Have a Deep Understanding	8.77%	10.52%
Only Invested but Not Very Familiar with the	14.040/	16 220/
Concept or Investment Logic	14.04%	16.23%
Have Not Invested but Have Heard of the Concept	63.16%	55.67%
Have Never Heard of It	14.04%	17.58%
Motivations for the sample group to invest in	Shanghai Sample	National Sample
ESG/sustainability-related fund products	Distribution	Distribution
High Fund Product Returns	9.65%	15.75%
Belief in the Long-Term Value Investment Logic of This Theme	47.37%	46.16%
Following Trends and Conceptual Sectors	21.05%	21.05%
Supporting Sustainability and Green, Low-Carbon Initiatives	51.75%	49.83%
Has the sample group heard of or used carbon benefit platforms or products (e.g., Alipay Ant Forest)	Shanghai Sample Distribution	National Sample Distribution
Have Used Related Products	57.02%	51.66%
Heard of It but Never Used	28.07%	30.35%
Haven't Heard of It but Interested in Learning	10.53%	11.61%
Haven't Heard of It and Not Interested	4.39%	6.38%
Which aspects of sustainable consumption are you	Shanghai Sample	National Sample
most interested in	Distribution	Distribution
Purchasing Energy-Efficient Appliances: High-Efficiency Lights, Air Conditioners, Refrigerators, etc.	78.07%	73.86%
Using Clean Energy Sources like Solar or Wind Power	54.39%	59.27%
Buying Products with Biodegradable or Recyclable Packaging	53.51%	48.27%
Opting for Public Transportation, Bicycles, or Electric Vehicles	64.04%	59.67%
Buying Second-Hand Furniture, Books, or Electronics	40.35%	32.86%
Using Reusable Shopping Bags and Utensils	50.88%	44.20%
Purchasing Clothing and Accessories Made from Eco-Friendly Materials	36.84%	33.27%
Using Eco-Friendly Home Renovation Materials, Furniture, and Supplies	41.23%	43.86%

Perception of the importance of low-carbon living and sustainable consumption for environmental protection	Shanghai Sample Distribution	National Sample Distribution
Very Significant	48.25%	55.67%
Fairly Significant	32.46%	32.52%
Moderate	10.53%	7.47%
Slightly Significant	7.89%	2.38%
No Impact	0.88%	1.97%
Main factors hindering the choice of green	Shanghai Sample	National Sample
products	Distribution	Distribution
High Price	51.75%	47.93%
Unstable Quality	43.86%	41.34%
Limited Product Options	45.61%	38.63%
Lack of Sufficient Information	33.33%	27.36%
Others	2.63%	5.91%
Do you prioritize purchasing products with	Shanghai Sample	National Sample
eco-friendly, renewable packaging	Distribution	Distribution
Yes	64.04%	63.48%
Occasionally	26.32%	29.26%
Rarely	8.77%	4.48%
No	0.88%	2.78%
Always	21.05%	27.70%
Do you prioritize purchasing energy-efficient	Shanghai Sample	National Sample
appliances	Distribution	Distribution
Use All Energy-Efficient Appliances		
Use Mostly Energy-Efficient Appliances	59.65%	58.72%
Use Some Energy-Efficient Appliances	18.42%	11.95%
Do Not Use Energy-Efficient Appliances	0.88%	1.63%
Views on the improvement of environmental quality in the city over the past three years	Shanghai Sample Distribution	National Sample Distribution
Significantly improved	26.32%	33.81%
Slightly improved	55.26%	48.61%
Remained unchanged	10.53%	11.41%
Slightly deteriorated	7.02%	4.48%
Significantly deteriorated	0.88%	1.70%
Views on the impact of climate change on quality	Shanghai Sample	National Sample
of life over the past three years	Distribution	Distribution

Very significant	23.68%	28.92%
Significant	47.37%	43.72%
Moderate	21.05%	20.50%
Slight	6.14%	4.62%
No impact	1.75%	2.24%
What level of urgency should the world adopt in	Shanghai Sample	National Sample
addressing climate change?	Distribution	Distribution
Actions should be taken at all costs to keep temperature rise within 2°C	24.56%	27.70%
Climate change should be addressed urgently, but not at any cost	57.02%	53.63%
Goals should be set to avoid altering the current global/economic structure	14.91%	15.48%
There is no need to address climate change	3.51%	3.19%
Awareness of the following international conferences and their discussions on climate change	Shanghai Sample Distribution	National Sample Distribution
United Nations Climate Change Conference (COP)	70.18%	62.93%
Kyoto Protocol Conference of the Parties	47.37%	38.36%
High-Level Meeting of the Paris Agreement	56.14%	42.02%
G20 Climate and Energy Ministers Meeting	45.61%	45.35%
Global temperature needs to be controlled within 1.5°C	35.96%	22.95%
Emission reduction targets committed through NDCs	23.68%	16.63%
Agreement reached at COP28 to reduce fossil fuel use	28.07%	17.45%
Level of understanding of the "Dual Carbon"	Shanghai Sample	National Sample
goals (carbon peaking and carbon neutrality)	Distribution	Distribution
Very familiar	32.46%	22.06%
Somewhat familiar	48.25%	54.31%
Somewhat rammar		
Have heard of it but not very familiar	18.42%	20.03%

Appendix II: Glossary of Reference Terms

Full Name	Abbreviation
Non-Financial Reporting Directive	NFRD
International Financial Reporting Standards Sustainability Disclosure Standard	
No. 1—General Requirements for Disclosure of Sustainability-related Financial	IFRS S1
Information	
International Financial Reporting Standards Sustainability Disclosure Standard	IFRS S2
No. 2—Climate-related Disclosures	II KS SZ
Action Plan for Accelerating the Improvement of Environmental, Social, and	
Governance (ESG) Capabilities of Foreign-related Enterprises in Shanghai	Action Plan
(2024 - 2026)	
European Sustainability Reporting Standards	ESRS
Corporate Sustainability Reporting Directive	CSRD
Implementation Opinions on Accelerating the Development of an International	Implementation
Green Financial Hub to Serve the Goals of Carbon Peaking and Carbon Neutrality	Opinions
Non-listed Joint Stock Company Share Transfer System	E-board
International Financial Reporting Standards	IFRS
International Maritime Organization	IMO
International Sustainability Standards Board	ISSB
International Organizations such as the Global Reporting Initiative	GRI
China Certified Emission Reduction	CCER
Sustainability Accounting Standards Board	SASB
United Nations Global Compact	UNGC
United Nations Principles for Responsible Investment	UN PRI
European Union Carbon Border Adjustment Mechanism	CBAM
European Union Emissions Trading System	EU ETS
European Green Deal Investment Plan	EGDIP
Task Force on Climate-related Financial Disclosures	TCFD
Carbon Disclosure Project	CDP
Global Sustainable Investment Alliance	GSIA
Science and Technology Innovation Board of Shanghai Equity Exchange Center	N-board
Shanghai Equity Exchange Center	SEEC
Shanghai Environment and Energy Exchange Co. Ltd.	SEEE
Shanghai Data Exchange	SDE
Shanghai Stock Exchange	SSE
Socially Responsible Investment	SRI
SME Equity Quotation System	Q-board

Postscript

This report is the first systematic report in China concerning the development status of local ESG practices, striving to comprehensively showcase the progress of ESG development in Shanghai. It was completed by a working group led by the Shanghai Advanced Institute of Finance at Shanghai Jiao Tong University, in collaboration with institutions such as the Shanghai State-Owned Capital Operation Research Institute, Shanghai Exchange Group, China Pacific Insurance (Group) Co. Ltd, Ernst & Young Hua Ming LLP, and Prestige and Fortune Fintech (Beijing) Co. Ltd. The report is the result of several months of collective effort of intensive research, analysis and synthesis by the members of the work group.

The working group was headed by Tu Guangshao, the founding Chairman of the Board of SAIF, and Professor Yan Hong, Chair Professor of Finance and Director of the Center for Sustainable Investment at SAIF. Mr. Tu proposed the basic direction, overall framework, and specific structure of the report and provided guidance on its content. Professor Yan undertook the organization, coordination, and guidance during the report's writing process and was responsible for compiling the final draft.

Chapter One was drafted by Xu Haoran and An Wenfei from the Shanghai State-owned Capital Operation Research Institute. Chapter Two was organized, coordinated, and written by the team from Shanghai Exchange Group (Shi Qiwei, Li Jin, Wu Lieyi, Chen Yanyan, Wu Lin, Zhang Xuelai, Shi Haofeng, Gong Xinyue, Jin Xi). Chapter Three was drafted, coordinated, and integrated by Su Shaojun and Wang Qian from China Pacific Insurance (Group) Co. Ltd, who also wrote the content on the insurance industry. Song Ruibo and Li Rui from Shanghai Pudong Development Bank Co. Ltd wrote the content on the banking industry. Zhao Zijian and Zheng Yikun from Guotai Junan Securities Co. Ltd, along with Xu Jiagang and Ye Chengjie from Orient Securities Co. Ltd, wrote the content on the securities industry. Jiang Ning from China Universal Asset Management Co. Ltd, along with Han Xiaoyan and Song Aolin from Harvest Fund Management Co. Ltd, wrote the content on the fund industry. The team from Shanghai Exchange Group provided content on some trading platforms in Chapter Four. Li Jing and Zhang Shengzhu from Ernst & Young Hua Ming LLP

were responsible for writing Chapter Five, integrating contributions from Zhang Fan at China Securities Index Co. Ltd, and Gong Wanbin, Ma Shiyu, Lu Lu, and Dong Luyao at Shanghai Ecovane Environmental Co. Ltd The team from Prestige and Fortune Fintech (Beijing) Co. Ltd (Wu Ying, Wang Xiaomeng, Wu Ruohan, Fang Zheng, Xin Yu) was responsible for drafting Chapter Six and contributed to Chapter Seven. Contributors to Chapter Seven also include Xu Haoran and An Wenfei from the Shanghai State-owned Capital Operation Research Institute; Li Tao and Fan Chengcheng from the SinaFinance ESG Rating Center; Gao Jing from the Research Center of Integrated Urban and Rural Planning, Shanghai Tongji Urban Planning & Design Institute Co. Ltd; and Wang Tan, Qiu Ciguan, and Sun Yuanchi from SAIF. The final compilation was completed by the SAIF Think Tank team (Wang Yangzi, Lin Longzhun, Shen Yifan, Sun Yuanchi, Wang Yang, Mao Shiqian, Wang Jiayun, Wen Mengyao). Professors Li Feng and Liu Xiaochun from the SAIF Think Tank also provided support to the completion of the report.

We sincerely thank the members of the working group for their hard work and selfless dedication, and we are also deeply grateful for the strong support from the leaders of all participating units. We extend our gratitude to the Shanghai Municipal Financial Regulatory Bureau, the Shanghai Municipal Commission of Commerce, and the Shanghai Municipal Commission of Economy and Informatization for their guidance and support. We also thank the Council for the Promotion of International Trade Shanghai, the Shanghai Pudong New Area Association of Enterprises with Foreign Investment, and the China Economic Information Service Shanghai Headquarters for their support and assistance with the data and questionnaire surveys included in the report.

Sustainable development and ESG initiatives are burgeoning and are still in the process of maturation and refinement. As a benchmark for China's economic development and a bridgehead for international exchanges, Shanghai plays a leading role in sustainable development and ESG construction. The formation of this report was rather hasty and faced challenges in data and information; thus, the report itself has many shortcomings and deficiencies. We look forward to readers' feedback and corrections. We will continue to monitor and document Shanghai's achievements and challenges in sustainable development, hoping to present more comprehensive, in-depth, and practical series of reports in the future.

