

## Research on the Regulation and Compliance of ESG Information Disclosure in the Securities Market

Huihui Wu<sup>1</sup>, Hasani Mohd Ali<sup>2</sup>, Hazlina Shaik Md Noor Alam<sup>3</sup>

### Abstract

*The disclosure of ESG information only depends on the voluntary disclosure of enterprises, which cannot ensure the openness and transparency of public information. Therefore, the supervision of the disclosure of ESG information is particularly important. Although China is gradually strengthening the ESG information disclosure requirements for listed companies, the regulatory framework for ESG information disclosure in China still needs to be optimized due to the differences in localization, small scope of disclosure, and large differences in evaluation system and standard system. This paper analyzes the current situation of ESG information disclosure in China, including the overall disclosure situation, the disclosure characteristics of different enterprises and industries, and the current situation of carbon emissions disclosure. The article points out the problems in the supervision system, such as the imperfection of supervision basis, the singleness of supervision subject and the insufficiency of supervision cooperation mechanism. On this basis, this paper puts forward some suggestions to improve the regulatory basis, build multiple collaboration subjects and optimize the regulatory collaboration mechanism, in order to improve the quality and efficiency of ESG information disclosure and promote the healthy development of China's capital market.*

**Keywords:** *ESG, Information Disclosure, Securities Market, Regulation and Compliance, Sustainable Development.*

### Introduction

ESG is a kind of value about how to develop, which emphasizes that the target company should pay attention to the public interest in the process of development, and the growth of the company should be promoted together with its social value. The three value pillars of ESG, environment, society and governance, refer to the environmental performance of the company in production and operation, the business ethics of the company and the external society, and the scientific and perfect modern enterprise management system. Benign ESG practice can effectively supervise and restrain the business activities of enterprises, emphasize honesty, transparency and fair trading, improve the long-term returns of investors by improving fiduciary obligations and moral requirements, and promote the healthy development of the capital market (Tsang et al., 2023).

ESG information disclosure is to demonstrate the transparency of the company's performance and practice in the field of ESG by disclosing key indicators, data and initiatives to provide external stakeholders with detailed information on the company's environmental protection, social responsibility and corporate governance. ESG disclosure facilitates positive interactions and relationship building with stakeholders, providing a platform that enables companies to share their ESG goals, strategies, and practices with investors, customers, employees, suppliers, communities, and other stakeholders (He et al., 2022). ESG disclosures help companies identify and manage ESG-related risks and opportunities. Through systematic collection and analysis of ESG data, companies can identify potential environmental, social and governance issues and take appropriate measures to mitigate risks. ESG information disclosure helps to promote the sustainable development and long-term value creation of the company. By setting and tracking ESG goals and targets, companies can incorporate ESG issues into their strategic and business decisions (Darnall et al., 2022).

---

<sup>1</sup> Faculty of Law, National University of Malaysia, 43600 UKM Bangi, Selangor Darul Ehsan Malaysia, Email: p114844@siswa.ukm.edu.my, (Corresponding Author)

<sup>2</sup> Faculty of Law, National University of Malaysia, 43600 UKM Bangi, Selangor Darul Ehsan Malaysia.

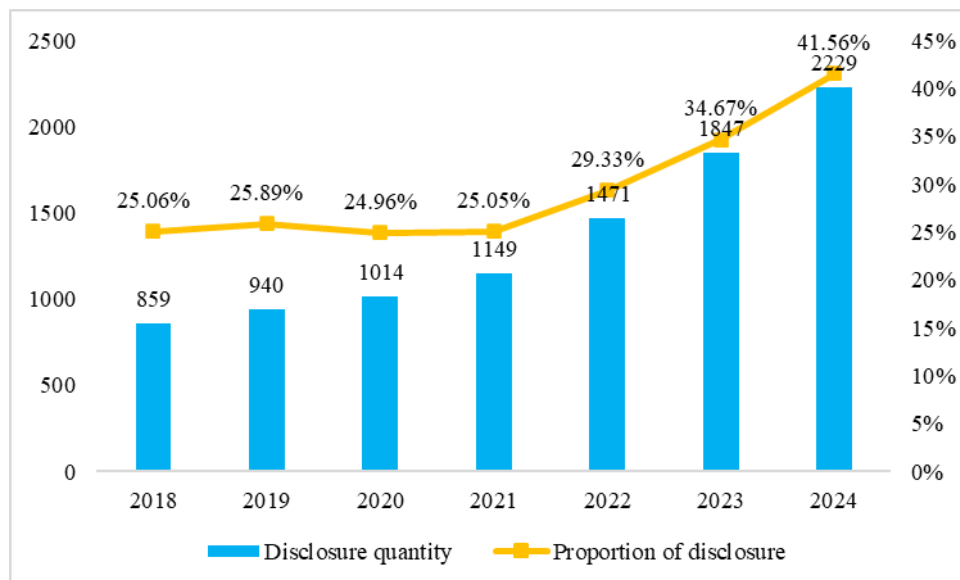
<sup>3</sup> Faculty of Law, National University of Malaysia, 43600 UKM Bangi, Selangor Darul Ehsan Malaysia

From the perspective of the importance of ESG information disclosure, this paper analyzes and discusses the current situation and problems of ESG information disclosure in China, and puts forward some suggestions and regulatory ideas for the development of ESG information disclosure in China, in order to provide enlightenment for the establishment of ESG information disclosure index system and promote the healthy development of localized ESG in China.

### *Current Situation of ESG Information Disclosure in the Securities Market*

#### *Overall Disclosure Status*

With the deepening of the concept of global sustainable development, environmental, social and governance (ESG) elements occupy an increasingly important position in the investment decision-making process. The performance of enterprises in ESG has become an important indicator to measure their long-term competitiveness and social responsibility. As shown in Figure 1, according to joint rating statistics, as of November 11, 2024, 2229 A-share listed companies have issued ESG reports, sustainable development reports or social responsibility reports, with a disclosure rate of 41.56%, and the number and rate of disclosure have reached a new high.



**Figure 1. Disclosure of ESG Related Reports by Listed Companies**

#### *Enterprise Nature and Disclosure Status*

The disclosure rate of ESG related reports of central state-owned enterprises is 94.58%, that of local state-owned enterprises is 60.77%, and that of non-state-owned enterprises is 30.64%. The disclosure rate of ESG reports of various enterprises in 2018-2024 is shown in Figure 2. With the vigorous promotion of the exchange, the disclosure rate of ESG related reports is expected to continue to improve.

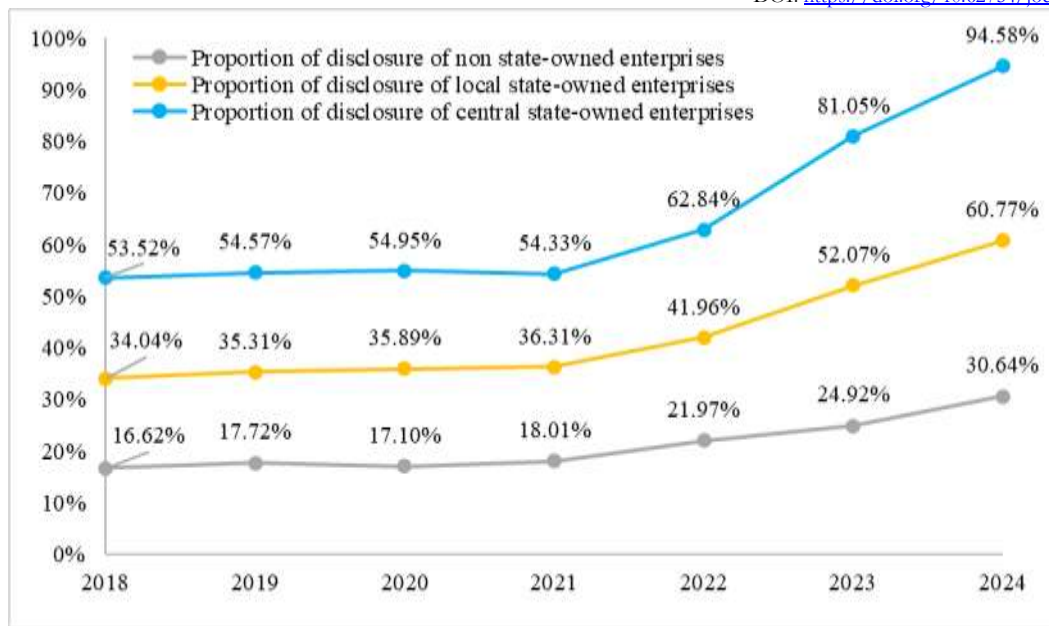


Figure 2. Proportion of Disclosure of Enterprises of Different Natures

### *Industry and Disclosure Status*

In terms of industry distribution, the release of ESG related reports shows certain industry characteristics. The industries with high-risk, high-energy consumption, heavy pollution and strong supervision, represented by the financial industry, steel industry and coal industry, as well as the public utilities industries closely related to social public services, such as electricity and water, have a more direct and significant impact on the environment and society, and the ESG disclosure rate of the industry is higher. Traditional manufacturing industries such as machinery and equipment and light industry manufacturing are mostly small and medium-sized enterprises, which are relatively lack of resources, professionals and full understanding of ESG concept, resulting in low disclosure rate. Industries with high disclosure rate, such as the financial industry, are subject to strict financial supervision and industry norms, and regulators have clear requirements for the integrity, accuracy and timeliness of their information disclosure (Liang & Yang, 2024). For some industries with low disclosure rate, such as some manufacturing and technology industries, the current regulatory requirements are relatively loose, resulting in insufficient motivation for enterprises to disclose. Highly polluting industries, such as steel and chemical industries, are facing more stringent environmental regulation and public opinion pressure due to the greater impact of their production process on the environment (Ellili, 2022). Enterprises tend to demonstrate their efforts in environmental governance and reduce reputation risk by disclosing ESG information. On the contrary, industries with low or no pollution, such as computers and communications, have relatively small environmental impact and relatively low attention and urgency to ESG disclosure. For some emerging industries, such as the Internet and artificial intelligence, although they are also concerned about sustainable development, due to their development stage and business characteristics, the pressure of transformation is relatively small, and the priority of ESG disclosure is relatively low.

### *Status of Carbon Emission Disclosure*

Many companies in Shanghai Stock Exchange are actively practicing the goal of "double carbon", focusing on the green transformation and development of industry, technological innovation of energy saving, carbon reduction and emission reduction, and ESG information disclosure, and constantly conveying the beneficial experience and long-term value of the company's green development. After the goal of carbon neutrality was put forward, leading enterprises in various industries and Chinese enterprises working closely with global capital markets and international downstream supply chains have taken ESG development as an important standard of corporate governance and management (Liu et al., 2023). Because these

enterprises have a good management foundation, it is not difficult to meet the disclosure requirements, and the pace of disclosure rate increases is faster. However, most of the relatively "long tail" companies have a lack of governance foundation, and there is no mandatory requirement for disclosure, so it is expected that it will take a long time to achieve universal disclosure. As shown in Figure 3, in terms of carbon emission disclosure, the disclosure level of the whole A-share industry has gradually improved in the past three years, with Scope 1 + Scope 2 (Note: Scope 1 refers to the greenhouse gas emissions generated by the energy process directly controlled by enterprises. Scope 2 refers to the disclosure rate of greenhouse gas emissions from purchased energy by enterprises, which increased from 11.21% in 2021 to 19.32% in 2023).

### *Problems in the Regulatory System of ESG Information Disclosure of Listed Companies*

#### *The Basis for Supervision is Not Perfect Enough*

Information disclosure is a relatively standardized means of supervision, which requires relatively unified disclosure standards as a clear basis for supervision. Compared with the international practice, China's current regulatory practice of ESG information disclosure lacks unified disclosure standards and institutional norms, resulting in the low quality of ESG information disclosure of listed companies. It does not define or set standards for both at the same time, nor does it set corresponding penalties for the two violations mentioned above, so there is greater discretion, so the disclosure practice is still based on voluntary disclosure, which brings some difficulties to supervision (Zhang et al., 2020). The mandatory provisions of Shanghai and Shenzhen Stock Exchange on ESG information disclosure are also inconsistent, and there is still a gap between the ESG information disclosure performance of Shenzhen 100 companies and the average level of Shanghai 50. From the overall situation of disclosure, in the ESG information disclosed by listed companies, qualitative indicators are more than quantitative indicators, and the coverage gap between qualitative and quantitative indicators is large, the scope of data collection and key issues are not uniform among companies, non-standardized data cannot be integrated, lack of quantitative and certified data is difficult to assess environmental risks. It is difficult for investors to compare the corresponding indicators horizontally and vertically (Raimo et al., 2021). The existence of these problems makes the ESG information disclosure of listed companies lack standardization and transparency, and then affects the objective judgment of investors on the company's future development prospects and company value.

#### *The Subject of Supervision is Relatively Single*

At present, the supervision of the securities market mainly relies on administrative supervision, self-regulation, industry supervision and social supervision have not yet fully played their due role, and the pattern of coordinated supervision has not yet formed (Eng et al., 2022). As a part of securities market regulation, ESG information disclosure of listed companies is currently subject to a single regulatory body, mainly the Securities Regulatory Commission and the Stock Exchange. The regulatory authority of the SFC covers a wide range and has a strong administrative colour. The regulatory measures of stock exchanges are mainly under the guidance of the Securities Regulatory Commission, and as the executor of the decision-making of the Securities Regulatory Commission, there is occasional duplication of exercise. In the current situation of relatively single regulatory body, there is a certain degree of game between listed companies and regulatory authorities, and it is difficult to form a self-restraint market mechanism (Cordazzo et al., 2020). At the same time, there is still a situation of multiple supervision in administrative supervision. From the evolution process of China's ESG-related policies, it can be seen that the National People's Congress, the General Office of the State Council, the State Environmental Protection Administration, the State-owned Assets Supervision and Administration Commission, the Ministry of Finance and other state ministries and commissions have the right to issue regulations requiring listed companies to disclose ESG-related contents such as environmental protection and social responsibility. The regulatory objectives of different departments often focus on different aspects, and to a certain extent, multiple supervision has caused the dilemma of lack of uniform standards for supervision. At the same time, the SASAC and the Ministry of Finance may also intervene or influence market policies through administrative orders. This intervention may have a direct impact on the ESG information disclosure of listed companies, because these

departments usually issue relevant policies and guidelines to promote the performance and information disclosure of enterprises in ESG (Maaloul et al., 2023).

### *The Collaborative Regulatory Mechanism is Not Efficiency*

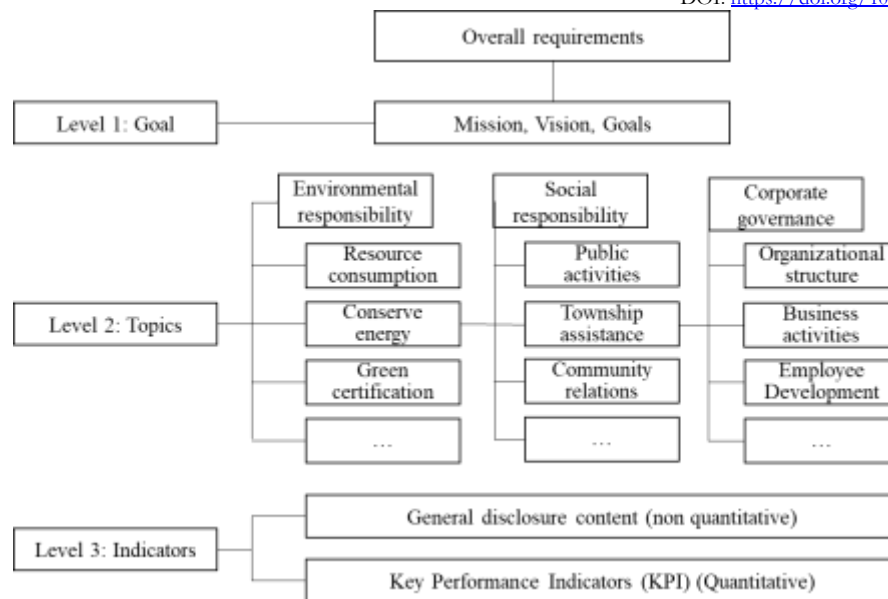
In the reform of the securities market, after the implementation of the registration system in the whole market, regulators conduct formal reviews of listed companies, requiring intermediaries to play the role of "gatekeepers" and be responsible for the authenticity, integrity and accuracy of information disclosure of listed companies. But at the same time, accounting firms and other intermediaries are often the "clients" of listed companies, which need to bear joint and several liabilities, which leads to the poor independence of intermediaries, vulnerable to market capture, and may even contribute to market violations. In addition, due to the lack of credible underlying data, the ESG evaluation framework is too different, and the domestic ESG rating differentiation is more obvious than that of foreign countries, which leads to the lack of deterrence and influence of ESG rating agencies in the capital market (Sugianto et al., 2022). At present, institutional investors are not dominant in the market. In the face of professional terms and complex data in the securities market, it is often difficult for retail investors to carry out systematic and in-depth study to make rational decisions (Li et al., 2023). Emotional dominance accounts for an important proportion in investment decisions. Even if listed companies disclose ESG information, it is often difficult for investors to obtain a reasonable basis for investment decision-making, and its supervisory role is also difficult to play. On the one hand, the promotion of science and technology supervision is relatively slow, the unified data platform of listed companies has not yet been built, the portrait of enterprises is not accurate enough, there is still a certain distance between the deep integration of science and technology supervision and business, and the analysis and early warning ability of the regulatory authorities needs to be improved. On the other hand, the construction of honesty and credit system in China is not complete enough, and social media fail to effectively carry out public opinion supervision. Therefore, many problems have jointly led to the formation of a coordinated regulatory pattern (Hassani & Bahini, 2022).

### *Improve Supervision Basis*

#### *Establish A Disclosure Framework*

ESG information is an important factor for listed companies and investors to measure and understand the company's overall performance, business risks and business opportunities. In order to avoid listed companies implementing simple disclosure in a reactive or task-oriented manner, regulators should explore what kind of disclosure is most useful, what is the right balance between principles and indicators, and clarify it through the system. To this end, ESG information disclosure should be incorporated into the company's internal processes and performance evaluation system (Guo et al., 2023). To disclose truly meaningful information, ESG metrics should be combined with targets or minimum standards, and key metrics should support the underlying data for sustainability, company performance analysis, and green finance. According to the statistics of SSEI, a global initiative for 78 sustainable stock exchanges, more than half of the partner exchanges have issued ESG disclosure guidelines. The recommended ESG information disclosure hierarchy framework is shown in Figure 3.





**Figure 3. Proposed ESG Disclosure Hierarchy Framework**

Divide ESG major risk indicators into industries according to national policies and regulations. The ESG risks of different industries are quite different, so regulators should strengthen the disclosure requirements of ESG information of enterprises in different industries, improve the threshold of industrial access, and more comprehensively understand and build the comprehensive competitiveness of future industrial development from the perspective of non-financial information. With policy guidance, it will effectively speed up the construction of unified ESG information disclosure standards and guidelines in the industry. Soft law norms can be a useful supplement to hard law regulation (Alsayegh et al., 2020). Self-regulatory organizations feedback common problems of ESG reports of listed companies and supplement detailed step guidelines for preparing reports by issuing explanatory guidelines based on the practical problems of regulatory practice. This will help listed companies to pay necessary attention to important information in the industry, promote the formation of self-restraint within the industry, and force the continuous improvement of laws and regulations.

#### *Implement Regulatory Guidelines*

On April 12, 2024, the Shanghai-Shenzhen-Beijing Stock Exchange issued the Guidelines for Self-Regulation of Listed Companies-Sustainable Development Report (Trial Implementation). As the first official guideline on information disclosure for sustainable development issued by the three major exchanges, the Guidelines clarify the disclosure contents and principles of listed companies, provide a standardized and complete framework for sustainable development reporting for enterprises, and aim to guide listed companies to understand and report sustainable development performance in order to enhance the transparency of listed companies. Promote the high-quality development of listed companies (Ji et al., 2023).

In terms of the scope of subjects, the Guidelines clarify the scope of mandatory disclosure and encourage conditional listed companies to apply it. Shanghai 180 Index, Kechuang 50 Index, Shenzhen 100 Index, GEM Index and other index sample companies, as well as domestic and foreign companies listed at the same time, are required to apply compulsorily, while Beijiao Stock Exchange has no mandatory disclosure requirements. In terms of quantity, the number of listed companies included in the scope of mandatory disclosure is about 450, accounting for about 9% of the total number of A-share listed companies (Dai et al., 2024). At the same time, other qualified listed companies are encouraged to disclose in accordance with the requirements of the Guidelines, but it should be noted that listed companies that do not require mandatory disclosure should also follow the relevant requirements of the Guidelines if they voluntarily disclose the relevant contents of the Guidelines.

In terms of disclosure time, the Guidelines give specific application time nodes and set up transitional arrangements. It is required to be disclosed within four months after the end of each fiscal year and no earlier than annual report. In terms of time rhythm, it does not require synchronous disclosure with the annual report, which will alleviate the pressure of centralized disclosure in the annual report season of listed companies to a certain extent. For listed companies within the scope of mandatory disclosure, the Guidelines require that the 2025 Sustainable Development Report should be disclosed by April 30, 2026 at the latest, and encourage listed companies to apply it in advance, but for listed companies that disclose the Sustainable Development Report in 2024, the contents of the report should also meet the relevant requirements of the Guidelines (Suttipun, 2021). Considering that the Guidelines have made a convergence arrangement for the Social Responsibility Report, in order to ensure the continuity of the report, it is expected that listed companies that have previously issued the Social Responsibility Report and other related reports will disclose them in accordance with the Guidelines in 2025.

In terms of disclosure framework, the Guidelines actively absorb useful international experience and link up with international standards for sustainable development information disclosure (Naveed et al., 2020). By combining financial importance with influence importance, listed companies are required to combine the characteristics of their own industries and business operations. Identify whether each issue is expected to have a significant impact on the company's business model, business operation, development strategy, financial situation, operating results, cash flow, financing methods and costs in the short, medium and long term (financial importance). And whether performance on the corresponding topic will have a significant impact on the economy, society and the environment (impact-importance). For issues of financial importance, the Guidelines require that sustainable information disclosure be carried out around the four core contents of governance, strategy, impact, risk and opportunity management, indicators and objectives; for issues of only impact importance, disclosure can be carried out in accordance with the relevant provisions of the Guidelines on specific issues.

On the issue of disclosure, the Guidelines fully reflect China's priority in the field of sustainable development. It covers 21 specific issues in the three dimensions of environmental, social and sustainable development-related governance, as shown in Table 1. In the appendix of the Guidelines, the index table of topics is clearly marked so as to facilitate the implementation of listed companies. Under the environmental dimension, the Guidelines set up issues such as pollutants, waste, ecosystem and biodiversity conservation, environmental incidents and penalties, circular economy, energy use and water resources use (Chouaibi & Affes, 2021). By disclosing the transformation plan, response measures and carbon emissions trading, listed companies will be guided to respond positively to the "double carbon" strategy. Under the governance dimension related to sustainable development, the Guidelines set up due diligence, stakeholder communication, anti-commercial bribery and anti-corruption, anti-unfair competition and other issues to guide listed companies to integrate the concept of sustainable development into various systems and processes of corporate governance, improve and perfect the corporate governance mechanism, and promote the sustainable development of companies. The ESG topics mentioned in the Guidelines is shown in Table 1.

**Table 1. 21 ESG Topics Mentioned in the Guidelines**

Environment (8 topics)	Social (9 topics)	Governance (4 topics)
Addressing climate change	Rural revitalization	Due diligence
Pollutant discharge	Social contribution	Stakeholder communication
Waste disposal	Innovation driven	Anti-commercial bribery and anti-corruption
Biodiversity conservation	Ethics of science and technology	Anti-unfair competition
Environmental compliance management	Supply chain security	

Energy utilization	Equal treatment of small and medium-sized enterprises	
Utilization of water resources	Safety and quality of products and services	
Circular economy	Data security and customer privacy protection	
	Staff	

In terms of mitigation measures, the Guidelines take full account of the application of listed companies at different stages, and set up a special exemption for retrospective adjustment of data. In the first reporting period, the listed company may not disclose the year-on-year changes of the relevant indicators; meanwhile, for the indicators that are difficult to disclose quantitatively, the listed company may make qualitative disclosure and explain the reasons for the failure to disclose quantitatively (except for the relevant indicators that have been disclosed quantitatively in the previous period). For quantitative data, the Guidelines require the adoption of units and measurement methods required by recognized international, national, industrial or local standards, and the consistency of data measurement and calculation methods, so as to facilitate data verification and horizontal and vertical comparison by investors and other stakeholders (Yuan et al., 2022). When the measurement and calculation methods of data change, the Guidelines allow retrospective adjustment of relevant data, and explain the changes and reasons of calculation methods before and after adjustment. In addition, in order to ensure the quality of sustainable development information disclosure and improve the reliability and comparability of data, the Guidelines encourage qualified listed companies to employ third-party organizations to verify or verify greenhouse gas emissions and other data.

#### *Construct Multiple Cooperative Subjects*

#### *Pay Attention to Administrative Supervision*

Clear regulatory responsibilities and clear regulatory boundaries are the preconditions and inherent requirements for the effective implementation of ESG information disclosure supervision of listed companies. The allocation of regulatory power should consider the distribution between securities regulatory power and self-regulatory management power. At the same time, we should clarify the boundary between the securities regulatory authorities and the main body of the market. Because of the information asymmetry of the securities market, prior supervision is afraid of involving insider information, which is easy to induce insider trading and power rent-seeking (Schiemann & Tietmeyer, 2022). Therefore, the supervision practice under the background of registration system should be carried out after the event. Therefore, the regulatory authorities should clarify the regulatory standards to the market participants, including but not limited to the information disclosure standards and the corresponding penalty standards, and supervise according to the standards. Establish multi-level regulatory bodies of the Securities Regulatory Commission, dispatched offices and stock exchanges. As a specialized agency for unified supervision of the securities market, the Securities Regulatory Commission and its dispatched offices are the main body for the implementation of securities supervision, exercising the administrative powers granted by the Securities Law and other laws and administrative regulations. The CSRC is under the leadership and supervision of the Financial Stability and Development Committee of the State Council, and also has a guiding and cooperative relationship with local governments.

Establish classified supervision measures that combine positive incentives with negative concerns. The Securities Regulatory Commission and the Stock Exchange can establish the ESG information risk level according to the violation data of listed companies so as to implement differentiated supervision. Give positive incentives to companies with low ESG risk, such as preferential policies or convenient channels, to encourage them to continue to operate in a standardized manner; For companies with high ESG risk, we should focus on the allocation of regulatory resources, give priority to the use of warning flexible regulatory measures in the regulatory process, correct illegal acts in time, and take more stringent regulatory measures or administrative penalties if they refuse to correct (Ferri et al., 2023). When carrying out



regulatory dialogue, we should do a good job in the expected management of the regulatory object as early as possible, and inform the regulatory object in advance of the whole process of the upgrade strategy followed by the whole regulatory measures, so as to achieve more extensive cooperation under the premise of compliance. For example, regulators reserve the right to verify the information disclosed by listed companies within a certain period of time, and if the environmental data disclosed by listed companies in ESG reports are distorted, regulatory measures will be upgraded in a timely manner.

### *Implement Self-Regulation*

In the field of securities regulation in China, self-regulatory organizations play a vital role, including stock exchanges, securities industry associations and stock transfer companies. These organizations show a high degree of consistency in self-regulatory management, and jointly maintain the order and healthy development of the securities market. Stock exchanges, as front-line regulatory bodies, are closest to the market. Through on-site supervision, self-regulatory measures and regular summary of experience, they have formed a series of guiding cases, providing clear regulatory guidance for market participants. The securities industry association plays an important role in the internal governance and external supervision of enterprises. It promotes the improvement of corporate governance system and the improvement of governance level by establishing a communication mechanism with stakeholders and advocating a positive shareholder culture and integrity culture. In addition, the association also promotes the internationalization of ESG practice in China by setting up ESG governance rankings, rewarding benchmarking enterprises, stimulating healthy competition in the industry, and promoting the construction of industry informatization and formulating specific guidelines for exchanges and cooperation with international organizations (Hassani et al., 2021).

Equity transfer companies focus on the supervision of listed companies and other information disclosure obligors to ensure their compliance in ESG. The work of these self-regulatory organizations involves not only supervision and guidance, but also the promotion and regulation of ESG information disclosure. However, they also face many challenges in practice, such as how to change the traditional concept of ESG, how to establish and improve the organizational and governance structure, and how to accurately disclose greenhouse gas data and accounting. These challenges require self-regulatory management organizations to work together with policy makers, enterprises and investors to improve the quality and transparency of ESG information disclosure through policy promotion and industry self-regulation, so as to promote the healthy development of the securities market and the sustainable development of enterprises. With the forthcoming release of the basic standards for sustainable disclosure of enterprises, it is expected to provide a more unified and standardized framework for ESG information disclosure of enterprises in China, which will greatly help to improve the quality of sustainable information disclosure of enterprises, but also put forward higher requirements for self-regulatory management organizations.

### *Optimize the Mechanism of Supervision and Cooperation*

### *Promote the Mechanism of Evaluation and Authentication*

The SFC will study and promote the external examination and verification of ESG information, continuously improve the accuracy and disclosure quality of ESG data of listed companies, support credit rating agencies to continuously establish and improve the rating method system of green enterprises and green bonds, promote the increase of ESG investment, launch more index and fund products, and launch more green finance. Promote a virtuous circle with a better market ecosystem. The development trend of ESG attestation in China is positive, and the government, regulatory authorities and professional institutions have been playing an important role in promoting ESG information disclosure. With the improvement of ESG awareness and the improvement of relevant laws and regulations, ESG attestation has become a trend from voluntary to compulsory. In terms of improving ESG attestation policy, China can actively refer to relevant foreign policies and the response and development of enterprises to combine the characteristics of China's financial market and fill the legislative gaps in ESG report attestation in China (Cicchello et al., 2023). In the process of development, it advocates steady development and promotes ESG report authentication into the enterprise ecology on the basis of ensuring the normal and stable

operation of the enterprise. Some ESG leading industries can take the lead in improving their own certification standards, actively communicate with the government and regulatory authorities on relevant information disclosure, provide reliable case reference for policy makers, and accelerate the progress of policy introduction. From the perspective of policy makers, it is not only necessary to strengthen the clear provisions of laws and regulations, unified standards and guidelines for assurance, but also to encourage enterprises to implement ESG report assurance, encourage the establishment of independent assurance agencies, and strengthen supervision and law enforcement to ensure the effective implementation of ESG report assurance policies.

### *Promote The Supervision Mechanism of Science and Technology*

The Securities Regulatory Commission adheres to the goal orientation and problem orientation, attaches great importance to digital transformation, seizes the opportunity, seizes the commanding heights of future development, and promotes the high-quality development of capital market with digitalization and intellectualization. The realization of scientific and technological supervision needs to fully tap, integrate, utilize and share existing data for supervision. Securities regulatory authorities need to strengthen the exchange of securities market data with judicial, industrial and commercial, credit and other external data, expand the coverage of scientific and technological supervision, and form valuable information sharing. The innovative application of information technology, such as artificial intelligence, blockchain and big data, provides technical support for scientific and technological supervision and public opinion supervision. It is suggested to promote enterprises to carry out digital management of ESG information, increase the layout and application of cutting-edge technologies such as machine learning and predictive analysis through the establishment of ESG information database, implement data information capture, summary, analysis and evaluation, and finally realize the automatic generation of ESG reports. Regulatory technology builds an efficient regulatory big data platform, which comprehensively uses data analysis technology to conduct real-time monitoring and historical analysis and investigation, and assists supervisors to conduct panoramic analysis of market participants. Technologies such as machine learning, natural language processing and robotic process automation are widely used in the securities industry to identify trading failures, risk pricing and other rules. The application of these technologies not only improves the efficiency of supervision, but also provides a technical basis for the automatic generation of ESG information.

## Conclusions

China's ESG information disclosure continues to improve, but the disclosure proportion of different types of enterprises and the disclosure of different ESG indicators are quite different, so there is still much room for improvement in the evaluation and supervision of enterprise disclosure. The semi-mandatory disclosure principle adopted by China has promoted enterprises to undertake environmental and social responsibilities to a certain extent, but the scope and standards of voluntary disclosure of ESG information are not enough to create a fair, open and transparent environment. By establishing a unified disclosure framework, strengthening the cooperation of multiple regulatory bodies and optimizing the regulatory mechanism, the quality of ESG information disclosure can be effectively improved, and the transparency and efficiency of the market can be enhanced. This will not only help investors make more informed investment decisions, but also provide opportunities for listed companies to enhance their corporate image and competitiveness. These efforts will promote the stable development of China's capital market and contribute to the realization of sustainable development goals.

## References

- Tsang, A., Frost, T., & Cao, H. (2023). Environmental, social, and governance (ESG) disclosure: A literature review. *The British Accounting Review*, 55(1), 101149.
- He, F., Qin, S., Liu, Y., & Wu, J. G. (2022). CSR and idiosyncratic risk: Evidence from ESG information disclosure. *Finance Research Letters*, 49, 102936.
- Darnall, N., Ji, H., Iwata, K., & Arimura, T. H. (2022). Do ESG reporting guidelines and verifications enhance firms' information disclosure?. *Corporate Social Responsibility and Environmental Management*, 29(5), 1214-1230.
- Liang, Z., & Yang, X. (2024). The impact of green finance on the peer effect of corporate ESG information disclosure. *Finance Research Letters*, 62, 105080.

- Ellili, N. O. D. (2022). Impact of ESG disclosure and financial reporting quality on investment efficiency. *Corporate Governance: The International Journal of Business in Society*, 22(5), 1094–1111.
- Liu, Y., Deng, Y., Li, C., Twumasi, M. A., & Cheng, Y. (2023). Do disclosure of ESG information policies inhibit the value of heavily polluting Enterprises?—Evidence from China. *Heliyon*, 9(12).
- Zhang, F., Qin, X., & Liu, L. (2020). The interaction effect between ESG and green innovation and its impact on firm value from the perspective of information disclosure. *Sustainability*, 12(5), 1866.
- Raimo, N., Caragnano, A., Zito, M., Vitolla, F., & Mariani, M. (2021). Extending the benefits of ESG disclosure: The effect on the cost of debt financing. *Corporate Social Responsibility and Environmental Management*, 28(4), 1412–1421.
- Eng, L. L., Fikru, M., & Vichitsarawong, T. (2022). Comparing the informativeness of sustainability disclosures versus ESG disclosure ratings. *Sustainability Accounting, Management and Policy Journal*, 13(2), 494–518.
- Cordazzo, M., Bini, L., & Marzo, G. (2020). Does the EU Directive on non-financial information influence the value relevance of ESG disclosure? Italian evidence. *Business Strategy and the Environment*, 29(8), 3470–3483.
- Maaloul, A., Zéghal, D., Ben Amar, W., & Mansour, S. (2023). The effect of environmental, social, and governance (ESG) performance and disclosure on cost of debt: The mediating effect of corporate reputation. *Corporate Reputation Review*, 26(1), 1–18.
- Sugianto, N. A. P., Riandy, C. N., Zainavy, S. F., & Hartikasari, A. I. (2022). The contribution of Environmental, Social, and Governance (ESG) disclosure to reduce investor asymmetry information. *Proceedings Series on Social Sciences & Humanities*, 7, 56–61.
- Li, J., Li, W., & Chen, S. (2023). The impact of ESG information disclosure quality on firm value. In *SHS Web of Conferences* (Vol. 154, p. 02001). EDP Sciences.
- Hassani, B. K., & Bahini, Y. (2022). Relationships between ESG disclosure and economic growth: A critical review. *Journal of Risk and Financial Management*, 15(11), 538.
- Guo, Y., Kassim, A. A. M., & Zhang, K. (2023). Comparative Analysis of ESG Information Disclosures. *Frontiers in Business, Economics and Management*, 8(2), 143–146.
- Alsayegh, M. F., Abdul Rahman, R., & Homayoun, S. (2020). Corporate economic, environmental, and social sustainability performance transformation through ESG disclosure. *Sustainability*, 12(9), 3910.
- Ji, Y., Xu, W., Zhao, Q., & Jia, Z. (2023). ESG disclosure and investor welfare under asymmetric information and imperfect competition. *Pacific-Basin Finance Journal*, 78, 101982.
- Dai, J., Liang, Q., & Yap, E. T. H. (2024). Driving corporate sustainable development: Assessing the impact of ESG disclosure on sustainable growth. In *The Palgrave Handbook of Green Finance for Sustainable Development* (pp. 595–616). Cham: Springer International Publishing.
- Suttipun, M. (2021). The influence of board composition on environmental, social and governance (ESG) disclosure of Thai listed companies. *International Journal of Disclosure and Governance*, 18(4), 391–402.
- Naveed, M., Sohail, M. K., Abidin, S. Z., Awais, M., & Batool, N. (2020). Role of ESG disclosure in determining asset allocation decision: An individual investor perspective. *Paradigms*, 14(1), 157–165.
- Chouaibi, S., & Affes, H. (2021). The effect of social and ethical practices on environmental disclosure: evidence from an international ESG data. *Corporate Governance: The International Journal of Business in Society*, 21(7), 1293–1317.
- Yuan, X., Li, Z., Xu, J., & Shang, L. (2022). ESG disclosure and corporate financial irregularities—Evidence from Chinese listed firms. *Journal of Cleaner Production*, 332, 129992.
- Schiemann, F., & Tietmeyer, R. (2022). ESG controversies, ESG disclosure and analyst forecast accuracy. *International Review of Financial Analysis*, 84, 102373.
- Ferri, S., Tron, A., Colantoni, F., & Savio, R. (2023). Sustainability disclosure and IPO performance: Exploring the impact of ESG reporting. *Sustainability*, 15(6), 5144.
- Hassani, H., Unger, S., & Entezarian, M. R. (2021). Information content measurement of esg factors via entropy and its impact on society and security. *Information*, 12(10), 391.
- Cicchiello, A. F., Marrazza, F., & Perdichizzi, S. (2023). Non-financial disclosure regulation and environmental, social, and governance (ESG) performance: The case of EU and US firms. *Corporate Social Responsibility and Environmental Management*, 30(3), 1121–1128.