Research on the Problems and Improvement Path of ESG System Construction in China's Construction Industry

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Abstract. As a major energy consumer and CO_2 emitter in China, the establishment of a sound environmental, social and governance (ESG) system for the construction industry is crucial to China's realization of its "dual-carbon" goals and high-quality development. However, China's ESG started late, and there are fewer studies related to ESG system construction in the construction industry. Based on the current situation of ESG system construction in China's construction industry, we analyze the problems in ESG disclosure, assessment and rating, and investment practices of construction enterprises, and propose improvement paths to address the problems, which can lay a foundation for subsequent theoretical research on ESG in the construction industry and corporate ESG practices.

Keywords: construction industry; ESG system; current situation; problems; improvement paths

1 Introduction

With the increasing severity of global environmental issues and the rising awareness of social responsibility, Environmental, Social and Governance (ESG) is becoming a hot topic around the world.The ESG concept was first introduced in 2004 in the United Nations Global Compact program，it can be understood in both a broad and narrow sense. In a broad sense, ESG is a value that takes into account the sustainable and coordinated development of economic, environmental, social and governance benefits, and an investment philosophy that seeks long-term value growth. In a narrower sense, for enterprises, ESG is a core framework for fulfilling environmental, social and governance responsibilities, and an assessment system for enterprises to evaluate environmental, social and governance risks; for investors, ESG is a systematic methodology that focuses on the value and risks of enterprises in terms of non-financial performance such as environmental, social and governance.

ESG started late in China and has attracted much attention in the past two years, but ESG-related research and practice are still in the primary stage, ESG related research mainly focuses on the establishment of the ESG reporting framework system, corporate ESG report disclosure, the relationship between ESG and investment, enterprise value,

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etc.For example, Kai Wang et al based on the comparative analysis of the ESG evaluation system of 14 famous ESG rating agencies at home and abroad, they study the solution countermeasures against the problems of poor quality of ESG information disclosure and large differences in ESG rating results in China[1].Xiaoxi Zhang et al analyzed the characteristics of ESG disclosure of chinese listed companies and proposed suggestions to enhance ESG disclosure of Chinese listed companies[2] . Yuchen Peng analyzed the limitations of China's current ESG disclosure system, and with reference to the EU legislative experience and combined with China's national conditions, putted forward countermeasures to optimize China's ESG disclosure system[3]. Xianming Fang et al studied that ESG performance significantly improves the innovation output of enterprises,and Qiliang Mao et al studied enterprise ESG advantage significantly improves the employment level of enterprises[4-5] .Few studies have been conducted on the construction of ESG systems by industry, especially in specific industries. For example, China's construction industry, as an important industry in the national economy, plays a pivotal role in promoting economic growth, improving people's livelihoods, and promoting social employment, yet it has always been the country's major energy consumer and CO2 emitter.Building an ESG system for the construction industry, guiding the construction industry to reduce carbon and energy, enhancing corporate social responsibility, and perfecting corporate governance is essential to promoting the sustainable development of the constructionindustry and realizing China's "3060" goal of carbon peaking&carbon neutrality①and high-quality development has important research value.A small amount of literature has begun to focus on ESG system construction in the construction industry, such as research on how construction enterprises can guide funds to support green building projects through ESG system construction[6] (Yichen Shi et al., 2020); research on constructing an ESG performance evaluation system for large construction enterprises based on economic, social, technological, and environmental factors and proposing countermeasures to promote the ESG performance of large construction enterprises[7] (Yuning Hou et al.2022); Research on the problems and countermeasures of ESG report management of intelligent construction enterprises[8] (Yanpeng Zhou 2023).However, on the whole, ESG research in the construction industry is still relatively small and not systematic, comprehensive and in-depth enough, therefore, this paper will comprehensively analyze the status quo and problems of ESG system construction in China's construction industry and further explore the solution countermeasures, with a view to providing references for the construction industry's ESG subsequent related research and practice.

2 The Necessity of ESG System Construction in China's Construction Industry

2.1 Favorable for the Realization of China's "Dual-carbon" and High-quality Development Goals

On September 22, 2020, President Xi Jinping announced in an important speech at the 75th session of the UN General Assembly that "China will strive to peak its carbon dioxide emissions by 2030, and strive to achieve carbon neutrality by 2060". However, the construction industry has always been a major energy consumer and CO2 emitter in China. According to statistics, in 2021, the total energy consumption of the whole process of the nation's construction (including the use of building materials in buildings and infrastructure, building construction, and building operation) will be 2.35 billion tons of standard coal, and the total amount of CO_2 emissions will be 5.01 billion tons, which will account for 47.1% of the total national carbon emissions[①].It is clear that "carbon and energy reductions" in the construction sector are critical to achieving the "double carbon" goal. In addition, the technical talents and labor rights of the construction industry are increasingly valued by society, and regulators, investors, stakeholders and the public are increasingly demanding that construction companies take responsibility for sustainable behavior. Therefore, the establishment of a sound ESG system in the construction industry is an inevitable requirement for promoting the green transformation of China's development mode, promoting the high-quality development of the economy and realizing the "dual-carbon" goal.

2.2 Favorable for Construction Companies to Attract Quality Investors and Capital Inflow

The establishment of ESG objectives and corporate strategic management by construction companies will lead them to adopt more environmentally friendly and socially responsible business models and technologies. On the one hand, it can reduce the likelihood of environmental pollution, social litigation and other risks, thereby reducing the resulting operating costs and losses. On the other hand, as investors and consumers are increasingly focusing on the social responsibility and sustainability performance of enterprises, strengthening the practice of ESG issues in construction enterprises can build up their corporate image, improve the public's awareness of and trust in the enterprise,and help to attract more high-quality investors and capital to provide the enterprise with more opportunities for financing and business expansion.

2.3 Favorable for China's Construction Industry Enterprises to Develop Overseas Markets

With the gradual saturation of China's construction market and the continuous implementation of the supporting construction of the Belt and Road Initiative, the demand for Chinese building construction enterprises to go overseas has increased significantly.However, a mature ESG evaluation system has been formed internationally, thus the ESG rating of enterprises and the ESG management level of projects have become important references for international financial institutions and investors to carry out investment and financing support.In the background, the ESG risks faced by China's building construction enterprises in expanding overseas markets are becoming increasingly significant. Therefore, the establishment and improvement of ESG system is

① Source: "2023 China Carbon Emission Research Report on Buildings and Urban Infrastructure" beneficial for China's construction enterprises to rapidly integrate into the international environment and develop overseas projects.

3 The Current Situation and Problems of China's Construction Industry ESG System Construction

ESG system includes three aspects: ESG information disclosure, ESG assessment rating and ESG investment practice, among which ESG information disclosure is the leading and crucial aspect. Corporate disclosure determines the organization's ESG rating, which in turn affects investors' risk assessment and investment decisions, and the above three aspects form a complete ESG system. However, there are still some problems in the construction of ESG system in China's construction industry.

3.1 Inadequate Construction of ESG Disclosure Policies and Low Policy Harmonization and Guidance

Since 2002, Chinese government departments have successively issued policies related to ESG disclosure, as shown in Table 1. 15 policy documents related to ESG disclosure have been issued by different departments during the past 20 years. On the whole, the policies on ESG disclosure for real enterprises are fewer and more fragmented. The Ministry of Finance, the State-owned Assets , the Ministry of Ecology and Environment, the People's Bank of China, and the Securities and Futures Commission are not sufficiently coordinated in the construction of the ESG system, and there is still a lack of unified, national-level guidelines on specific disclosure indicators.

Table 1. ESG Disclosure Policies of China's Government Departments for Entities (2002-2022)

Publishing department	Corresponding documents	Date of issue/revision	Category involved	Compulsory
China securities regulatory commission	"Guidelines for the Preparation of Listed Companies"	2002.1/2018.9.30 Revision	E&S&G	Compulsory
Ministry of Ecology and Environment	"Public Notice on Disclosure of Environmental Information by Enterprises"	2003.9	E	Partly compulsory, partly voluntary
Ministry of Ecology and Environment	"Measures for Disclosure of Environmental Information "(trial implementation)	2007.4	E	Partly compulsory, partly voluntary
State Assets Supervision and Administration Commission	"Guiding Opinions on the Fulfillment of Social Responsibility by Central Enterprises"	2007.12	E&S&G	Voluntary
Ministry of Ecology and Environment	"Guiding Opinions on Strengthening the Supervision and Management of Environmental Protection of Listed Formulas"	2008.2	E	Partly compulsory, partly voluntary

Ministry of Ecology and Environment	"Guidelines on Disclosure of Environmental Information by Listed Companies" (draft for comments)	2010.9	E	Partly compulsory, partly voluntary
Ministry of Ecology and Environment	"Measures for Disclosure of Environmental Information by Enterprises and Institutions"	2014.12	E	Partly compulsory, partly voluntary
People's Bank of China, Ministry of Finance and other seven ministries and commissions	"Guiding Opinions on Building a Green Financial System"	2016.8	E	Unclear
China securities regulatory commission	"Opinions of the China Securities Regulatory Commission on Commanding the Role of Capital Markets to Serve the National Strategy of Poverty Eradication"	2016.9	S	Unclear
Central Committee of the Communist Party of China and State Council	"Opinions of the State Council of the Central Committee of the Communist Party of China on Supporting Zhejiang's High-Quality Development and Building a Demonstration Zone for Common Wealth"	2021.6	S	Unclear
China securities regulatory commission	"No. 2 Guidelines on Content and Format of Information Disclosure by Companies Offering Securities in Public —Content and Format of Annual Reports"	2017 2021.6 (Revision)	E	Partly compulsory, partly voluntary
			S	Voluntary
			G	Compulsory
China securities regulatory commission	"No. 3 Guidelines on the Content and Format of Information Disclosure by Companies Offering Securities in Public — Content and Format of Semi-Annual Reports"	2017 2021.6 (Revision)	E	Partly compulsory, partly voluntary
			S	Voluntary
			G	Compulsory
Ministry of Ecology and Environment	"Administrative Measures for Legal Disclosure of Corporate Environmental Information"	2021.12	E	Compulsory
	"Format Guidelines for Legal Disclosure of Corporate Environmental Information"	2022.1		
China securities regulatory commission	"Guidelines on Investor Relationship Management for Listed Companies"	2021.2Seek advice 2022.2Officially launch	E&S&G	Unclear

Note: Government departments here include regulators but not exchanges.Information obtained from the websites of various government departments

From the perspective of different ESG topics, there are more E aspects, especially in recent years, when the dual-carbon target is proposed, the importance of E has been more prominent, and the proportion of information disclosure policies for E is as high as 80%, while fewer focus on S and G. It can be seen that the current ESG disclosure policy construction is not comprehensive enough.

In terms of mandatory requirements, the highest level of mandatory requirements is for G, accounting for 20% of the total, while the second highest level of mandatory requirements is for E, which is mostly semi-mandatory, and the boundary between mandatory and voluntary disclosure is blurred. For highly polluting enterprises, there are mandatory requirements, but the mandatory scope of information disclosure is narrower. There is almost no mandatory requirement for disclosure of information on S. It can be seen that ESG disclosure policy is less mandatory on the whole.

In addition, most of the indicators required by the current ESG information disclosure policy are qualitative indicators, and for the calculation of quantitative indicators, only in the"Format Guidelines for Legal Disclosure of Corporate Environmental Information",it is proposed that important data involving emissions and other important data can refer to laws and regulations of the relevant fields, standards and norms and industry norms, while other less or no specific calculation methods are indicated, which makes the policy's guideline and operability not strong.

3.2 Lack of ESG Awareness in the Construction Industry and Low ESG Disclosure Rate

The overall ESG disclosure rate of China's listed companies is low, and starts to grow significantly in 2021. In the seven years prior to this, the disclosure rate of A-share ESG reports was around 26%, rising to 31% in 2021 and 34% in 2022.

From the industry level, the ESG disclosure rate of most industries in China has continued to rise, but there are large differences between industries. Among them, construction industry enterprises do not have a good knowledge of ESG, many of them pay little attention to and are not highly motivated to disclose ESG information, especially many private construction enterprises.During 2018-2022, the ESG disclosure rate of A-shares in the construction industry is 25.2%, 25.2%, 22.5%, 23.5%, and 33.5%, with an average of 25.9%, which is much lower than the highest ESG disclosure rate of the banking industry of 98.9%, and also lower than the average of ESG disclosure rate of each level of the industry, e.g., in 2022, the ESG disclosure rate of the construction industry is 33.5%, while the average ESG disclosure rate of each primary industry is 44.2%, with the former being nearly 11 percentage points lower than the latter.As shown in Figure 1, among the 5-year ESG disclosure rate averages of each primary industry, the ESG disclosure rate of the construction industry is relatively low, lower than most industries. In addition, the enterprises in the construction industry that carry out ESG disclosure are mainly concentrated in listed central state-owned enterprises.Among the listed central state-owned enterprises in the construction industry, 19 enterprises disclosed ESG or social responsibility reports in 2023, accounting for 90.5%. It can be seen that the rate of ESG information disclosure in China's construction industry still has more room for increase.

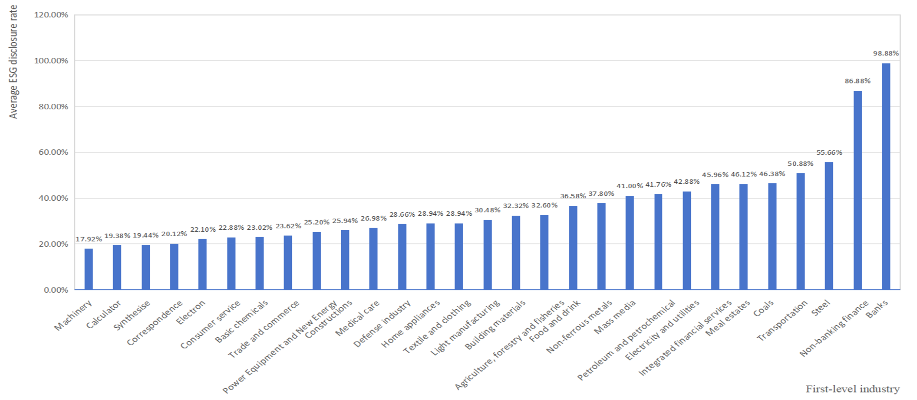

Fig. 1. Average ESG disclosure rate in China by industry level (2018-2022)
Data sources: "2023 White Paper on ESG Practice in China"

3.3 Construction Industry ESG Information Disclosure Standards Vary, Information Quality Needs to be Improved

Due to the lack of national-level unified, specific ESG disclosure standards, some standards only focus on the environmental dimension or for some indicators are missing, focusing on different, and ESG disclosure is not mandatory, therefore, there is arbitrariness in ESG disclosure in the construction industry, enterprises often refer to different disclosure standards, and there is a large degree of selectivity in disclosure, and those who don't want to disclose can still choose not to disclose, which makes the disclosure results lack of comparability.In addition, most of the disclosure indicators are qualitative indicators, while the calculation methods for quantitative indicators are not necessarily scientific and reasonable. Therefore, although enterprises disclose ESG reports, the accuracy of the information is insufficient, and there is still much room for improvement compared with the international average and advanced level.

3.4 Wide Variation in Construction Industry ESG Rating Results and Weak Guidance for Investment

China's ESG evaluation system with local market characteristics has been gradually established, and ESG rating organizations for the A-share market have surged from 8 in 2019 to 19 in 2022, such as: Huazheng, SynTao Green Finance, Star, Harvest, Social Value Investment Alliance, etc. Different organizations have different ESG evaluation methods, each with its own focus. For example, the China Securities Index ESG evaluation system consists of three dimensions: environment (E), society (S) and corporate governance (G), and consists of 14 themes, 22 units and more than 100 indicators.the Sino-Securities index ESG evaluation system includes four levels of indicators, i.e., E/S/G pillars, 14 themes, 26 key indicators, 130+ sub-indicators, and the ESG rating results are categorized into three levels and nine grades.In addition, in order to focus on the monitoring of negative information, the Sino-Securities index also warns listed companies with ESG tail risk levels in four categories: serious warning, warning, concern, and low risk.The ESG evaluation system of CITIC Securities is divided into 13 secondary indicators and 28 tertiary indicators, with the design and weighting of the indicators centered on the actual impact on the production and operation of the enterprise.Due to the lack of uniform mandatory standards for ESG ratings of various institutions, each institution has its own focus, and the methods and indicators are different, resulting in a significant differentiation of ESG evaluations of building construction companies by various institutions. According to statistics, the average value of correlation coefficient of 11 Chinese and foreign institutions on ESG evaluation of A-share building construction enterprises is 0.3146, and the maximum value is only 0.8975, the correlation is generally weak, and there is a negative correlation between some of the institutions, with the smallest negative value of -0.8819, and they even have opposite opinions on ESG performance of the same building construction enterprises.②Another example is the real estate enterprise Vanke Group, whose rating results in the the Sino-Securities index ESG rating system and the SynTao Green Finance ESG rating system are also very different,from 2015 to 2021, the former's rating results for Vanke Group are all AAA, while the latter's rating results for it fluctuate between B and C[9](Pin Zhou et al.2023).

Due to the large differences in the methods, data and rating results adopted by different rating agencies for ESG rating of construction enterprises, the effective utilization rate of the rating results is low. On the one hand, it is difficult for the assessed enterprises to recognize their own shortcomings through the assessment results, so as to improve their risk management and control capabilities; on the other hand, it is difficult for investors to use ESG assessment results to understand the real situation of the assessed enterprise's sustainable development capability, so as to fail to effectively guide the risk control and investment practices, resulting in serious information asymmetry between the supply and demand of funds, which leads to inefficient docking of the supply and demand of funds in the construction industry.

4 Path to Improve the Construction of ESG System in China's Construction Industry

4.1 Policy Level: Improve China's ESG-related Policies to Incentivize and Guide the Construction Industry's ESG System Construction

At present, there are fewer incentive policies for enterprise ESG construction in China, and the policies on enterprise ESG disclosure are fragmented, lacking unified and specific disclosure index guidelines and low mandatory, which leads to insufficient cognition and attention to ESG by enterprises, and strong arbitrariness of ESG disclosure, which in turn makes the quality of ESG data low and affects ESG evaluation and ESG investment. Therefore, the establishment of ESG-related policies is a key path to improve the construction of ESG system in the construction industry.

② Data sources: CITIC SECURITIES.ESG Evaluation Series Industry Topics (II)

Improving ESG-related policies mainly includes two major aspects: incentive policies for corporate ESG construction and corporate ESG information disclosure policies. The former aims to incentivize enterprises to take the initiative to establish ESG concepts, thereby promoting greening of buildings and sustainable development of society. For example, the bank credit policy based on ESG should be issued jointly with the financial sector and the tax sector, i.e., differentiated approval processes, credit limits and interest rates should be given to different creditors and projects for the ESG performance of the construction enterprises, so as to consciously guide the capital to flow into energy-saving, emission reduction and greening projects.At the same time, tax incentives are given for ESG performance to incentivize companies to increase their environmental investments, actively take on social responsibility and improve corporate governance.The latter mainly accelerates the establishment of industry-unified and specific ESG report disclosure standards, provides construction companies with comprehensive and referable quantitative ESG indicators, reduces subjective qualitative descriptions and increases objective data disclosure, establishes a reward and punishment mechanism for sub-industry supervision and combines it with the supervision of financial information disclosure.In addition, the degree of mandatory is sorted out and harmonized to enhance the guidelines and standardization of ESG disclosure for construction companies.

4.2 Industry Level: Enhancing ESG Cognition of Construction Enterprises and Playing the Main Role of ESG Practices of Construction Enterprises

Enhancing the ESG cognition of construction enterprises and playing the main role of their ESG practice is the core path to improve the construction industry's ESG system construction, which can be started from the following aspects:

4.2.1 Strengthen ESG Education & Training, and Improve ESG Cognition and Attention of Construction Enterprises

ESG started late in China, and despite the rapid development in recent years, there are still many enterprises in the construction industry that do not have sufficient knowledge of ESG, especially some private enterprises that do not pay enough attention to the construction of ESG and do not have enough enthusiasm for ESG information disclosure.Therefore, enterprises should carry out ESG-related training on a regular basis, so that enterprises, from strategic management to ordinary employees, can have an in-depth understanding of the ESG concept, ESG core issues, ESG disclosure policies, the impact of ESG disclosure and ratings on the value of the enterprise, ESG practice cases of industry benchmark enterprises, the management methods of ESG issues of the benchmark enterprises, and the disclosure of data indexes, etc., which will help them realize that ESG development is highly compatible with the national "dual-carbon" and high-quality development strategies, and that it is the inevitable choice for the enterprises to achieve high-quality development and enhance their long-term value.At the same time, through ESG-related training, it makes up for the shortage of ESG professionals in the construction industry, promotes the cultivation of low-carbon emission reduction and ESG practice ability of ESG-related work specialists, and promotes the integration of ESG with business strategies and commercial operations.

4.2.2 Strengthen ESG Information Disclosure and Enhance ESG Management Capabilities of Construction Companies

In the process of moving towards high-quality development, it is imperative for construction companies to improve their ESG management capabilities and rating performance.Firstly, enterprises should actively understand ESG disclosure related policies and participate in the formulation and improvement of policies. Secondly, they should take the initiative to strengthen ESG disclosure by combining domestic and international ESG disclosure standards, scientifically formulating key corporate ESG topics, conducting stakeholder research, and strengthening special breakthroughs in key areas. Finally, emphasize the management of ESG ratings in order to enhance ESG management capabilities.For example, we pay attention to and analyze our own ESG rating performance, identify and respond to potential environmental and social risks, communicate with ESG rating agencies, investors, local communities and other relevant parties to understand the demands of all parties, and provide references for the improvement of ESG management and practices; at the same time, we carry out peer ESG excellence practice management benchmarking, sort out the ESG issue management methodologies of peer benchmark companies, and judge the gap between ourselves and the industry's best practices in each issue and our own potential for improving the management of the issue.Further combining the ESG rating analysis, incorporating ESG rating inspection indicators into management tools, guiding enterprises to establish a working mechanism for ESG performance assessment, short board identification, improvement and enhancement, and incorporating the ESG short board improvement degree into the management evaluation of enterprises or project departments, in order to promote the implementation of ESG practice points.

4.2.3 Strengthen the Innovation of Construction Technology and Management Mode, and Promote the Practice of ESG Key Topic Areas

Strengthening the R&D and application of new building energy-saving and environmental protection technologies, upgrading the level of fine and intelligent management in construction sites, as well as the innovation of socially responsible management modes are conducive to advancing the practice of key ESG topic areas and enhancing the sustainable development capability of construction enterprises. For example, in the field of environmental protection (E), we have taken the initiative to formulate environmental policies, set energy-saving and emission reduction targets & action roadmaps, increased the innovation and application of green and low-carbon technologies in assembly building and engineering construction, and committed to reducing carbon dioxide emissions throughout the life cycle of the construction industry.In the field of social responsibility (S), we strengthen the innovation of social responsibility management mode, enhance the level of fine and intelligent management of construction sites, focus on construction safety, and maximize the protection of labor rights and interests. We also pay attention to the needs of the communities in which we are located, actively integrate into the development of local communities, carry out community welfare programs in relevant fields and continuously invest resources to help the development of local communities.Through these measures, construction companies can not only improve their environmental and social performance, but also demonstrate their commitment to sustainability in terms of corporate governance (G), thus making substantial progress in key ESG topic areas.

4.3 Third Party Organization Level: Strengthening ESG Research and Providing Professional Support for ESG Ecological Construction in the Construction Industry

Currently, the poor quality of ESG disclosure in the construction industry, the big difference in rating results, and the weak guidance for investment practice are mainly due to the lack of standardization of the industry ESG system. Reconstructing the ESG ecosystem of the construction industry requires third-party organizations (including scientific research institutions) to strengthen the research on the selection of indicators, quantification methods of indicators and determination of indicator weights for ESG disclosure in the construction industry based on China's national conditions and the industry fundamentals, so as to provide construction companies with better disclosure calculation methods and tools.At the same time, for the characteristics of the construction industry, it is important to strengthen the research on the ESG rating index system that can truly reflect the level of sustainable development of construction enterprises, the research on quantitative methods and relevant standards, and to enhance the consistency, comparability and reliability of the rating results.In addition, statistical accounting is an important basis for information disclosure, analysis, and quantitative decision-making, and it is important to strengthen the study of theoretical standards on statistical caliber.

5 Conclusion

The construction industry is a major consumer of energy and emitter of carbon dioxide. Establishing and improving the ESG system in the construction industry is of vital importance for China to achieve its "dual carbon" goals and high-quality development.This article conducts an in-depth analysis of the current status of ESG system construction in China's construction industry and finds that the following problems exist: (1)Incomplete ESG disclosure policy building, poor policy harmonization and guidance. (2)Lack of ESG awareness and low ESG disclosure in the construction industry. (3)Construction industry ESG disclosure standards vary and information quality needs to be improved. (4)Wide variation in construction ESG rating results, weak guidance for investment.To further address the current problems, we propose the path to improve the construction of ESG system in China's construction industry, such as: at the policy level, improve China's ESG-related policies to stimulate and guide the construction of the construction industry's ESG system; at the industry level, strengthen

ESG education and training, ESG information disclosure, and innovation in construction technology and management mode; at the level of third-party organizations, strengthen ESG research and provide professional support for the construction industry's ESG ecological construction,which in order to provide a reference for promoting the construction of ESG system in China's construction industry.

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