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**Corporate Environmental Information
Disclosure in China**

Empirical research based on listed companies in mining industry

Supervisor

Ch. Prof. Michela Cordazzo

Assistant supervisor

Ch. Prof. Franco Gatti

Graduand

Xiaoman Li

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ABSTRACT

China's economy is on the road of “dual carbon” goals and ecological civilization, and the Chinese government has greatly accelerated the construction of relevant regulations on corporate environmental information disclosure (EID). The China Securities Regulatory Commission (CSRC) promulgated the new version of “Measures for the Administration of Information Disclosure of Listed Companies” in 2021, requiring listed companies to add a section “Environmental and Social Responsibility” in their annual report and disclose environmental information. In the same year, the Ministry of Ecology and Environment (MEE) issued the “Measures for the Administration of Legal Disclosure of Enterprise Environmental Information”, requiring some companies that meet certain standards to disclose environmental information in the “Corporate Environmental Information Disclosure Report in accordance with the Law”. The release of these two documents marks that EID in China has entered the era of mandatory disclosure. The thesis sorts out the latest EID requirements of various departments and stock exchanges in China and chooses 44 listed companies in the mining industry that were listed as key pollutant-discharge units in 2021 as samples to investigate their environmental information disclosure after the introduction of the new regulations, including disclosure in annual report and non-financial report. Since 2023 is the first year for some companies to disclose the “Corporate Environmental Information Disclosure Report in accordance with the Law”, and the reports are partly not available to the public, the article turns to investigate other ways to query same environmental information based on the "Format Guidelines for Legal Disclosure of Enterprise Environmental Information" issued by the MEE, and concludes China's environmental information disclosure system. In the end, the article concludes with a summary of the current situation of EID in China and puts forward personal suggestions.

Key words: Environmental Information Disclosure, Key pollutant-discharge units, Laws and Regulations, Mining Industry

摘要

中国经济正走在“双碳”目标和生态文明的道路上，近年来，中国政府大幅加速了企业环境信息披露相关法律法规的建设。中国证监会在2021年颁布了新版《上市公司信息披露管理办法》，要求上市公司在年度报告中增加“环境和社会责任”部分，披露环境信息。同年，生态环境部也发布了《企业环境信息依法披露管理办法》，要求部分符合一定标准的企业在《企业环境信息依法披露报告》中公开环境信息。这两份文件的发布，标志着我国环境信息进入强制性披露时代。论文总结了国内各部门最新的环境信息披露要求，并选取了44家被列为2021年重点排污单位的采矿业上市公司作为样本，考察其在新规出台后的环境信息披露情况，包括年报和非财务报告中的信息披露。由于2023年是《企业环境信息依法披露报告》进行发布的第一年，且部分报告无法从披露平台获取，因此本文基于生态环境部发布的《企业环境信息依法披露格式准则》，查找了相关环境信息在其他地方的披露情况，并总结了我国的环境信息公开制度。最后，文章总结了我国企业环境信息披露的现状，并提出了建议。

关键词：环境信息披露、重点排污企业、法律法规、采矿业

LIST OF ABBREVIATIONS

CASS	Chinese Academy of Social Sciences
CBIRC	China Banking and Insurance Regulatory Commission
CCETE	China Carbon Emission Trade Exchange
CCRC	China Carbon Emission Registration Clearing Limited Company
CERES	Coalition for Environmentally Responsible Economics
CNRDS	Chinese Research Data Services Platform
CSMAR	China Stock Market & Accounting Research Database
CSR	Corporate Social Responsibility
CSRC	China Securities Regulatory Commission
EID	Environment Information Disclosure
EPA	Environmental Protection Agency
ESG	Environmental, Social and Governance
FASB	Financial Accounting Standards Board
FSB	Financial Stability Board
GRI	Global Reporting Initiative
FASB	Financial Accounting Standards Board
FSB	Financial Stability Board
GRI	Global Reporting Initiative
HKEx	Hong Kong Exchanges and Clearing Limited
ICMM	International Council on Mining and Metals
ISO	International Organization for Standardization
MEE	Ministry of Ecology and Environment
MEP	Ministry of Environmental Protection
NDRC	National Development and Reform Commission
PBOC	People's Bank of China
SAMR	State Financial Regulatory Administration
SASAC	State-owned Assets Supervision and Administration Commission
SASB	Sustainability Accounting Standards Board
SDGs	Sustainable Development Goals
SEC	Securities and Exchange Commission

SSE	Shanghai Stock Exchange
SZSE	Shenzhen Stock Exchange
TCFD	Task Force on Climate-Related Financial Disclosures

CHAPTER I: Regulations on Enterprise Environmental Information Disclosure in China

1.1 Introduction

In recent years, the climate change and the deterioration of global environment have become urgent concerns of many countries, concepts like sustainable development and ESG (Environmental, Social and Governance) have been strongly promoted in the international community. China has also stepped-up efforts to protect the environment and actively promoted sustainable development. In September 2020, China announced that “we will strive to peak carbon dioxide emissions before 2030 and strive to achieve carbon neutrality before 2060” at the 75th United Nations General Assembly, which put forward higher requirements for a green and low-carbon development as well as the construction of ecological civilization. China is also positively carrying out environmental pollution control and ecological resource protection. As more environmental goals are integrated into the overall economic and social development planning, activities related to EID have become an important aspect of corporate compliance and social responsibility. But judging from past experience, the quality of EID by Chinese enterprises was rather low, and their willingness of disclosure was not very strong. Part of the reason is that the regulations for corporate EID were not uniform, some rules were even controversial, and many companies did not realize that EID is closely related to their business operations. In general, Chinese companies were relatively passive in EID-related fields, which made government regulations and supervisions particularly important.

The Chinese government has been aware of the situation and has begun to actively regulate the management of pollutants and the governance of corporate EID. In 2016, the “Guiding Opinions on Building a Green Financial System” jointly issued by the People's Bank of China (PBOC) and other six ministries proposed to gradually establish and improve the mandatory EID system for listed companies and bond-issuing enterprises. In June 2017, the Ministry of Environmental Protection (MEP) (now the Ministry of Ecology and Environment of the People's Republic of China, MEE) and the China Securities Regulatory Commission (CSRC) signed the “Cooperation Agreement on

Jointly Carrying Out the Environmental Information Disclosure of Listed Companies” to promote the establishment and improvement of the mandatory EID system for listed companies, also urge listed companies to fulfill their social responsibilities for environmental protection. On March 3, 2020, the “Guiding Opinions on Constructing a Modern Environmental Governance System” reviewed and approved by the 11th meeting of the Central Committee for Comprehensively Deepening Reforms was publicly issued. The “Guiding Opinions” pointed out that “China should improve corporate credit ...to establish a mandatory EID mechanism for listed companies.”

According to the above-mentioned policies on environmental information disclosure of listed companies, both the CSRC and the MEE have the right to supervise the EID of listed companies. In addition, listed companies need to abide by various rules issued by Shanghai Stock Exchange (SSE) and Shenzhen Stock Exchange (SZSE), including self-regulatory guidelines and voluntary commitments. Table 1 shows the requirements of these departments and stock exchanges on corporate EID.

Table.1 Regulatory authorities and policy on Corporate EID in China

(Updated April 2023)

China Securities Regulatory Commission (CSRC)	
Policy Target	Companies or their important subsidiaries that are key pollutant-discharge units shall disclose major environmental information; Other listed companies are encouraged to voluntarily disclose the measures they have taken to reduce carbon emissions during the reporting period.
Disclosure method	Add section “Environment and Social Responsibility” in their half-year reports and annual reports.
Policy documents	“Standards Concerning the Contents and Formats of Information Disclosure by Companies Offering Securities to the Public No.2 — Contents and Formats of Annual Reports” (2021) ¹ ; “Standards Concerning the Contents and Formats of Information Disclosure by Companies Offering Securities to the Public No.3 — Contents and Formats of Half-year Reports” (2021) ² .

¹Source: <http://www.csrc.gov.cn/csrc/c101864/c6df1268b5b294448bdec7e010d880a01/content.shtml>

² Source: <http://www.csrc.gov.cn/csrc/c101864/cc6e558b1406e477190ad3a52984ac7a5/content.shtml>

Ministry of Ecology and Environment (MEE)	
Policy Target	1. Key pollutant discharging units ³ ; 2. Enterprises that implement mandatory cleaner production audits; 3. Listed companies or bond-issuing enterprises that have been investigated for criminal responsibility or received major administrative punishments for ecological and environmental violations.
Disclosure method	Publish annual “Corporate Environmental Information Disclosure Report in accordance with the Law” on government websites.
Policy documents	“Measures for the Administration of Legal Disclosure of Enterprise Environmental Information” (2021) ⁴ .
Shanghai Stock Exchange (SSE)	
Policy Target	The following types of companies listed on the Shanghai Stock Exchange: Sample companies in the “SSE Corporate Governance Sector” ⁵ ; Companies listed both domestically and overseas; Financial enterprises.
Disclosure method	Disclose non-financial reports such as social responsibility reports at the same time as the disclosure of annual reports.
Policy documents	“Shanghai Stock Exchange Listed Companies Self-Regulatory Guidelines No. 1 - Standardized Operation” (2022) ⁶
Shenzhen Stock Exchange (SZSE)	
Policy Target	SZSE 100 sample companies.
Disclosure method	Disclose non-financial reports such as social responsibility reports at the same time as the disclosure of annual reports.
Policy documents	“Shenzhen Stock Exchange Listed Companies Self-Regulatory Guidelines No. 1 - Standardized Operation of Main Board Listed Companies” (2022) ⁷ .

³ The definition of key pollutant-discharge units is in Chapter 1, Section 5

⁴ Source: https://www.mee.gov.cn/xxgk2018/xxgk/xxgk02/202112/t20211221_964837.html

⁵ The SSE Corporate Governance Sector is released by China Securities Index Corporation, and the Shanghai Stock Exchange provides support in the process of selection and index compilation.

⁶ Source: http://www.sse.com.cn/lawandrules/sselawsrules/stocks/mainipo/c/c_20230209_5715994.shtml

⁷ Source: http://www.szse.cn/lawrules/rule/stock/supervision/mb/t20220107_590547.html

1.2 China Securities Regulatory Commission

In October of 1992, the Securities Commission of the State Council and the CSRC were established, the former was the competent authority for the unified supervision and management of the securities market, while the CSRC was its regulatory agency which was responsible for supervising the securities market in accordance with laws and regulations. In November 1993, the State Council decided to hand over the pilot work of the futures market to the Securities Commission, and the CSRC was responsible to implement it. In March 1995, the State Council formally approved the “Institutional Establishment Plan of the CSRC”, which determined that the CSRC is a public institution directly under the State Council at the vice-ministerial level, and is the regulatory and executive institution of the Securities Commission. In August 1997, the State Council decided to place the Shanghai and Shenzhen stock exchanges under the supervision of the CSRC, and set up the Commissioner's Office in Shanghai and Shenzhen. In November 1997, the central authorities held a national financial work conference, which decided to reform the national securities management system, exercise vertical leadership over local securities regulatory departments, and transfer securities business institutions previously supervised by PBOC to the unified supervision of the CSRC. In April 1998, the institutional reform plan of the State Council decided to merge the Securities Commission of the State Council and the CSRC. After these reforms, the functions of the CSRC have been significantly strengthened, and a centralized and unified national securities regulatory system has basically been formed. In September of the same year, the State Council approved the “Regulations on the Functional Configuration, Internal Organization and Staffing of the China Securities Regulatory Commission”, specifying that the CSRC is a public institution at ministerial-level institution directly under the State Council and is the competent department of the national securities and futures market. Since then, the functions of the CSRC have not changed until 2023.

The two sessions⁸ in 2023 have made new adjustments, the first is to establish the State Financial Regulatory Administration (SAMR) to replace the China Banking and Insurance Regulatory Commission (CBIRC) by merging some of the functions of the

⁸ “Two sessions” is the short form of “National People’s Congress of the People’s Republic of China” and “Chinese People’s Political Consultative Conference”.

CBIRC, the PBOC and the CSRC; Second, the CSRC was adjusted from a public institution to a commission directly under the State Council, undertaking the responsibility of reviewing the issuance of corporate bonds by the National Development and Reform Commission (NDRC), while SAMR took its original responsibility of investor protection. This move elevated the administrative level and importance of the CSRC, which indicates the importance that the state attaches to the direct financing function of the capital market.

1.2.1 Regulations on Corporate Environmental Information Disclosure

September 2018, the new version of the “Guidelines on Governance of Listed Companies” revised by the CSRC added chapters on stakeholders, environmental protection and social responsibility, stipulating that listed companies should disclose the following information in accordance with laws, regulations and requirements of relevant departments: environmental information, information on the fulfillment of social responsibilities such as poverty alleviation and information on corporate governance. These three aspects correspond to the idea of ESG respectively. On November 26, 2019, the 11th meeting of the Central Committee reviewed and approved the “Guiding Opinions on Building a Modern Environmental Governance System”. The “Guiding Opinions” pointed out that China should establish a mandatory mechanism for the disclosure of environmental protection information of listed companies. On March 4, 2021, the CSRC promulgated the new version of “Measures for the Administration of Information Disclosure of Listed Companies” (came into force on May 1, 2021), set out standardized requirements for periodic reports and temporary reports issued by enterprises. In June of the same year, the CSRC issued the format requirements for periodic reports in “Standards Concerning the Contents and Formats of Information Disclosure by Companies Offering Securities to the Public No.2 — Contents and Formats of Annual Reports” (2021) and “Standards Concerning the Contents and Formats of Information Disclosure by Companies Offering Securities to the Public No.3 — Contents and Formats of Half-year Reports” (2021).

The two “Standards Concerning the Contents and Formats of Information Disclosure” integrate relevant provisions on environmental protection and social responsibility, ask listed companies to add Section 5 “Environmental and Social Responsibility” in their half-year reports and annual reports, and put forward different requirements for key

pollutant-discharge enterprises and other listed companies. For key pollutant-discharge enterprises, the information needs to be disclosed in the section can be divided into mandatory information and non-mandatory information. Mandatory information include: 1) Pollutant discharge information. Including but not limited to the name of main pollutants and characteristic pollutants, discharge method, number and distribution of discharge outlets, discharge concentration and total amount, excessive discharge, implemented pollutant discharge standards, and approved total discharge; 2) Construction and operation of pollution prevention and control facilities; 3) Environmental impact assessment of construction projects and other environmental protection administrative licenses; 4) Environmental emergency plans; 5) Environmental self-monitoring plan; 6) Administrative penalties due to environmental problems during the reporting period; 7) Other environmental information that should be made public. The “guidelines” also encourage listed enterprises to disclose relevant information on ecology protection, pollution prevention, environmental responsibilities fulfillment, social responsibilities measures to reduce carbon emissions, efforts in consolidating and expanding the achievements of poverty alleviation and rural revitalization during the reporting period.

Companies other than key pollutant-discharging enterprises need to disclose the administrative punishments received due to environmental problems during the reporting period, and may disclose other environmental information with reference to the above requirements. If other environmental information is not disclosed, the reasons shall be fully explained.

1.3 Ministry of Ecology and Environment

The MEE is a department of the State Council established in March 2018, the function of this department is based on the responsibilities of the former MEP, adding the responsibility of the National Development and Reform Commission in dealing with the climate change and promoting emission reduction, the responsibility of the Ministry of Land and Resources in monitoring and preventing groundwater pollution, the responsibility of the Ministry of Water Resources in managing sewage outlets and protecting water environment in river basins, the responsibility of the Ministry of Agriculture in guiding the controlling agricultural pollution and the responsibility of the State Oceanic Administration in marine environmental protection. The main

responsibilities of MEE are as follows: formulate and organize the implementation of ecological environment policies, plans and standards; be responsible for ecological environment monitoring and law enforcement; supervise and manage pollution prevention and control, nuclear and radiation safety, and organize central environmental protection inspections. Before the establishment of MEE, China's environmental authorities went through six updates.

In the early 1970s, China's environmental pollution intensified. Premier Zhou Enlai personally laid the foundation of China's environmental protection work and approved the establishment of the "Office of the Environmental Protection Leading Group of the State Council" as the temporary department in charge of national environmental protection work at that time. During the institutional reform in 1982, the State Council merged the "Office of the Leading Group for Environmental Protection of the State Council" with the National Construction Committee, the State Urban Construction Administration, the General Administration of Construction Engineering and the State Bureau of Surveying and Mapping to form the "Ministry of Urban and Rural Construction and Environmental Protection", and the "Environmental Protection Agency" was inside it. In May 1984, the Environmental Protection Committee of the State Council was established, and its office was located in the "Ministry of Urban and Rural Development and Environmental Protection". In December 1984, the "Environmental Protection Agency" was renamed the "State Environmental Protection Agency". In 1988, as the situation of environmental pollution in various places became more and more serious, it was imminent to strengthen the construction of environmental protection institutions. With the approval of the State Council, the "State Environmental Protection Agency" was formally separated from the "Ministry of Urban and Rural Construction and Environmental Protection", and became a vice-ministerial agency directly under the State Council. Since the "Ninth Five-Year Plan", China's environmental protection has entered a new period. In order to adapt to the new situation, the "State Environmental Protection Agency" was upgraded to the "State Environmental Protection Administration" at the ministerial level during the reform of central government institutions in 1998. The nation started to implement dual leadership in the environmental protection system, the role of local governments was brought into play, the Environmental Protection Committee of the State Council was abolished. Then in 2008, the "State Environmental Protection Administration" was upgraded to the MEP, until the first session of the 13th National

People's Congress decided to establish the MEE and no longer retain the MEP.

1.3.1 Regulations on Corporate Environmental Information Disclosure

On December 11, 2021, the MEE issued the “Measures for the Administration of Legal Disclosure of Enterprise Environmental Information”, which came into effect on February 8, 2022. The “Measures” stipulates for the first time the obligation of listed companies to disclose environmental information among laws and regulations in the environmental field.

According to Article 7 of the “Measures”, the following enterprises shall disclose environmental information in accordance with law:

1. Key pollutant-discharge units.
2. Enterprises that implement mandatory cleaner production audits

According to the Cleaner Production Audit Measures⁹, enterprises that implement mandatory cleaner production audits include the following three categories:

- (1) Companies that discharge pollutants in excess of national or local standards, or exceed the total discharge control targets for key pollutants
- (2) Companies that exceed prescribed energy consumption limit for unit product and hence constitute “high energy consumption”
- (3) Companies that use toxic and harmful raw materials for production or discharge toxic and harmful substances during production

3. Eligible listed companies and bond-issuing enterprises

According to Article 8 of the “Measures”, publicly listed companies (and their subsidiaries) and companies that issue bonds are also required to disclose environmental information if they have been penalized for ecological or environmental violations in any of the following ways in the previous year:

- (1) Have been investigated for criminal liability.

⁹ Source: https://www.gov.cn/gongbao/content/2016/content_5100040.htm

- (2) Have been fined at least RMB 100,000 (US\$14,118).
- (3) Have been subject to consecutive penalties on a daily basis according to the law due to environmental violations.
- (4) Have been forced to limit or suspend production.
- (5) Have had their ecological or environmental licenses revoked.
- (6) A legal representative, main responsible person, a person in charge, or other directly responsible people at the company has been sentenced to administrative detention.

Municipal ecology and environment departments are responsible for compiling a list of companies within their jurisdiction that are required to disclose environmental information. Before finalizing the list, the authorities are required to publish it on the government website and solicit feedback from the public for a minimum of 10 working days. The list must be completed by the end of March each year and then made public.

Enterprises need to prepare annual “Corporate Environmental Information Disclosure Report in accordance with the Law” and upload them onto the “System on Corporate Environmental Information Disclosed in accordance with the Law”. This system is set up by the MEE and other local ecology and environment departments on the official government websites, where the environmental information of the companies is consolidated. This information must be free for members of the public to look up. Enterprises should disclose environmental information from January 1 to December 31 of the previous year before March 15. The annual report shall include the following eight types of information:

- (1) Basic company information, including information on company production and environmental protection.
- (2) Environmental management, including ecological and environmental administrative licenses, environmental protection tax, environmental pollution liability insurance, and environmental protection credit evaluation, etc.
- (3) Production, management, and discharge of pollutants, including pollution prevention facilities, pollutant emissions, discharge of toxic and hazardous matter, and the production, storage, flow, utilization, handling, and self-monitoring of industrial solid waste and hazardous waste.
- (4) Carbon emissions, including on the volume of emissions and emissions facilities.

- (5) Ecological and environmental emergency response mechanisms, including information on emergency plans for environmental crises or disasters and emergency responses to heavily polluted weather.
- (6) Environmental violations.
- (7) Any other ad hoc environmental information legally required to be disclosed from the current year.
- (8) Other environmental information stipulated by laws and regulations.

Specifically, the content of the annual “Corporate Environmental Information Disclosure Report in accordance with the Law” is different for key pollutant-discharging enterprises, enterprises implementing mandatory clean production audits, listed companies, and bond-issuing enterprises, as shown in Table 2:

Table.2 EID requirements on different enterprise entities

Type of enterprise	Disclosure of Information
Key pollutant-discharge enterprises.	Eight categories of information
Enterprises that implement mandatory cleaner production audits	<ol style="list-style-type: none"> 1. Eight categories of information; 2. The reason for having to undergo mandatory clean production audits. 3. The implementation, evaluation, and inspection results of mandatory clean production audits.
Eligible listed companies and bond-issuing enterprises	<ol style="list-style-type: none"> 1. Eight categories of information; 2. Where financing is carried out through the issuance of stocks, bonds, depository receipts, medium-term notes, short-term financing bonds, ultra-short-term financing bonds, asset securitization, bank loans, etc., information such as the form, amount, and investment direction of the financing shall be disclosed, as well as relevant information on climate change and ecological environmental protection of the projects invested in the financing.

The environmental information disclosed by companies will also be incorporated into the corporate credit management system and can be used as a key indicator for evaluating a company's corporate credit. Companies that breach the requirements outlined in the Measures by failing to disclose environmental information or disclosing incorrect or inaccurate information could be liable for penalties of RMB 10,000 (US\$1,412) to RMB 100,000 (US\$14,118). Penalties issued for violating environmental information disclosure requirements will also be included in the company's credit record. Companies that engage in any of the following behavior may be liable for fines of up to RMB 50,000 (US\$7,059):

1. Failing to meet requirements of the "Format Guidelines for Legal Disclosure of Enterprise Environmental Information" for disclosing environmental information.
2. Disclosing environmental information beyond the prescribed time limit.
3. Failing to upload environmental information to the Enterprise Environmental Information Legal Disclosure System.

1.4 Requirements of Shanghai Stock Exchange and Shenzhen Stock Exchange

In addition to following the "Measures for the Administration of Information Disclosure of Listed Companies" issued by the CSRC and the "Measures for the Administration of Legal Disclosure of Enterprise Environmental Information" issued by the MEE, listed companies in Mainland China also need to abide by various business operation rules and self-regulatory guidelines issued by the stock exchanges. The SSE and the SZSE have respectively issued the "Guidelines for Environmental Information Disclosure of Listed Companies on the Shanghai Stock Exchange" (2008) and "Guidelines on Social Responsibility of Listed Companies on the Shenzhen Stock Exchange" (2006), encouraging companies to disclose the fulfillment of social responsibilities including environmental protection and release it in the form of a social responsibility report.

The latest "Rules Governing the Listing of Stocks on Shanghai Stock Exchange" (2022) and "Rules Governing the Listing of Stocks on Shenzhen Stock Exchange" (2022) require part of the listed companies to prepare and disclose social responsibility reports and other non-financial reports in accordance with regulations, the content of the report should include "decisions or notices from relevant departments to rectify major violations,

suspend production, relocate, and close down.” Specific requirements are as follows (Table 3):

Table.3 Regulations of Shanghai Stock Exchange and Shenzhen Stock Exchange

Regulators	Policy Object	Policy requirements	Policy documents
Shanghai Stock Exchange	Sample companies in the “SSE Corporate Governance Sector” Companies listed both domestically and overseas Financial companies	Disclose non-financial reports such as social responsibility reports at the same time as the disclosure of annual reports	“Shanghai Stock Exchange Listed Companies Self-Regulatory Guidelines No. 1 - Standardized Operation”
Shenzhen Stock Exchange	SZSE 100 sample companies	Disclose non-financial reports such as social responsibility reports at the same time as the disclosure of annual reports	“Shenzhen Stock Exchange Listed Companies Self-Regulatory Guidelines No. 1 - Standardized Operation of Main Board Listed Companies”

1.5 Key pollutant-discharge units

Pollutant-discharge units refers to enterprises, institutions and other producers and business operators that are pollutant-dischargers. In order to implement the “Environmental Protection Law of the People’s Republic of China”, the “Law of the People's Republic of China on the Prevention and Control of Atmospheric Pollution” and the “Law of the People's Republic of China on the Prevention and Control of Water Pollution”, as well as to clarify the screening conditions of key pollutant-discharge units and standardize the management of the list of key pollutant-discharge units, the MEP formulated the “Regulations on the List of Key Pollutant-Discharge Units (for Trial Implementation)” in 2017. The list of key pollutant-discharge units is divided into five

categories according to the polluted environmental elements: water, air, soil and sound environment, and others. Every year, according to the environmental carrying capacity of the administrative region, the requirements for improving the environmental quality and the screening conditions of the “regulation”, the competent department of environmental protection of the local people's government at or above the prefecture level need to screen out enterprises and institutions that discharge large quantity or toxic and harmful pollutants. The list covers both listed enterprises (or involving some subsidiaries) and non-listed enterprises, including central enterprises, state-owned enterprises, private enterprises, institutions, etc. Every year the list is updated and released by municipal governments. In 2021, the number of units included in the list of pollutant-discharge units in city like Guangzhou (Guangdong Province) reached 760, while the number in Shenzhen City reached 1,058. Enterprises should check the list of key pollutant-discharging units in the local ecology and environment department’s website, or directly consult with the local ecology and environment department to see if they have been included in the list of key pollutant-discharging units of the current year.

In addition, the MEE implements the environmental monitoring system of key enterprises and publishes the list of “National Key Monitoring Enterprises” every year. The CSRC requires listed heavily-polluting enterprises to disclose “whether the listed company and its subsidiaries belong to the key pollutant-discharge unit announced by the environmental protection departments” in their annual reports.

1.6 Comparison between the requirements of the CSRC and the MEE

Both the CSRC and MEE require key pollutant-discharge enterprises to disclose environmental information, in different forms and platforms. Table 4 shows the comparison of requirements between the CSRC and the MEE.

Table.4 Comparison between requirements of the CSRC and the MEE

	CSRC	MEE
Disclosure method	Adding section "Environmental and Social Responsibility" in the annual report and half-year report; Temporary report.	Annual "Corporate Environmental Information Disclosure Report in accordance with the Law"; Temporary report.
Environmental Information	<p>Section "Environmental and Social Responsibility" should include:</p> <p>1. Pollutant discharge information. Including but not limited to the name of main pollutants and characteristic pollutants, discharge method, number and distribution of discharge outlets, discharge concentration and total amount, excessive discharge, implemented pollutant discharge standards, and approved total discharge.</p> <p>2. Construction and operation of pollution prevention and control facilities.</p> <p>Environmental impact assessment of construction projects and other environmental protection administrative licenses.</p>	<p>1. Basic company information, including information on company production and environmental protection.</p> <p>2. Environmental management, including ecological and environmental administrative licenses, environmental protection tax, environmental pollution liability insurance, and environmental protection credit evaluation, etc.</p> <p>3. Production, management, and discharge of pollutants, including pollution prevention facilities, pollutant emissions, discharge of toxic and hazardous matter, and the production, storage, flow, utilization, handling, and self-monitoring of industrial solid waste and hazardous waste.</p> <p>4. Carbon emissions, including on the volume of emissions and emissions facilities.</p>

	<p>3. Environmental emergency plans.</p> <p>4. Environmental self-monitoring plan.</p> <p>5. Administrative penalties due to environmental problems during the reporting period.</p> <p>6. Other environmental information that should be made public.</p>	<p>5. Ecological and environmental emergency response mechanisms, including information on emergency plans for environmental crises or disasters and emergency responses to heavily polluted weather.</p> <p>6. Environmental violations.</p> <p>7. Any other ad hoc environmental information legally required to be disclosed from the current year.</p> <p>8. Other environmental information stipulated by laws and regulations.</p>
Disclosure time	Before April 30 of each year (from 2022)	Before March 15 of each year (from 2023)
Platforms of disclosure	Websites of the stock exchanges and social media (such as China Securities Journal ¹⁰) that meet the conditions stipulated by the CSRC.	Websites of the central and provincial ecology and environment departments (Under construction)

The MEE released the correspondent “Format Guidelines for Legal Disclosure of Enterprise Environmental Information”¹¹ on January 4, 2022 to further standardize the format and content of the Corporate Environmental Information Disclosure Report in accordance with the Law. In this “Format Guidelines”, the MEE amplified and specified the scope of environmental information. In general, the mandatory environmental information required by the MEE covers the information required by the CSRC, the common words include pollutant discharge information, pollution prevention, environmental protection administrative licenses, etc. The extra environmental information required by the MEE include environmental protection tax, environmental pollution liability insurance, environmental protection credit evaluation, self-monitoring

¹⁰ "China Securities Journal" is a professional journal of national securities sponsored by Xinhua News Agency, and is a newspaper designated by the CSRC to publish information disclosure of listed companies

¹¹ Source: https://www.mee.gov.cn/xxgk2018/xxgk/xxgk05/202201/t20220110_966488.html

of industrial solid waste and hazardous waste, etc. Carbon emissions information is mandatory for MEE, but voluntary for CSRC. However, in practice there are more differences between the section “Environmental and Social Responsibility” in the annual report and the “Corporate Environmental Information Disclosure Report in accordance with the Law”. The specific differences are as follows:

Firstly, the main body of the annual report is the parent company (publicly listed company), the “Environmental and Social Responsibility” section covers the pollutant-discharge information of all subsidiaries classified as key pollutant-discharge units, and information on the social responsibilities assumed by the parent company. While the main body of the “Corporate Environmental Information Disclosure Report in accordance with the Law” is each subsidiary classified as key pollutant-discharge unit, the parent company does not undertake the unified EID responsibility.

Secondly, from the perspective of the length and standardization, the “Corporate Environmental Information Disclosure Report in accordance with the Law” is longer and more standardized than the “Environmental and Social Responsibility” section in the annual report. The quality of the “Environmental and Social Responsibility” section is uneven, some key pollutant-discharge enterprises (listed companies) only disclose one or two pages of environmental information in a casual attitude. While for the “Corporate Environmental Information Disclosure Report in accordance with the Law”, enterprises need to compile it online in a unified format through government websites instead of submitting a paper report or an electronic report, which ensures the completeness of the content and consistency of the format.

Thirdly, regarding of the content, the “Environmental and Social Responsibility” Section usually contains information on corporate social responsibility, including their social achievements on ecology protection, pollution prevention, environmental responsibilities fulfillment like planting trees, poverty alleviation and rural revitalization during the reporting period. While the “Corporate Environmental Information Disclosure Report in accordance with the Law” only focuses on environmental information. But for now, among 32 mainland provinces, autonomous regions and municipalities, only a few of them has published the website address newly built for uploading the “Report”, and only

few of them do not request an enterprise account to log in the website. Also, some websites do not provide file download service, and only allow online reading, so currently it's almost impossible to collect complete data of the "Report".

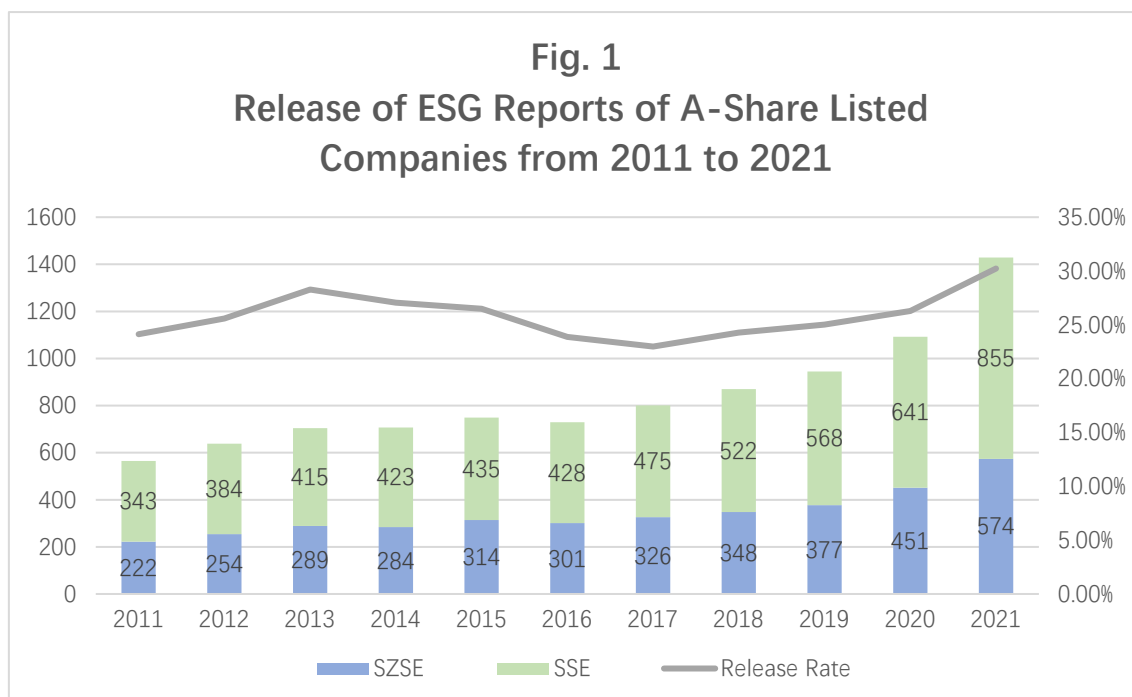
1.7 CSR report and ESG report

The concepts of CSR (Corporate social responsibility) report and ESG (Environmental, social, and governance) report has been slowly developing in China in the past 20 years. As early as 2002, the "Guidelines on Governance of Listed Companies" issued by CSRC clearly stated that enterprises should attach importance to social responsibility, this is the first government document that mentioned the CSR concept. Then the SZSE published the "Guidelines on Social Responsibility of Listed Companies on the Shenzhen Stock Exchange" in 2006, in which they encouraged listed companies to fulfill social responsibilities, form CSR report, and disclose the report together with the annual report. Two years later, the SSE issued the "Guidelines for Environmental Information Disclosure of Listed Companies on the Shanghai Stock Exchange", in which they encouraged listed companies to formulate annual CSR report according to their conditions and characteristics, but the report shall at least include the following aspects:

- 1) The company's work on promoting sustainable social development, such as the protection of employee health and safety, the protection and support of the community where it is located, and the control of product quality;
- 2) the company's work in promoting environmental and ecological sustainable development, such as how to prevent and reduce environmental pollution, how to protect water resources and energy, how to ensure the habitability of the area, and how to protect and improve the biodiversity of the area;
- 3) The company's work in promoting sustainable economic development, such as how to create value for customers through its products and services, how to create better job opportunities and future development for employees, and how to bring high economic returns to its shareholders wait.

As for the ESG report, since the concepts of sustainable development and ESG responsible investment have been strongly promoted in the international community in recent years, China's regulatory authorities have successively issued document guidelines for ESG information disclosure, continuously strengthening the requirements for ESG information disclosure of listed companies. On May 27, 2022, the State-owned Assets

Supervision and Administration Commission of the State Council issued the “Work Plan for Improving the Quality of Listed Companies Controlled by Central Enterprises”, which further standardizes the ESG information disclosure of central enterprises, promotes more central enterprises to disclose ESG special reports. On May 15, 2022, the CSRC's “Guidelines for the Management of Investor Relations of Listed Companies” came into effect, which explicitly regards ESG as an important part of communication between listed companies and investors in investor relations management.

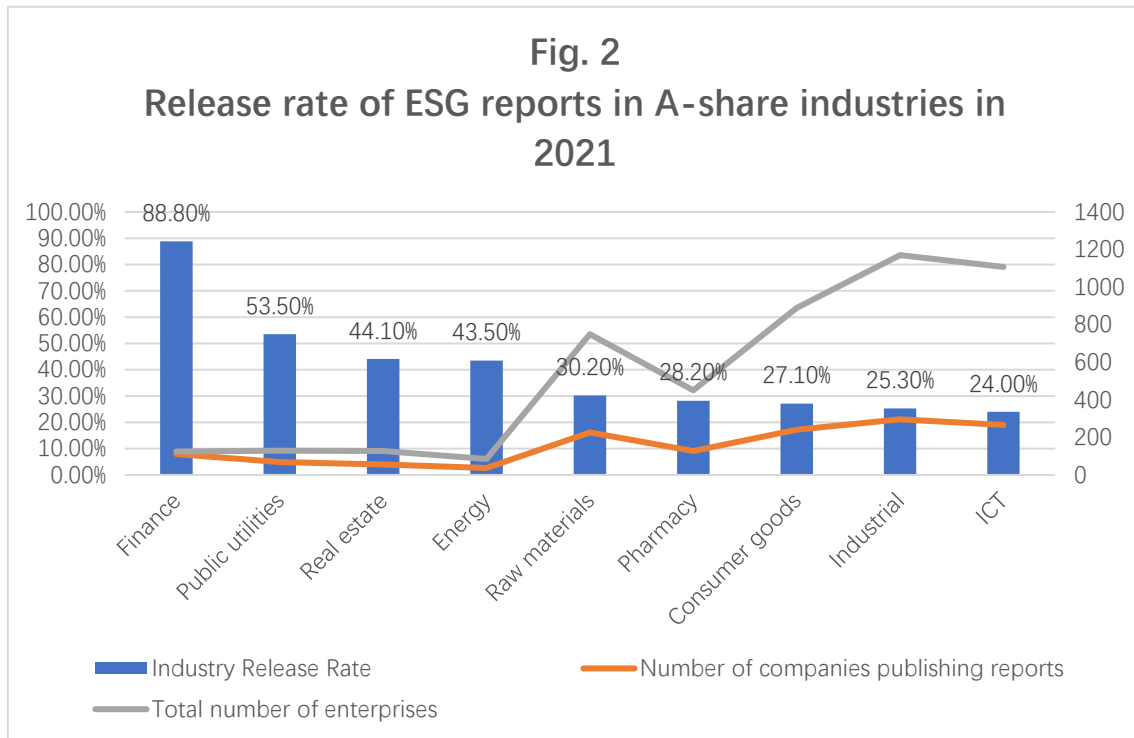


Data Sources: China Securities and Futures Statistical Yearbook and SynTao company¹².

Even though the government encourages listed companies to disclose ESG information, the regulations and requirements are relatively fragmented, there is a lack of unified and specific guidelines for disclosure indicators. China has not formed a complete and appropriate legal framework for ESG information disclosure, the legal provisions are scattered in basic regulations on environmental protection, company, labor, competition...as well as regulations issued by stock exchanges and local governments. Figure 1 shows the number of ESG Reports released by A-Share Listed Companies on SSE and SZSE from 2011 to 2021. It can be seen that in the past ten years, the release rate of ESG reports has been between 20% and 30%, and there has been an upward trend in recent years due to the encouragement and guidance of the government. The release

¹² <http://www.syntao.com/>

rate of ESG reports on the SSE is higher than that of the SZSE, because large-scale companies usually choose to list on the SSE.



Data Sources: Statistical Research Report on ESG Information Disclosure of A-Share Listed Companies of SynTao

There are large differences in the release rates of different industries, as figure 2 shows, the release rate of ESG report in finance, public utilities, real estate and energy industry is higher, while the release rate in pharmaceutical industry and industrial is much lower.

Besides, since there is no uniform standard for the naming of reports, most companies choose to name the report as CSR reports, sustainable development (SD) report, ESG report or a combination of them. The reference standards companies choose to use are also differentiated, including GRI standards set by Global Reporting Initiative (GRI), CASS-CSR4.0 issued by the Academy of Social Sciences, “Environmental, Social and Governance Reporting Guidelines” issued by Hong Kong Exchanges and Clearing Limited (HKEx), ISO26000, guidelines from SSE... and some industrial guidance.

CHAPTER 2: Literature review

2.1 The content of environmental information disclosure

Scholars from various countries have conducted research on the content of corporate EID. Moneva and Llena (1996) surveyed 47 Spanish industrial companies and found that 33 companies provided information on their environmental conditions, and 6 companies disclosed environmental information together with the financial state. Deegan and Rankin (2006) did research on Australian companies and found that most companies almost only disclosed positive information that was beneficial to themselves, which made them question the objectivity of the disclosure report. Cho and Patten (2007) divided the environmental information into monetary information and non-monetary information, analyzed the disclosure differences of enterprises with different sensitivity to the environment. Jerry et al. (1996) once divided environmental information into environmental laws and regulations promulgated by the central and local governments, corporate responsibilities and obligations to the environment, the impact of environmental costs on corporate financial status, insurance compensation on environmental accidents, environmental achievements or rewards, etc. Patten and Trompeter (2010) analyzed the environmental information disclosed by listed companies and found that it mainly includes environmental laws and regulations, environmental risks, and pollutant-discharge governance. Chinese scholar Meng Fanli (1999) summarized the content of EID into: the impact of environmental issues on financial status and operating results, the implementation of environmental laws and regulations, environmental quality, environmental governance, and utilization of pollutants. Li Lianhua (2001) believe that the content should include basic environmental background, pollution discharge information, environmental performance, financial information related to the environment, and quality assurance of environmental information. Zhu and Sun (2012) proposed that the content should include low-carbon accounting information, which can be used as a formal subject in general financial statements and can be measured in currency, such as low-carbon assets and low-carbon liabilities, etc.

Government requirements for EID are also differentiated. In America, the Coalition for Environmentally Responsible Economics (CERES) designed the first standardized corporate environmental reporting in early 1990, followed by a joint effort by the

Securities and Exchange Commission (SEC), the Environmental Protection Agency (EPA) and the Financial Accounting Standards Board (FASB). Under these conditions, a relatively systematic EID system has been formed. The information disclosed by enterprises mainly includes environmental costs and environmental liabilities; in terms of performance information, enterprises should disclose corporate responsibilities, corporate environmental policies, environmental management systems and international standards (such as ISO) related instructions, energy use and emission waste disposal rules. According to the requirements of the “Environmental Accounting Guidelines” issued by the Ministry of the Environment of Japan, the environmental information disclosed by enterprises should include financial aspects of environmental protection costs, as well as non-financial aspects of environmental objectives, environmental policies, compliance with environmental regulations, raw materials and energy consumption, Waste discharge, recycling amount, environmental management system and standards, energy recycling rate and other information.

Due to different scopes and policies of EID in different countries, the descriptions of the content by different scholars are differentiated, but they cover basic categories such as environmental policies, environmental measures, impact on financial performance, and environmental achievements.

2.2 The method of environmental information disclosure

Chinese scholars conducted research on the methods of EID in China. The research of Geng and Jiao (2002) found that some listed companies disclosed the environmental information in the prospectus to meet the needs of shareholders. Zhang Sugang and Zhang Hongliang (2009) believed that EID should through both statement notes and a separate environmental report. Shen et al. (2010) compared the environmental information disclosed in independent reports with the annual reports of listed companies in heavily polluting industries, and found that annual reports are still the main method of EID, but the number of companies that have started to prepare independent reports was increasing; Although the environmental information disclosed in the independent reports covered more environmental information, the quality is generally not high; the environmental information in the independent report and the annual report are mutually reinforcing rather than replacing. Chen (2010) believes that enterprises can first disclose

environmental information in the form of supplementary reports, wait until China's environmental accounting research and external conditions are mature and then adopt the method of preparing independent environmental accounting reports for detailed disclosure. Zhang (2012) believes that in short-term, enterprises should use independent report, while in the long-term they should adopt supplementary report, and the environmental and economic matters that cannot be measured in currency should be disclosed in the form of notes. Han (2013) believes that non-heavy polluting enterprises can disclose environmental information through supplementary reports; while heavily polluting enterprises should use independent reports. At the same time, in order to meet the different needs of stakeholders, the accounting reports should be expanded and adopt both quantitative and qualitative disclosure. Liu Dawei (2018) believes that companies can prepare environmental reports referring to the standards of developed countries, listed companies should disclose major environmental events that occurred during the reporting period while disclosing their financial reports.

2.3 Environmental information disclosure of listed companies in China

Many scholars have conducted research on the situation of EID of listed companies in China. Table 5 summarizes part of the existing research.

Table.5 Previous Research on EID of listed companies in China

Industry	Author	Research object	Conclusion
Heavy polluting industry	Shang Huijun et al (2007)	127 companies randomly selected from 9 heavily polluting industries from 1992 to 2002	Environmental information disclosed in prospectuses is relatively general; four highly polluting industries, such as textiles, metallurgy, brewing, and energy, have disclosed more detailed information than other industries; since 1992, information disclosure has gradually become more detailed; Information disclosure has a strong correlation with the promulgation of relevant laws and regulations.

Heavy polluting industry	Shen Hongtao and Li Yuxiaolu (2010)	All listed companies in heavily polluting industries from 2006 to 2008	The proportion of companies disclosing environmental information has increased significantly in the past three years, but the quality has declined; There are large differences in the quantity and quality of disclosed information in different industries; more positive and difficult-to-verify descriptive information and less information on resource consumption and pollutant emissions that may have negative impacts.
Paper and printing industry, metal industry, petrochemical plastics industry	Zhang Liping et al (2008)	166 listed companies in related industries in Shanghai Stock Exchange in 2007	The proportion of information disclosure increases rapidly and the willingness is strong; the disclosure proportion of listed companies in Northwest China is the highest; monetary and non-monetary environment information disclosure coexists; mandatory disclosure is still the mainstream.
Manufacturing Industry	Lu Xin and Li Jianming (2010)	2007-2008 Shanghai A-share manufacturing listed company	After the introduction of the “Guidelines for Environmental Information Disclosure of Listed Companies”, the content and method of EID of listed companies have been significantly improved, but still mainly qualitative description; companies often disclose positive information that is conducive to establishing a good image.

All Industries	Nie Xingkai et al (2022)	2008-2019 Listed Companies in China	<p>Regarding the disclosure of environmental violations, there were no disclosures in 2008-2012, 2015, and 2018 and scattered disclosures from 2013 to 2017; more than 40 environmental violations were disclosed in 2018 and 2019.</p> <p>The disclosure of environmental petitions has exploded in 2019, reaching 3,814 companies, before the number was less than 10. Behind this change is the public's increased attention to ecological and environmental protection.</p>
Banking	Shen Shuangbo (2022)	58 listed banks in 2021	<p>All 58 listed banks have disclosed ESG reports/ sustainability reports / CSR reports, this rate is much higher than the average disclosure rate of 30.13% of all listed companies.</p> <p>Some listed banks still need to improve the quantity and quality of key indicators in the reports, and the standardization.</p>
Coal industry	Yao Tong (2022)	Listed companies in coal industry from 2016 to 2020	<p>The number of companies disclosing social responsibility reports has increased year by year while the overall number of companies in the industry remains unchanged; more qualitative descriptions, less quantitative descriptions; environmental information is disclosed mainly in the environmental protection statements of key pollutant-discharging units; the content of EID in other company's other than key pollutant-discharging units is mainly qualitative</p>

			descriptions and there are large differences.
Paper industry	Gou Meiling (2022)	2019 Shanghai and Shenzhen A-share paper industry listed companies	The choice of information disclosure methods is relatively random; no unified environmental information disclosure standard; the quality of disclosed information is poor and lacks effectiveness; there is a lack of a complete government supervision and reward & punishment mechanism.

It can be seen from the above table that the EID of Chinese enterprises has the following characteristics:

First, the level of EID is tightly related to the promulgation of laws and regulations. In the early years, due to the lack of government regulation, mostly of enterprises only disclosed environmental information when they feel necessary, that is to disclose in the prospectus to attract investors. Over the years with the introduction of government documents and the awakening of the public's awareness of environmental protection, the level of corporate EID is continuously strengthened. Second, there are large differences among different industries. Some industries, such as the financial industry, have established their own disclosure requirements and standards, which effectively elevated the level of EID. In the meantime, heavily polluting enterprises, key pollutant-discharge units, and companies with environmental penalties are under special attention of the government and the public, which lead to a higher level of environmental information disclosure. However, the EID of other ordinary listed companies is still based on the principle of voluntary in terms of laws and regulations. Third, in the past, there were some problems in the disclosure of corporate environmental information, such as the lack of quantitative description, selective disclosure of beneficial information to the company, and the lack of uniform reference standards, etc. Fourth, supplementary disclosure notes and independent reports were parallel in Chinese society before 2021. But since the CSRC and the MEE have issued new regulations, the method of EID began to develop in the direction of mandatory independent reports starting from 2022.

CHAPTER 3: Empirical research based on listed companies in mining industry

3.1 Classification of polluting enterprises

In general, Chinese government's policies and regulations on EID are varied based on the industry, the nature (state-owned or private), and the pollution severity of the target enterprises. In the meantime, some industries have introduced their own industrial EID standards. As a result, different enterprises usually need to follow different standards and regulations of EID. Before 2017, most of Chinese scholars selected listed companies in high-pollution industries as samples when conducting research on Corporate EID. High-pollution industries refer to those industries in which the waste generated in the production and operation process has a high degree of pollution to the environment, and cannot be decomposed or digested by the environment itself. The "Guidelines for Environmental Information Disclosure of Listed Companies" issued by the MEP in 2010 specified that high-pollution industries mainly include 16 industries: chemicals, thermal power, cement, electrolytic aluminum, steel, coal, leather, metallurgy, textiles, brewing, fermentation, pharmaceuticals, papermaking, chemical industry, building materials and mining. According to the document, A-share listed enterprises in these industries should publish annual environmental report on the company's website and website of the MEP, regularly disclose the following information: the occurrence of major environmental problems; the implementation of environmental impact assessment and the "Three simultaneous" system; the discharge of pollutants up to the standard; the disposal of general industrial waste and hazardous waste; the completion of the total emission reduction task, and the payment of pollutant-discharge fees according to law; the implementation of cleaner production; the establishment and operation of the environmental risk management system. Companies that have an environmental emergency or is subject to major environmental penalties should issue a temporary environmental report within one day of the incident.

Another concept related to polluting enterprises is the key-polluting enterprises or key-monitoring enterprises. In 2005, the former State Environmental Protection Administration issued "Opinions on Strengthening and Improving Environmental

Statistics Work”, which mentioned implementing a quarterly reporting system to selected key-polluting enterprises. The list of key-polluting enterprises is negotiated and decided by the State Environmental Protection Administration and the provincial environmental protection departments. In principle, enterprises whose discharge of major pollutants account for more than 65% of the total emissions is considered “key-polluting enterprises”. This is the first time that the concept of “key-polluting enterprises” has been proposed. In 2007, the State Council issued the “Notice of the State Council on Approving the Measures for Statistical Monitoring and Assessment of Energy Conservation and Emission Reduction”, which stipulated: “the list of key-polluting enterprises in the quarterly reporting system is announced by the State Environmental Protection Administration, and shall be adjusted dynamically every year.” Then in the same year, the State Environmental Protection Administration released the “List of National Key Emission Enterprises for Monitoring”. Since then, the competent national department of environmental protection has made dynamic adjustments to the list every year. At the same time, with reference to the national key-monitoring enterprises, departments of environmental protection at provincial and municipal levels have also carried out the screening of key-monitoring enterprises at provincial and municipal level. For a long time, the state's environmental supervision on polluting enterprises has been classified into supervision on enterprises “monitored at national level”, supervision on enterprises “monitored at provincial level” and supervision on enterprises “monitored at municipal level”¹³. The government has introduced many policies based on this classification of polluting enterprises, such as: “Measures for Auditing the Validity of Automatic Monitoring Data of Pollution Sources in National Monitoring Enterprises”, “Regulations for the Supervision and Assessment of Automatic Monitoring Equipment for Pollution Sources in National Key Monitoring Enterprises”, “Measures for the Use of Qualified Marks for the Supervision and Assessment of Automatic Monitoring Equipment for Pollution Sources in Key National Monitoring Enterprises”, “Measures for Supervisory Monitoring and Information Disclosure of Pollution Sources in Key National Monitoring Enterprises” and “Measures for Self-Monitoring and Information Disclosure by National Key Monitoring Enterprises (for Trial Implementation)” and so on. National key monitoring enterprises are the focus of government supervision in terms of monitoring, statistics, law enforcement supervision and pollution control. Among many regulations

¹³ They are called “国控”, “省控”, “市控” in Chinese.

on these key-polluting enterprises, some are related to environmental information disclosure: First, the quarterly environmental report. The quarterly environmental report takes the national key monitoring enterprises as basic samples, scientifically measures the total amount of major pollutants discharged in each region, summarizes the national quarterly statistical results, and releases them to the public; Second, the national key-monitoring enterprises archives. The government need to establish archives of the key-monitoring enterprises and regularly publish the pollutant discharge information in accordance with relevant laws and regulations.

The last concept related to polluting enterprises is the key pollutant-discharge enterprises included in the key pollutant-discharge units. In February 2008, the “Law of the People's Republic of China on the Prevention and Control of Water Pollution” first introduced the concept of “key pollutant discharging units”. In addition, new version of the “Environmental Protection Law” and “Air Pollution Prevention and Control Law” have put forward requirements for key pollutant discharging units. Nevertheless, only after 9 years later, the former MEP issued the “Regulations on the List of Key Pollutant-Discharge Units (for Trial Implementation)” in November 2017, which made detailed provisions on the basic management requirements and screening conditions of key pollutant-discharge units.

Key pollutant discharging units are the replacement and continuation of key monitoring enterprises, the targets are the following three types of enterprises: first, enterprises with large pollutant production and pollutant discharge; second, large and medium-sized enterprises belonging to key pollution supervision industries; third, enterprises that could become the sources of environmental risks, such as enterprises that discharge toxic and harmful pollutants, enterprises with prominent environmental pollution problems, enterprises with poor environmental protection, enterprises that have major environmental pollution incidents within three years and enterprises that have caused severe social impacts due to environmental pollution problems. The list of key pollutant discharging units is issued by the municipal ecological and environmental departments. This move not only gives the local government sufficient autonomy to consider the environmental carrying capacity and environmental quality improvement requirements of the region, but also reflects the regional characteristic industries and characteristic pollutants. In addition, it is also an important manifestation of the implementation of the

local responsibility system for environmental quality.

3.2 Samples and data sources

According to the industry classification of listed companies in the third quarter of 2021 released by the CSRC, there were 79 A-share mining companies listed on the Shanghai and Shenzhen stock exchanges in 2021. According to Chinese Research Data Services Platform (CNRDS)¹⁴, 48 of them are key pollutant-discharge enterprises. After excluding 2 ST-type listed companies that were specially treated due to economic problems and 2 companies that claimed in their annual reports that they weren't classified as key pollutant-discharge enterprises in 2021, 44 companies were finally selected as samples. The environmental information reports involved in this article are mainly annual reports and non-financial reports like ESG reports manually collected from company's official websites, China Stock Market & Accounting Research Database (CSMAR)¹⁵ and CNINFO¹⁶ after verification. Table 6 shows the name, stock code and Stock Exchange of 44 listed key pollutant-discharge companies in mining industry.

¹⁴ <https://www.cnrds.com/>

¹⁵ <https://www.gtarsc.com/>

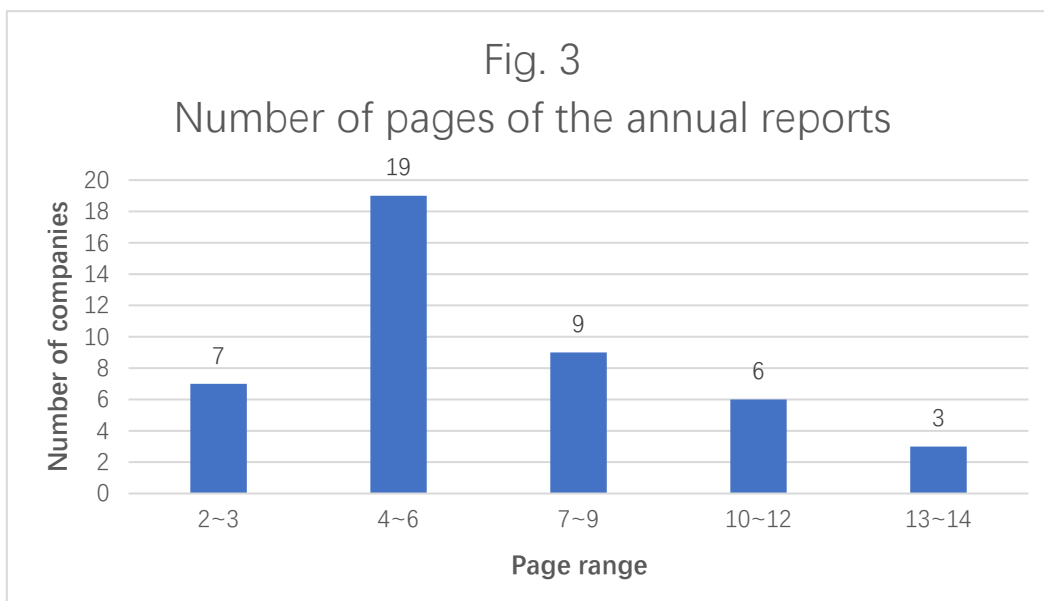
¹⁶ CNINFO is the statutory information disclosure platform of SZSE, its website is: <http://www.cninfo.com.cn/>

Table.6 Sample companies and stock codes

Stock Code	Company	Stock Exchange	Stock Code	Company	Stock Exchange
603727	博迈科	SSE	601168	西部矿业	SSE
600497	驰宏锌锗	SSE	601918	新集能源	SSE
600988	赤峰黄金	SSE	600188	兖州煤业	SSE
600259	广晟有色	SSE	600121	郑州煤电	SSE
600256	广汇能源	SSE	601088	中国神华	SSE
601969	海南矿业	SSE	600489	中金黄金	SSE
600968	海油发展	SSE	601898	中煤能源	SSE
600583	海油工程	SSE	601899	紫金矿业	SSE
601101	昊华能源	SSE	001203	大中矿业	SZSE
600971	恒源煤电	SSE	000688	国城矿业	SZSE
600348	华阳股份	SSE	002155	湖南黄金	SZSE
600985	淮北矿业	SSE	002554	惠博普	SZSE
601958	金钼股份	SSE	000937	冀中能源	SZSE
601001	晋控煤业	SSE	000655	金岭矿业	SZSE
600123	兰花科创	SSE	000552	靖远煤电	SZSE
601699	潞安环能	SSE	000983	山西焦煤	SZSE
603993	洛阳钼业	SSE	000603	盛达资源	SZSE
600395	盘江股份	SSE	000762	西藏矿业	SZSE
600547	山东黄金	SSE	000975	银泰黄金	SZSE
600508	上海能源	SSE	000758	中色股份	SZSE
600711	盛屯矿业	SSE	002128	露天煤业	SZSE
601069	西部黄金	SSE	002683	宏大爆破	SZSE

3.3 Annual report

According to the requirements of the CSRC, key pollutant-discharge companies need to disclose environmental information in the “Environmental and Social Responsibility” section of the annual report. After checking the annual reports of all sample companies, it is found that all companies have added this section in the annual report. Figure 3 shows the relation between the number of companies and the page range of the “section”.



For all 44 companies, this section occupies 2 to 14 pages, of which 4 to 6 pages accounts for the most, and 80% of which are less than 9 pages. It can be seen that the length of this section is relatively short, and its proportion in the whole annual report is very low. Next, this article will analyze the actual disclosure situation of all sample companies in contrast to the detailed disclosure requirements of the CSRC for this section.

3.3.1 Mandatory information

(1) Pollutant-discharge information.

According to the “Standards Concerning the Contents and Formats of Information Disclosure by Companies Offering Securities to the Public No.2 — Contents and Formats of Annual Reports” (2021) issued by the CSRC, companies need to disclose pollutant-discharge information, including the name of main pollutants and characteristic pollutants, discharge method, number and distribution of discharge outlets, discharge concentration and total amount, excessive discharge, implemented pollutant-discharge standards, and approved total discharge. Figure 4 and 5 shows the disclosure rate of each part of the pollutant-discharge information in the section required by the CSRC.

Fig. 4

Disclosure rate of pollutant discharge information Part 1

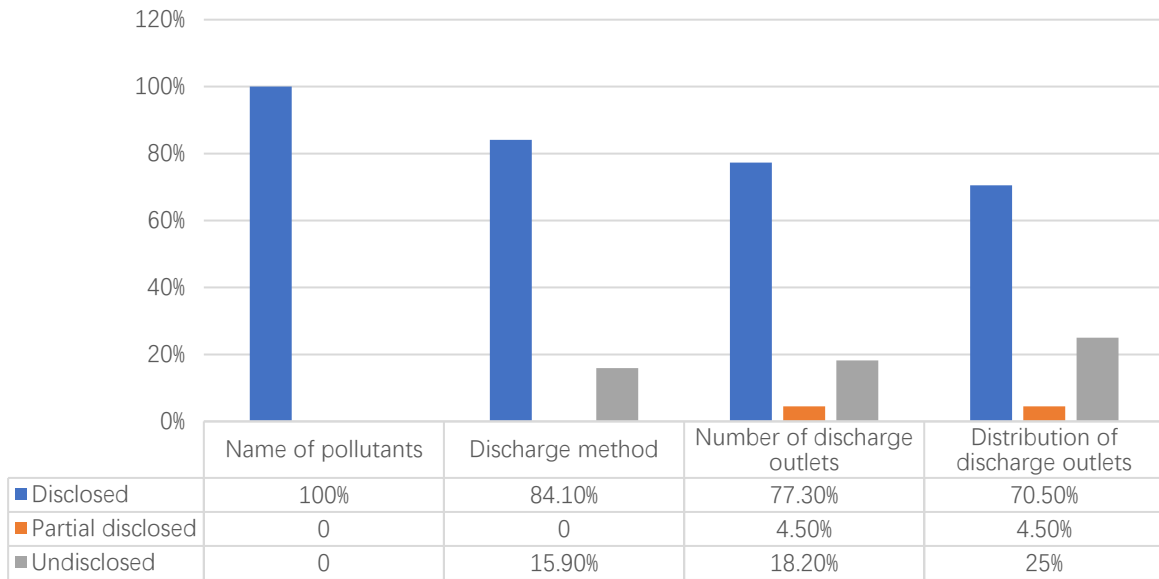
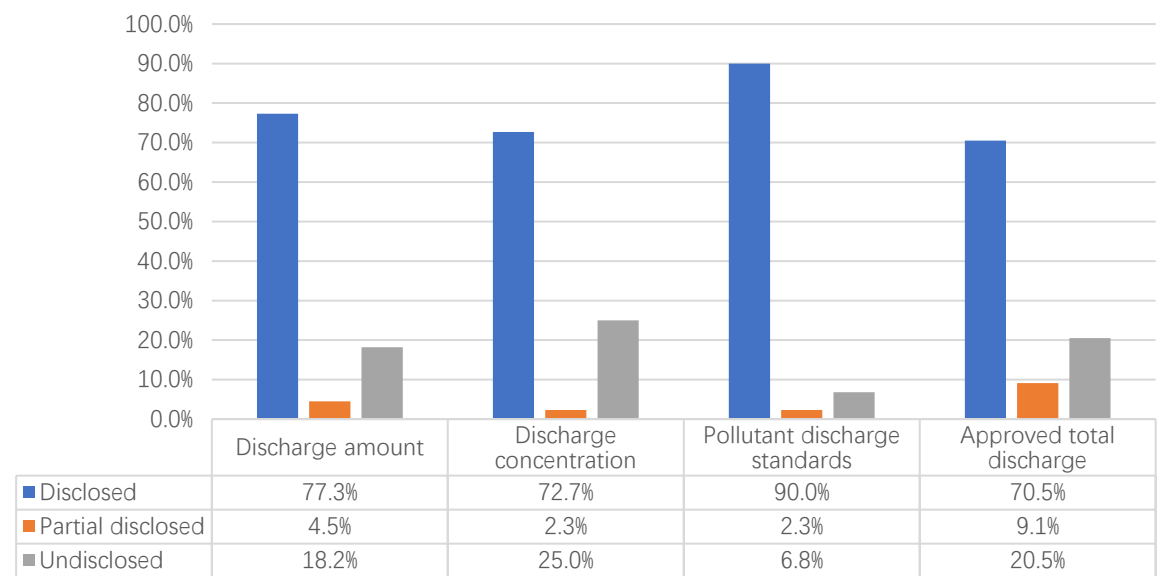


Fig. 5

Disclosure rate of pollutant discharge information Part 2



Pollutant discharge information is the most important and the biggest part in the whole section, it is the focus of government supervision and the main way for the public to understand the pollution discharge situation of enterprises. According to the research on these sample companies, the pollutant discharge information presents the following characteristics: first, there is no unified disclosure format, 34 companies chose to disclose

the information using the form of tables, one of which chose to use appendix table at the end of the report, and the other 10 companies used only texts. From the perspective of data users, the form of table is clearer, while textual disclosure sometimes leads to chaotic disclosure hierarchy and incomplete disclosure; second, in terms of completeness of disclosure, although the CSRC clearly stipulated the content of the pollutant-discharge information, some companies still didn't disclose relevant information. It is worth noting that this part summarizes the pollutant-discharge information of all subsidiaries that are listed as key pollutant-discharge units. As a result, there might be some missing data on part of the subsidiaries when the main companies collect data and compile the report, which has been marked as "partial disclosed" in Figure 4 and 5. In addition, sometimes different subsidiaries belong to different pollution catalogs, such as soil, air, sound, water pollution, etc. In this case, it is possible that the pollutant-discharge information of part of the catalogs is disclosed, which also means incomplete disclosure; third, there are big differences between the understandings of companies on the same disclosure item and the way they disclose relative information. For example, some companies used "discharge under organization" while some used "discharge after reaching the standard" in the item of discharge method, these two expressions actually indicate different things. These are many other examples: some companies listed the names of various pollutants, while others just wrote generally "waste water" and "waste gas" in the item of major pollutants; In the item of the location of the sewage outlets, some companies used its latitude and longitude, some used the serial number of the sewage outlets, and some companies used the location of the reference object. Besides, in terms of excessive pollutant-discharge, 3 companies confirmed that the phenomenon of excessive discharge has happened, 6 companies did not mention the item, the rest of the company didn't mark any excessive pollutant-discharge situation.

A few Individual enterprises did not disclose specific pollutant-discharge data in this section, but mentioned that the data can be queried on the "National Pollutant Discharge Permit Information Management Platform" and the provincial and municipal environmental information disclosure platforms. In China, enterprises first need to obtain a pollutant-discharge permit to discharge pollutants. Pollutant-discharge permit refers to the certificate issued by the regional environmental protection administrative department to allow the pollutant-discharge unit to discharge a certain number of pollutants after the pollutant-discharge unit submits an application to the environmental protection

administrative department. The pollutant-discharge permit is composed by the original document and a copy, and the copy needs to include the following information: 1) national or local standards for pollutant discharging; 2) the number of sewage outlets, the serial number, name, and location of each sewage outlet, the type, quantity, concentration, rate, method, whereabouts, time period, and seasonal requirements of pollutants discharged; 3) the main processes and equipment that produce pollutants; 4) types and capabilities of pollutant treatment facilities; 5) monitoring and reporting requirements for pollutant-discharge; 6) regular inspection records; 7) for pollutant-discharge units who have the obligation to control the total amount of pollutants, their pollutant-discharge permits shall stipulate the total amount of pollutant-discharge control indicators, the reduction amount and the time limit; 8) for pollutant-dischargers who are obliged to audit clean production shall specify the requirements for the audit results of cleaner production in their pollutant-discharge permits; 9) other relevant provisions and requirements of environmental protection laws, regulations, and policies that should be implemented.

It can be seen that some of the information required by the CSRS, such as information on main pollutants, sewage outlets and pollutant-discharge standards, is already disclosed due to the information disclosure mechanism of pollutant-discharge permit. The “National Pollutant Discharge Permit Information Management Platform”¹⁷ under the MEE was established in 2017. Enterprises can apply for the permit to local environmental protection departments through this platform and regularly renew their pollutant-discharge permits, while the public can use this platform to obtain quarterly pollutant-discharge information of enterprises and institutions. In addition to controlling enterprises through pollutant-discharge permits, the provincial and municipal governments are also actively promoting the automatic monitoring system of pollutant-discharge units, which connects the pollutant-discharge facilities of various enterprises to the Internet and detects the pollutant-discharge situation in real time.

(2) Construction and operation of pollution prevention and control facilities

Among the 44 companies, 34 companies disclosed information on the construction and operation of their facilities, such as their environmentally friendly production process, environmental protection technology, pollution prevention and control measures, sewage equipment and pollutant-discharge system. The other 10 companies did not give specific

¹⁷ <http://permit.mee.gov.cn/>

information on the construction and operation of their facilities, but only mentioned that the company has complied with relevant environmental protection laws and regulations, strictly implemented national and local standards, and that various environmental protection facilities have been functioning normally, meeting the “three simultaneous” system proposed by the MEE. The “three simultaneous” system means that if there are main projects such as newly built, rebuilt and expanded capital construction projects, technological transformation projects, natural development projects or other engineering construction projects that may cause pollution and damage to the environment, then facilities for preventing and controlling pollution and other public hazards and other environmental protection facilities must be designed, constructed and put into use simultaneously with the main project. The “three simultaneous” system is a pioneering work in China's environmental protection work. It is an important environmental protection legal system recognized by Chinese law on the basis of summarizing the practical experience of China's environmental management. The purpose of this system is to prevent new environmental problems, resolve the contradiction between man and nature and achieve sustainable economic and social development.

(3) Environmental impact assessment of construction projects and other environmental protection administrative licenses

In China, the environmental protection authorities implement categorical management of the environmental impact assessment of construction projects according to their degree of impact on the environment. Enterprises and institutions that starts new construction project shall organize the preparation of the environmental impact documents in accordance with the following provisions: 1) if the construction project may cause significant environmental impact, the relevant unit shall conduct a comprehensive evaluation of the resulting environmental impact and prepare an environmental impact report; 2) if the construction project may cause mild environmental impact, the relevant unit shall conduct a special evaluation of the resulting environmental impact and prepare an environmental impact form; 3) if the impact on the environment is very small and environmental impact assessment is not necessary, the relevant unit shall only fill out an environmental impact registration form. The classified management directory of environmental impact assessment of construction projects is formulated and published by the environmental protection administrative department of the State Council.

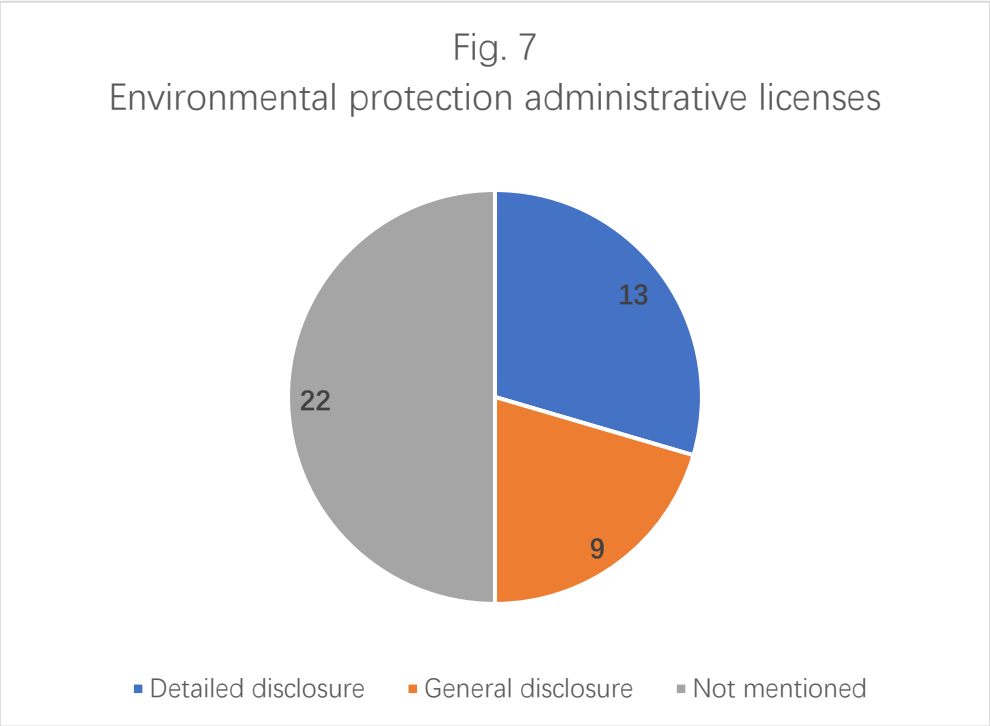
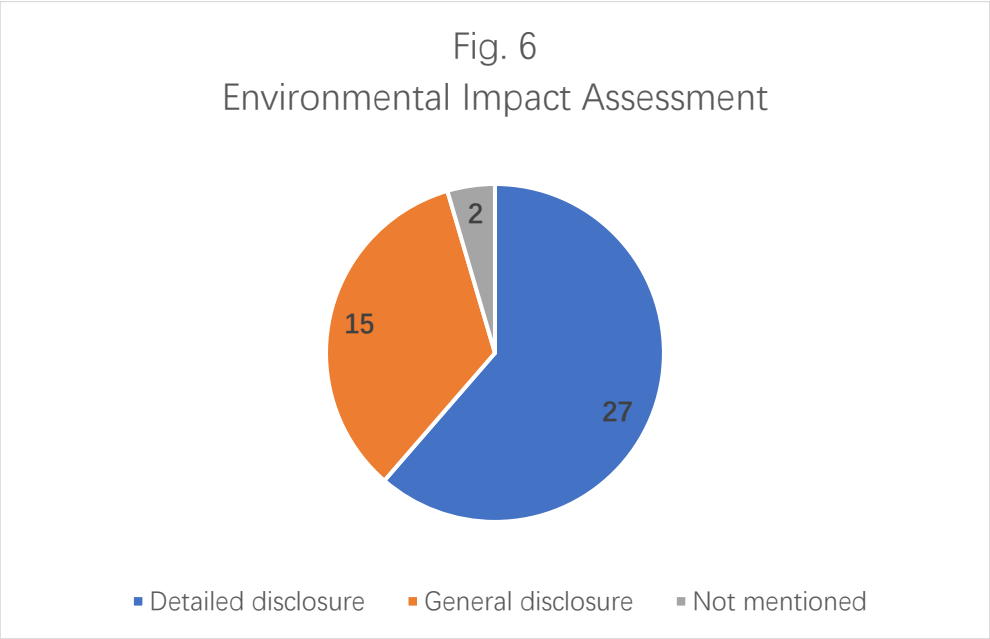


Figure 6 and 7 shows information disclosure on environmental impact assessment and environmental protection administrative licenses of the sample companies. For the environmental impact assessment of construction projects, the detailed information that may be involved includes the name of the project, the review department, the approval time, the approval number, and environmental protection acceptance of the completed project. Most of the companies did not disclose all the information in the annual report. Among them, 27 companies disclosed part of the detailed information, 15 companies only

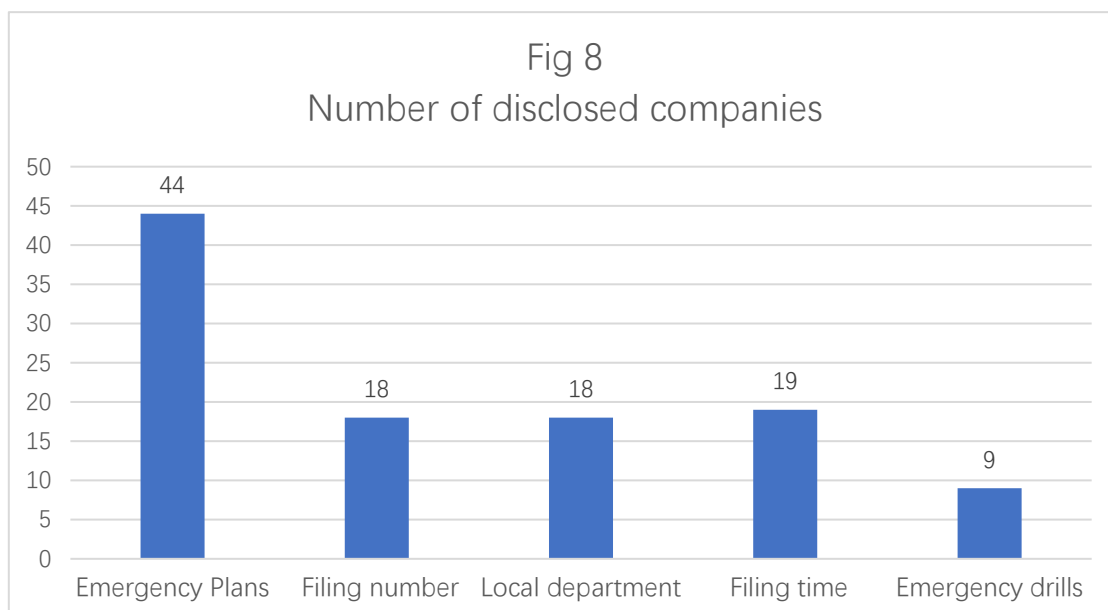
explained in one sentence that they had implemented the construction project environmental impact assessment system and obtained environmental assessment approval, but did not introduce the specific situation. Another 2 companies did not mention anything on environmental impact assessment. It is worth noting that even though some companies have disclosed relevant information on the environmental impact assessment of construction projects, the time frames they used are very inconsistent. 21 companies used data in the past ten years, and 5 companies used data in 2021, and one company did not specify time of the data. For environmental protection administrative licenses, the information that may be involved includes the type of license, the time of acquisition, the certificate number and the issuing unit. Only 13 companies mentioned the name and type of environmental protection administrative license they obtained, mainly pollutant-discharge permit, but also radiation safety permits and hazardous waste operation licenses. Nine companies only stated that the company had applied for environmental protection administrative license in accordance with the law, but didn't mention the type or any other details, The other half of the companies did not mention relevant entries. In general, when the company discloses the environmental impact assessment of construction projects and other environmental protection administrative licenses, there is a lack of standardization and uniformity in terms of form, and a lack of details in terms of content.

(4) Environmental emergency plans

Environmental emergency plan refers to the work plan formulated in advance by enterprises in order to take emergency measures in response to various accidents and natural disasters to avoid or reduce pollutants or other toxic and harmful substances from entering the atmosphere, water, soil and other environmental media outside the factory boundary. In 2021, the MEE dispatched and guided the disposal of 147 environmental emergencies of various types, supervised and disposed 27 major and sensitive environmental emergencies. In order to prevent and control the environmental risks of environmental emergencies, the MEE has continuously promoted the construction of emergency management institutions, promulgated and revised environmental emergency laws, regulations, systems and standards. In almost ten years, China has initially established a risk prevention and control and emergency management system for environmental emergencies. Enterprises and institutions are the main subjects of environmental emergencies and the main objects of risk prevention and control of

environmental emergencies. The state has successively promulgated the “Measures for the Registration of Environmental Emergencies Plans in Enterprises and Institutions (for Trial Implementation)” and “Guidelines for the Investigation and Management of Environmental Emergencies in Enterprises (for Trial Implementation)” (2016), “Enterprise Environmental Emergencies Risk Classification Method” (2018), “Guidelines for the Review of Environmental Emergency Plans of Enterprises and Institutions (for Trial Implementation)” (2018), etc. According to relevant laws and regulations, enterprises should formulate corresponding environmental emergency plan and various special emergency plans, on-site disposal plans based on the production process, product links and environmental risks, report to the local environmental protection department for record and regularly organize different types of environmental emergency drills to improve the skills of preventing and handling environmental emergencies.

The local environmental protection departments usually do not disclose the environmental emergency plans of enterprises to the public. According to Article 34 of the “Measures for the Management of Environmental Emergencies” (2015) issued by the MEP, enterprises and institutions shall disclose the content of the environmental emergency plan by themselves (sensitive information can be deleted), and the disclosure platform can be the company's website. The 44 sample companies all stated in their annual reports that they had prepared “environmental emergency plans” in accordance with government requirements, but did not disclose the content of the plans. Other information that might be involved includes the filing number of the emergency plan, the charging local environmental protection department, filing time, and emergency drills for environmental emergencies. 2 companies disclosed all types of the information mentioned above; 13 companies disclosed most of the information; 17 companies did not disclose any other details except that they had prepared the “environmental emergency plan”. Figure 8 shows the number of companies that disclosed relevant information in the annual report.



(5) Environmental self-monitoring plan

In order to establish and improve the pollution source monitoring and information disclosure system, the MEP organized the compilation of the “Measures for Self-monitoring and Information Disclosure of National Key Monitoring Enterprises (for Trial Implementation)” (2013), in which the Article 18 stipulates: enterprises should disclose the status of self-monitoring work and monitoring results to the public, and the content should include: 1) basic information: company name, legal representative, industry, geographical location, production cycle, contact information, name of entrusted monitoring agency, etc. 2) self-monitoring plan; 3) self-monitoring results: all monitoring points, monitoring time, types and concentrations of pollutants, standard limits, status of compliance, multiples of exceeding standards, pollutant-discharge methods and discharge destinations; 4) reasons for not carrying out self-monitoring; 5) annual report on pollution source monitoring. According to Article 19, enterprises may disclose self-monitoring information through external websites, newspapers, radio, television and other ways that are easy for the public to know. At the same time, the self-monitoring information should be published on the platform organized and established by the provincial or prefecture-level environmental protection authorities, and should be kept for at least one year. In addition to the “Measures for Self-monitoring and Information Disclosure of National Key Monitoring Enterprises (for Trial Implementation)” mentioned above, the State Council has formulated the “Regulations on the Management of Pollutant Discharge Permits” in accordance with the “Environmental Protection Law of the People's Republic of China” and other relevant laws, which will come into force on March 1, 2021.

Enterprises in need of a pollutant-discharge license should apply to the competent ecology and environment department of the local government at or above the municipal level where their production and business operations are located, and explain the company's self-monitoring plan when applying. Since 2017, the MEE has successively issued the “Technical Guidelines for Self-monitoring of Pollutant Discharging Units” for enterprises in various industries. Enterprises can choose their own monitoring plan, or entrust a qualified third-party organization to conduct monitoring.

At present, the platforms for the disclosure of corporate environmental self-monitoring plans and monitoring data mainly include the “National Pollutant Discharge Permit Management Information Platform”, the “National Pollution Source Monitoring Information Management and Sharing Platform”¹⁸ and the “National Key Monitoring Enterprise Self-Monitoring Information Release Platform”¹⁹. In the annual reports, all 44 sample companies declared that they had compiled environmental self-monitoring plans in accordance with relevant regulations and guidance, yet none of them disclosed the specific content of the plan, 10 companies disclosed some detailed information including monitoring objects and monitoring frequency. It is worth noting that many companies entrust third-party monitoring companies to carry out environmental monitoring work, which is part of the company's environmental self-monitoring plan.

(6) Administrative penalties due to environmental problems during the reporting period
Among the 44 sample companies, 19 companies disclosed the administrative penalties received during the reporting period, the other companies declared that they haven't received administrative penalty. The “Standards Concerning the Contents and Formats of Information Disclosure by Companies Offering Securities to the Public No.2 — Contents and Formats of Annual Reports” clearly states that the disclosure requirements for administrative penalties is applicable to all companies and subsidiaries, including non-key pollutant discharging companies. If a company doesn't disclose administrative penalties, the reason should be fully explained. In addition, the regulation cancels the keyword “significant”, which means that regardless of the size of the environmental penalty, it should be disclosed in the annual report. Fines exceeding 100,000 yuan are generally considered “significant”. Judging from the actual inspection of the samples, 43%

¹⁸ <https://wryjc.cnemc.cn/>

¹⁹ Every province has its own platform.

of the companies have disclosed the environmental penalties received. However, a typical problem is that most of the companies do not disclose the penalty document number corresponding to the penalty, but simply describe what kind of penalty they have received and the reason. As a result, the public and investors cannot get more specific information about the penalty and the follow-up through this “ID number” of the penalty, such as whether the penalty disclosed by the enterprise is comprehensive, accurate and complete, whether the companies have carried out credit restoration, and so on. In addition to not disclosing the penalty document number, according to the information notified by the MEE, some listed companies did not disclose on their corporate websites, social responsibility reports or other environmental reports after receiving environmental penalties. The research report on the disclosure of administrative penalties of Qingyue data²⁰ also confirmed that some listed companies tend to disclose only subsidiaries that are key pollutant-dischargers, and omit subsidiaries that are non-key pollutant-dischargers or that do not account for a relatively large proportion of the company's business.

Table 7 Administrative penalties disclosure

Stock Code	Reason of penalty	Authority of penalty	penalty document number	Amount of fine	Regulation basis	Rectification
000256	1	1	1	1		1
000688	1			1		1
601969				1		1
601101		1				
600971	1	1		1		
002155	1	1	1	1	1	1
600348	1			1		
600985	1	1	1	1		1
000937	1			1	1	1
601001	1	1	1	1		1
600123	1	1	1	1		1
601699	1		1	1		
000983	1			1	1	1
600188		1		1		
601088	1	1	1	1		
600489	1		1	1		
601898				1		
601899				1		1
Total	14	10	8	18	3	11

²⁰ <https://data.epmap.org/>

Table 7 shows the disclosure details of administrative penalties of 19 sample companies, where “1” means disclosed. Among them, only 8 companies disclosed the penalty document number, accounting for 42%.

3.3.2 Non-mandatory information

Non-mandatory information includes “other environmental information that should be disclosed”, “information on ecology protection, pollution prevention, environmental responsibilities fulfillment”, “measures to reduce carbon emissions”, “social responsibilities” and “efforts in consolidating and expanding the achievements of poverty alleviation and rural revitalization” during the reporting period. Table 8 shows the non-mandatory information disclosure of 44 sample companies.

Table 8 Non-mandatory information disclosure

Stock Code	Other information	Ecology protection	Carbon emissions	Social responsibilities	Poverty alleviation
603727	1	1	1	1	1
600497	1	1	R	1	1
600988	1	1	1	1	
001203	1			1	
002128	1			1	1
600259				R	1
600256	1	1	1	R	1
002683				1	1
000688				1	1
601969		1	1	R	1
600968		1	1	R	1
600583		1	1	R	1
601101		R	R	R	1
600971	1	1	1		
002155			1	1	1
600348		1	1	R	R
600985	1	1	1	R	1
002554				1	
000937				R	1
000655			1	R	
601958		1	1	R	1
601001		1	1		1
000552				1	1
600123				R	1
601699		1	1	1	
603993	1	1	1	1	1
600395		1	1	1	
600547		1	1	1	1
000983	1		1	R	R

600508		1	1	R	1
000603			1	1	
600711		1	1	R	1
601069		1	1	1	1
601168		1	1	1	1
000762				R	1
601918	1		1	R	1
600188		1	1	R	1
000975				1	1
600121				1	1
601088	1	1	1	R	1
600489	1		1	R	1
601898		1	1	R	1
000758	1		1	R	
601899		1	1	1	1
Total	14	23	29	19	32
Percentage	32%	52%	66%	43%	72%

Note: “1” means disclosed, “R” means not disclosed in annual report, but lead to independent report such as ESG report and social responsibility report.

The “Standards Concerning the Contents and Formats of Information Disclosure by Companies Offering Securities to the Public No.2 — Contents and Formats of Annual Reports” does not specify the five types of non-mandatory information. Judging from the annual reports of the sample companies, the information disclosed by each company is casual and without unified standard. Most of the contents are about efforts made by companies around the above topics and they are basically qualitative descriptions, while quantitative descriptions are very lacking and are not key information. For example, some companies declare that they adhere to the concept of environmental protection, actively abide by environmental laws and regulations, actively improve production processes, upgrade facilities, plant trees and reduce energy consumption. However, important quantitative information such as their carbon emissions and carbon emission facilities are not covered in the annual report. In addition, a significant number of companies choose to disclose their social responsibilities through independent report.

Carbon information disclosure is a key focus of environmental information disclosure, and it is also a critical step for China to achieve the “dual carbon goals”. At the end of 2021, the CPC Central Committee and the State Council issued the “Opinions on the Accurate and Comprehensive Implementation of the Green Development Concept to fulfill the mission of Carbon Peaking and Carbon Neutrality”. The State Council also

issued the “Action Plan for Peaking Carbon Emissions before 2030”, making overall arrangements for promoting carbon peaking and carbon neutrality. The “2022 Government Work Report” also proposed that it is necessary to promote “dual carbon” in an orderly manner, implement the recent carbon peak goal, and pave the way for carbon neutrality. The realization of the “dual carbon goal” is inseparable from corporate carbon information disclosure, the data disclosed by enterprises on carbon information will be used as an important reference standard for verifying and allocating carbon market share, and the specific allocation of carbon emission allowances is the key to achieving the “dual carbon goals”.

Looking at China's current legislation, there is no special law that focuses on corporate carbon information disclosure, but there are two laws that has relation to corporate carbon information disclosure: the first is the “Cleaner Production Promotion Law” promulgated in 2002, which is the earliest legal document in China that requires enterprises to disclose environmental information. The law has been amended several times to continuously expand the scope and content of environmental information disclosure. The other is the “Law of the People's Republic of China on the Prevention and Control of Atmospheric Pollution”, introduced in 2018, which was the first law to address greenhouse gas emissions. In addition to laws, there are also regulations. In 2014, the National Development and Reform Commission issued the “Temporary Regulations on the Administration of Carbon Emissions Trading” which is the earliest central regulation dedicated to carbon information disclosure, but it’s still in the draft stage. The content that has been published show that the document will make unified provisions on the scope of the carbon emission trading market, the determination of emission enterprises, the specific allocation of quotas, the supervision of carbon emission data quality, the clearance of quotas and the operation of trading. In addition to the laws and regulation of the central government, there are also departmental regulations and the normative legal documents issued by various ministries and commissions, either individually or jointly. Among them, the MEE successively promulgated the “Administrative Rules for Carbon Emission Allowance Registration (for Trial Implementation)”, the “Measures for the Administration of Legal Disclosure of Enterprise Environmental Information”, the “Administrative Rules for the Management of Carbon Emission Trading (for Trial Implementation)” and the “Administrative Rules for Carbon Emission Allowance Settlement (for Trial Implementation)” in 2021. The “Measures for the Administration of

Legal Disclosure of Enterprise Environmental Information” also stipulates the main content of carbon information disclosed by enterprises. In addition to the above-mentioned normative legal documents issued at the national level, local governments have also coordinated regional environmental needs and constantly explored to introduce local regulations that meet local realities as legislative power is more delegated to local governments. For example, the “Guangdong Province Carbon Emission Management Trial Measures”, “Shandong Province Electric Power Industry Sulfur Dioxide Emission Rights Trading Temporary Management Measures” and so on.

At this stage, the requirements of laws and regulations for corporate carbon information disclosure can be divided into two types: First, carbon information disclosure of key carbon emitting enterprises. According to the “Guidelines for Accounting Methods and Reporting of Corporate Greenhouse Gas Emissions (Revised in 2022)” issued by the state, enterprises with greenhouse gas emissions of 26,000 tons of carbon dioxide equivalent are required to publish annual greenhouse gas emission reports and fully disclose information on carbon emissions, emission facilities, etc. Second, carbon information disclosure of listed companies. Some listed enterprises disclose their environmental impact or environmental behavior information to the public in the form of annual reports or environmental reports. The disclosure methods and disclosure contents of listed enterprises are more diversified due to their specialty. Under the current institutional system, the carbon information disclosed by listed companies is mainly information on carbon emissions and emission facilities.

3.4 Corporate Environmental Information Disclosure Report in accordance with the Law

According to the “Measures for the Administration of Legal Disclosure of Enterprise Environmental Information” issued by the MEE, key pollutant-discharge units need to prepare annual “Corporate Environmental Information Disclosure Report in accordance with the Law” and upload them to the government website from 2023. Local provincial governments have established reporting disclosure platforms and organized reporting training for local enterprises by 2022 to April 2023. Until now, most of the local governments haven’t attached this newly established platform to the official website of department of environmental protection. Enterprises need to get access to the disclosure

platform through domain name address and register with corporate social credit code, which is the ID number of enterprises. Most of the data collected by the local governments are not available for now, but judging from the already published data, the format of the enterprise's report basically complies with the requirements of the “Format Guidelines for Legal Disclosure of Enterprise Environmental Information” issued along with the “Measures for the Administration of Legal Disclosure of Enterprise Environmental Information”. The “Format Guidelines” provides a more detailed explanation of the disclosure standard of the “Corporate Environmental Information Disclosure Report in accordance with the Law”. First of all, the cover of the annual report should specify the name of the enterprise, the social credit code, the reporting year and the date of preparation. The title page of the annual report shall bear the following commitment: the person in charge of the enterprise guarantees that the contents of the annual report are true, accurate and complete, and that there are no false records, misleading statements or major omissions, and shall bear corresponding legal responsibilities. The person in charge of the environmental protection work guarantees the authenticity, accuracy and completeness of the information and data in the annual report. Secondly, the enterprise shall give a summary description of the following information: 1) the annual change of the ecological and environmental administrative licenses, including the new acquisition, modification, renewal, revocation, and pending application of the licenses, etc.; 2) the annual discharge of major pollutants and carbon emissions, including the actual discharge of various pollutants, the generation, utilization and disposal of industrial solid waste and hazardous waste, emissions of toxic and harmful substances, carbon emissions, etc.; 3) environmental administrative penalties and judicial decisions received in the year. Enterprises should also provide explanations of technical and professional terms. After the cover and title page of the report, there are detailed disclosure standard of each type of information.

(1) Basic information of the enterprise

The “Format Guidelines” stipulates: “key pollutant-discharge enterprises should disclose the following basic information: 1) name of the enterprise, legal representative, registered address, production address, industry category, enterprise contact person and contact information, etc.; 2) the nature of the enterprise, whether it's state-owned enterprise, private enterprise, foreign-funded enterprise, collective enterprise, listed company, bond-issuing enterprise, etc., as well as whether it's key pollutant discharging units and

enterprises carrying out mandatory cleaner production audits; 3) name of major products and services and production processes, as well as whether the production processes belong to the directories of encouraged, restricted, or eliminated categories published by the state or localities.”

(2) Enterprise environmental management information

“Enterprises shall disclose relevant information on all ecological and environmental administrative licenses (including but not limited to pollutant-discharge permit, environmental impact assessment of construction projects, hazardous waste operation license, qualification permit for the disposal of waste electrical and electronic products, etc.) that are valid or in applying process or in updating process: 1) the name and number of the license, the approval documents for obtaining the license, the issuing department, the time of obtaining it, and the period of validity; 2) major permissions.” As mentioned before, the public can inquire about the information of the “pollutant-discharge permit” on the website “National Pollutant Discharge Permit Information Management Platform” and get detailed quarterly information on the pollutants, standards, facilities production processes of the enterprises. As for the environmental impact assessment of construction projects, the public might get a brief summary of the name of the construction projects and whether they have been approved by the competent local government through the annual report, but nothing more in detail. The current regulation on the disclosure of environmental impact assessment reports is mainly the “Guidelines for Government Information Disclosure of Environmental Impact Assessment of Construction Projects (for Trial Implementation)” (2013), which came into effect on January 1, 2014. It stipulates that “before the enterprise submits the environmental impact report and environmental impact form of the construction project to the competent department of environmental protection, it shall actively disclose the full version of the environmental impact report and form according to law and delete content like state secrets, commercial secrets, etc., and explain the reasons for the deletion. At the same time, when accepting the environmental impact report and form of the construction project, the environmental protection department shall verify the report and disclose the full version of the environmental impact report and table.” The “Guidelines” also stipulates the methods of disclosure: environmental protection departments at all levels shall disclose the information on environmental impact assessment through the website of the department; they may also adopt other methods, such as centralized disclosure through administrative

service halls or service windows; disclosure through television, radio, newspapers and other media.” At present, some provincial and municipal environmental protection departments have begun to publish the full version of the environmental impact assessment report on the government website, generally in the announcement and publicity section. Another more recent regulation on public participation in construction projects is the “Measures for Public Participation in Environmental Impact Assessment” (2018), which came into effect on January 1, 2019. After the environmental impact report consultation draft is formed, the construction enterprise shall disclose the network link of the full text of the environmental impact report consultation draft and the method of consulting the paper report. Before construction enterprise submit the environmental impact report to the competent environment protection department for approval, the full text of the report shall be made public through website. After accepting the environmental impact report, the competent environment protection department shall disclose the full text of environmental impact report and public participation instructions to the public through its website or other methods. Construction enterprises have a wide selection of websites to disclose the report draft and approval draft. At present, the most popular websites are local government websites, construction enterprise websites, environmental assessment enthusiast websites and other public websites. Ecological and environmental authorities generally publish the full report on their websites.

As for the hazardous waste operation license, the MEE formulated the “Measures for the Administration of a Permit for Operation of Dangerous Waste” (Revised in 2016) according to the “Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Waste”, which aims to strengthen the supervision and management of hazardous waste collection, storage and disposal operations, and to prevent the hazardous waste to pollute the environment. According to this provision, the competent environmental protection departments at or above the county level shall strengthen the supervision and inspection of hazardous waste management units through written verification and on-site inspection, and record the situation and treatment results, signed by the supervision and inspection personnel. The public has the right to consult the supervision and inspection records of the competent environmental protection departments at or above the county level. Besides, the competent environmental protection departments at or above the county level shall establish and improve the file management system for hazardous waste operation licenses, and regularly announce to

the public the status of the approval and issuance of hazardous waste operation licenses. In practice, the public can find information such as the list of companies that will receive hazardous waste operation license, the permitted operation content and validity period on the websites of provincial environmental protection departments. The MEE also formulated the “Measures for the Administration of Qualification Permit for the Disposal of Waste Electrical and Electronic Products” in 2010, which came into effect on January 1, 2011. According to this provision, the competent environmental protection departments of at or above the county level shall strengthen the supervision and inspection of the disposal activities of waste electrical and electronic products through written verification and on-site inspection, and record the situation and processing results. The public may apply to the competent environmental protection department at or above the county level in accordance with the law to disclose the results of the supervision and inspection. Enterprises disposing of waste electrical and electronic products shall establish a data information management system, regularly submit the basic data and relevant information on the disposal of waste electrical and electronic products to the issuing authority, and disclose them to the public.

“Enterprises shall disclose information on environmental protection tax payment, including the amount of environmental protection tax to be paid, the total amount actually paid and possible tax reductions or exemptions.” Before 2018, the Chinese government only imposed pollution discharge fees. On January 1, 2018, the “Environmental Protection Tax Law of the People's Republic of China” came into force, marking the first tax aimed at environmental protection in China. The tax law stipulates that a total of 117 major pollution factors will be taxed nationwide on four major categories of pollutants, including air pollutants, water pollutants, solid waste and noise. Until now, no mainstream platform such as the government website and the enterprise website has disclosed relevant information on environmental protection tax, which means that the “Corporate Environmental Information Disclosure Report in accordance with the Law” is the first report that carries the information disclosure on environmental protection tax, including taxable factors, taxable factor codes, total emission (t/a), approved tax payment amount, actual payment amount, possible tax reductions or tax exemption, tax relief and types of taxable pollutant.

“Enterprises shall disclose information on the environmental pollution liability insurance

they insured in accordance with law, including insurance company, insurance period, policyholder, contracting scope, insurance compensation amount and other information.” It’s the first time that relevant information is disclosed to the public. On May 7, 2018, the MEE reviewed and approved the “Measures for the Administration of Environmental Pollution Compulsory Liability Insurance (Draft)”, which clarified the scope of enterprises that require compulsory insurance: enterprises dealing with heavy metals, enterprises on the government list to purchase insurance according to local regulations, other high environmental risk enterprises. The state encourages high-environmental-risk enterprises such as petrochemical industry enterprises, hazardous chemical management enterprises to purchase environmental pollution liability insurance, but in practice it’s still a non-mandatory commercial insurance. However, starting in 2018, the Shenzhen province promoted the pilot program of compulsory liability insurance for environmental pollution by issuing the “Environmental Pollution Compulsory Liability Insurance Pilot Enterprise Directory of Shenzhen”. Enterprises engaged in high environmental risk business, enterprises that discharge heavy metal pollutants in production activities and other four types of enterprises are put in the directory, which covers 1066 companies in 10 industries. According to the requirements, these enterprises must purchase compulsory liability insurance for environmental pollution before the end of September of the year.

“Enterprises shall disclose their current environmental credit ratings and possible changes in the annual environmental credit rating.” The environmental credit rating is determined by the environmental protection department after a comprehensive evaluation of the company's environmental behavior based on the company's compliance with various environmental protection laws and regulations. The grades are divided into five levels: green (excellent environmental behavior), blue (good environmental behavior), orange (basically meet the requirements), red (environmental violations), and black (serious violations). The grade represents the degree of friendliness of the enterprise to the environment, and it is the basis for the management of the enterprise by the government and other systems such as banking, securities, industry and commerce, taxation, land and resources, it’s an important part of the enterprise social credit system. In December 2013, the MEP, together with the National Development and Reform Commission, the People's Bank of China and the China Banking Regulatory Commission, jointly issued the “Corporate environmental credit evaluation (for Trial Implementation)”. According to the document, the environmental protection departments shall publicly release the evaluation

results through government websites, newspapers and other media, or press conferences within 5 working days after the results of the enterprise's environmental credit assessment are determined. Where general and serious environmental emergencies occur in enterprises and the environmental protection departments lower their credit rating, the departments need to announce it to the public. The results of enterprise environmental credit assessment are to be shared with other environmental protection departments, the People's Bank of China, banking regulators and other relevant departments. If possible, the results of the enterprise's environmental credit assessment shall also be disclosed in the region's public social credit information platform. In practice, provincial environmental protection departments have promulgated their own measures on corporate environmental credit evaluation, the content and evaluation standards are different in details but similar in general, the public can find information on the environmental credit rating of enterprises on the website of the environmental protection departments.

(3) Pollutant generation, treatment and discharge information

“Enterprises should disclose the following information: 1) Information on all pollution prevention and control facilities installed and operated, including the name of the facilities, the corresponding pollution chain, the pollutants, and serial numbers of the sewage outlets; the name of annual malfunctioning facilities, the frequency, date, duration and main reasons of the abnormal operation, pollutants discharged; if the pollution prevention and control facilities are operated and maintained by a third party, the information of the party shall be provided. 2) Information on the discharge of major water pollutants and air pollutants, including the number of discharge outlets for water pollutants and air pollutants; the actual total discharge of various pollutants from the main discharge outlets, the annual average of the daily average concentration of water pollutants, and the annual average of the hourly concentration of air pollutants, the installation of online automatic monitoring equipment for pollution sources at each sewage outlet and the networking with the ecological and environmental departments; the name of monitoring points for fugitive emissions, the actual total discharge and discharge concentration of major water pollutants and air pollutants at each monitoring point; annual production days, self-monitoring days, number of times the standard has been met and violated; if a third-party monitoring agency is entrusted to conduct self-monitoring work, relevant information such as the name and qualification of the third-party agency shall be provided. 3) Information on the generation, storage, flow, utilization and disposal of industrial solid

waste, including the name, type, composition, grade (Class I or Class II general industrial solid waste), amount of production, amount of storage, method and volume of utilization and disposal, the type (Class I or II), area, cumulative storage volume, latitude and longitude and latitude coordinates of general industrial solid waste storage and disposal sites or facilities; if a third-party is entrusted with the use and disposal of industrial solid waste, relevant information such as the name, qualifications and technical capabilities of the entrusted party, as well as the transportation, utilization and disposal of general industrial solid waste, shall be provided. 4) Information on the generation, utilization and disposal of hazardous waste, including the name, waste code, main harmful components, hazardous characteristics, information on the storage and disposal sites or facilities; if a third party is entrusted, relevant information such as the name, qualification and hazardous waste transfer form shall be provided. 5) Information on toxic and harmful substances such as the name, form (liquid, gas, solid), toxicity, discharge concentration, total discharge of the substances discharged in accordance with the “List of Toxic and Harmful Air Pollutants”, “List of Toxic and Harmful Water Pollutants”, and the “List of Priority Controlled Chemicals”. 6) Information on noise such as the names and locations of noise emission monitoring points, implementation standards, emission limits, and actual emission values. 7) Information on the main measures taken by the enterprises to prevent and control dust pollution from construction dust and (un)loading materials. 8) Enterprises under the pollutant-discharge license management shall disclose information on the pollutant-discharge permit implementation report.”

The annual report also requires companies to disclose information on pollutant-discharge as well as the construction and operation of pollution prevention and control facilities, but there are big differences between the two reports in practice. First of all, the CSRC has not given too many details on the disclosure of environmental information in annual reports, which led to great differences in the formats adopted by companies when disclosing information. Some companies choose to disclose in text, some choose tables, and some companies combine the two. While the disclosure platform required by the MEE for the annual enterprise environmental information legal disclosure report is the official website of the environmental protection departments, and the disclosure form is online compilation. In other words, the disclosure process and disclosure format of all enterprises are uniform, and the public can click on the directory of the report when viewing it, so as to obtain specific information under the directory. Secondly, in terms of

content, the details required by the annual enterprise environmental information legal disclosure report are very clear and relatively complete. Pollutants are divided into industrial solid waste, hazardous waste, toxic and harmful substances, noise and dust, and specific requirements are made for each category. While the annual report does not carry out classified management of pollutants. It only requires the disclosure of information on major pollutants, and does not specify the disclosure details. As a result, some companies omit a lot of details by default when disclosing information. There are also situations where enterprises have different understandings on how to disclose information on “emission method” (organized emission and unorganized emission) and “facilities location” (latitude and longitude coordinates), the enterprise environmental information legal disclosure reporting system has offered a training on normative information disclosure to the enterprises. Judging from the scope of information required by the two, the enterprise environmental information legal disclosure report require extra information on measures to prevent dust pollution, noise monitoring points, third-party agencies, online automatic monitoring equipment, and networking with ecological and environmental departments, etc. The information is included in the scope of information disclosure for the first time and is open to the public.

(4) Carbon emission information

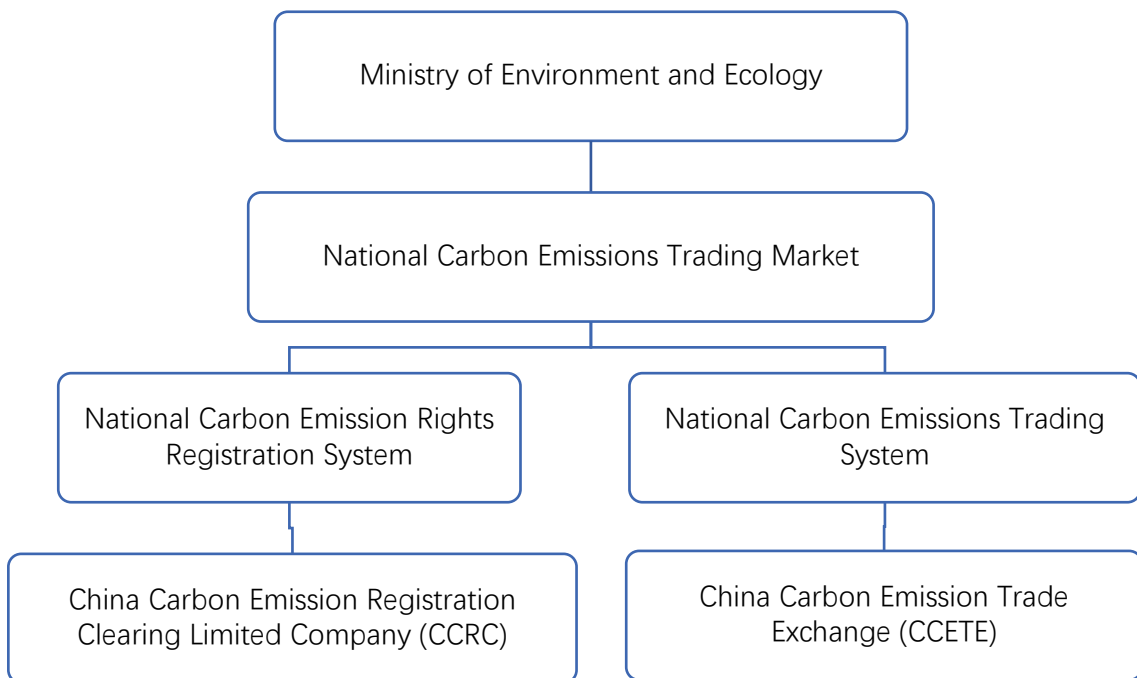
“Key greenhouse gas emitting units included in the quota management of the carbon emissions trading market shall disclose carbon emission related information: 1) the actual annual carbon emissions and the actual carbon emissions of the previous year; 2) quota payment status; 3) disclosure of information on emission facilities and accounting methods in accordance with greenhouse gas emission accounting and reporting standards or technical specifications.” On December 31, 2020, the MEE officially issued the “Carbon Emissions Trading Management Measures (for Trial Implementation)”— Another important top-level guiding policy document for the national carbon market— which replaced the “Temporary Measures for the Management of Carbon Emissions Trading” issued by the National Development and Reform Commission on December 10, 2014. The new document is more suitable for the current stage of Chinese development. According to the “Management Measures”, if a greenhouse gas emitting unit meets the following conditions, it should be included in the list of key greenhouse gas emitting units: 1) It belongs to the industry covered by the national carbon emission trading market; 2) The annual greenhouse gas emission reaches 26,000 tons carbon dioxide equivalent. The

competent local departments of ecology and environment shall, in accordance with the above provisions, determine the list of key emission units in the administrative region, report to the Ministry of Ecology and Environment, and disclose the list to the public. At present, the national carbon trading market only involves the power industry, and the first batch of key emission units included in the power generation industry totaled 2,225, accounting for about 40% of the country's total carbon emissions. In the future, starting from the power generation industry, the scope of industries covered by the national carbon trading market will gradually expand, and eventually cover seven major industries: petrochemicals, chemicals, building materials, steel, nonferrous metals, paper and domestic civil aviation. Since 2019, the MEE has successively issued the “2019-2020 National Carbon Emissions Trading Quotas Setting and Allocation Implementation Plan (Power Generation Industry)” and the “2021-2022 National Carbon Emissions Trading Quotas Setting and Allocation Implementation Plan (Power Generation Industry)” two guidance documents. Before 2021, there were seven local carbon trading markets in China, including Guangzhou Carbon Emissions Exchange, Shenzhen Emissions Exchange, Beijing Green Exchange, Shanghai Environment and Energy Exchange, Hubei Emissions Exchange, Tianjin Climate Exchange and Chongqing Carbon Emissions Exchange. These local exchanges provide carbon emission quota trading, covering multiple industries, such as electric power, steel, chemical, manufacturing, etc., and are open to investment institutions, natural persons, and foreign investors. On July 16, 2021, the China Carbon Emission Trade Exchange (CCETE) opened, the trading center was launched in Shanghai, and the seven carbon trading pilot markets will gradually withdraw. The key emission units included in the national carbon emission trading market will no longer participate in the local carbon emission trading pilot markets.

Chart 1 shows the national carbon emissions trading system established in China after the release of “Measures for the Administration of Carbon Emissions Trading (for Trial Implementation)”. The MEE organized the establishment of the national carbon emission rights registration system and the national carbon emission rights trading system, which are implemented by China Carbon Emission Registration Clearing Limited Company (CCRC) and CCETE respectively. Among them, CCRC is a state-owned enterprise established with the approval of the State Council, which is non-profit and has independent legal personality. Through the national carbon emission rights registration system, the CCRC records information such as the holding, change, payment, and

cancellation of carbon emission allowances, and provides settlement services. The information recorded in the national carbon emission rights registration system is the ultimate basis for judging the ownership of carbon emission quotas. The CCETE is responsible for organizing the centralized and unified trading of national carbon emission rights. The above two institutions shall regularly report to the MEE the registration, trading, settlement and other activities of the national carbon emission rights and the operation status of the institutions, as well as other major matters that should be reported, and ensure that the national carbon emission rights registration system and the national carbon emissions trading system are safe, stable and reliable.

Chart 1 National carbon emissions trading system

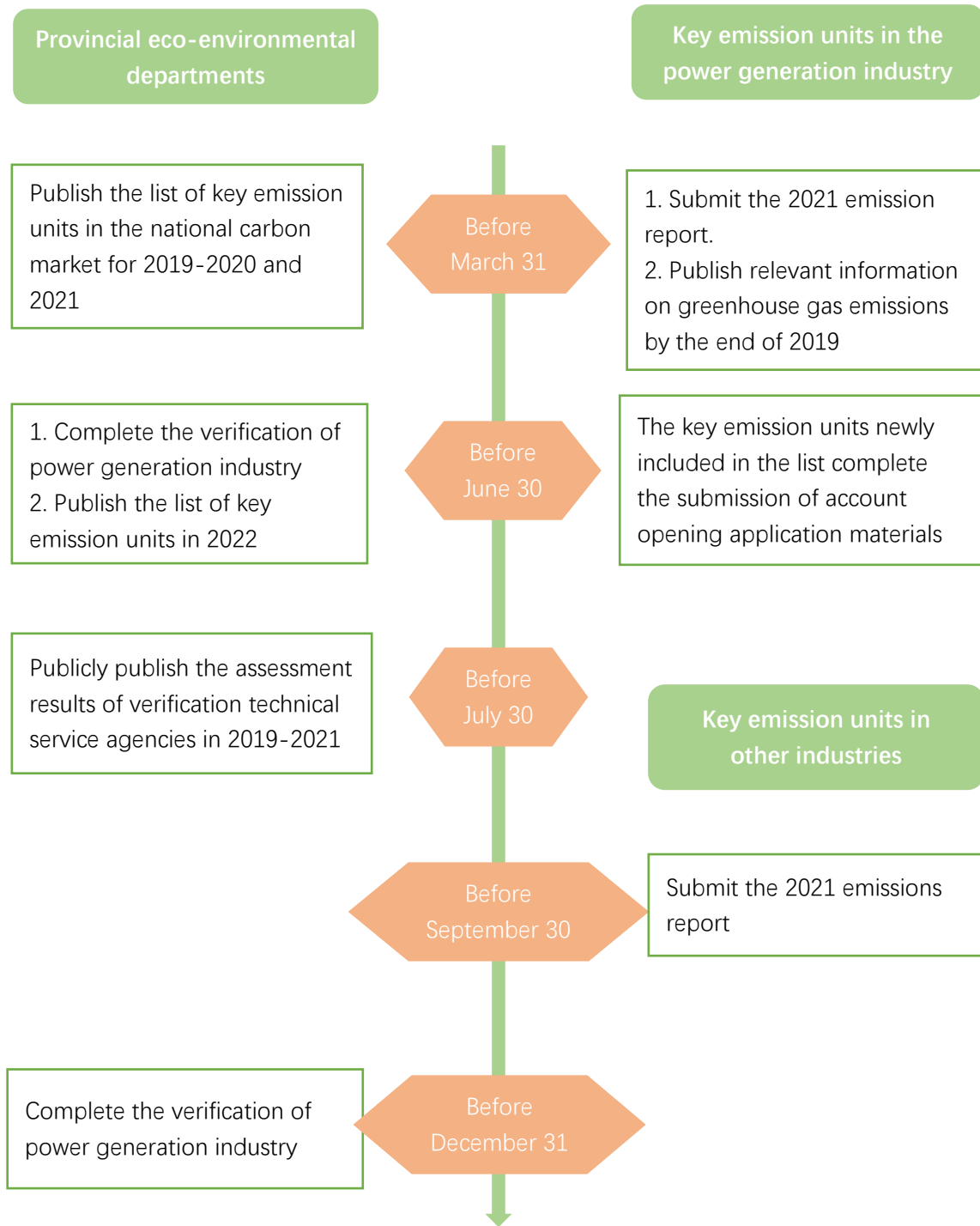


According to the “Measures for the Administration of Carbon Emissions Trading (for Trial Implementation)”, the key emission units shall prepare the “Greenhouse Gas Emission Report” for the previous year in accordance with the technical specifications for greenhouse gas emission accounting and reporting formulated by the MEE, specify the emissions, and submit it to the provincial-level ecological and environmental departments where the production and business site is located through the management platform before March 31 of each year, and be responsible for the authenticity, completeness and accuracy of the greenhouse gas emission report. The annual greenhouse gas emission reports shall be periodically disclosed and subject to public supervision, except where state secrets and commercial secrets are involved. The greenhouse gas

emission report is currently the latest and most formal report in the field of carbon disclosure in China. From 2022, greenhouse gas emissions reports should be prepared in accordance with the requirements of the “Guidelines for Accounting Methods and Reporting of Corporate Greenhouse Gas Emissions – Power Generation Facilities (Revised in 2022)”. The Guidelines are divided into 13 chapters, covering the scope of application, normative reference documents, terms and definitions, working procedures and content, accounting boundaries and emission source determination, fossil fuel combustion emission accounting requirements, emission accounting requirements for purchased use of electricity, emission calculation, production data accounting requirements, data quality control plans, data quality management requirements, periodic reporting requirements, information disclosure format requirements, And 5 appendices including common fossil fuel related parameter default values, data quality control plan requirements, report content and format requirements, information disclosure format of key greenhouse gas emitting enterprises, and calculation methods for auxiliary parameters of emission reporting. In terms of content, the “Guidelines” further improve the content of enterprise data quality control plans, supplementing the methods of data determination, including detailed requirements for key parameters, measurement equipment, responsible departments and data missing processing. It also refines the internal quality control and quality assurance content of enterprise data combined with the requirements of strengthening management, including detailed requirements for establishing systems, clarifying responsibilities, guiding monitoring and improving records. From the perspective of information disclosure, the Guidelines provide detailed specifications on the format and content of information that key emitting enterprises in the power generation industry need to disclose, but do not mention the disclosure management department and the disclosure platform.

On March 15, 2022, the MEE issued the “Notice on the Reporting and Management of Greenhouse Gas Emissions of Enterprises in 2022”, in which made requirements for the information disclosure obligation of the key emission units in the power generation industry, key emission units in other industries, and provincial ecological and environmental departments. Chart 2 demonstrates the disclosure process in 2022 of each party required by the “Notice”.

Chart 2 Timeline of carbon emission information disclosure in 2022



Among the parties, the key emission units in the power generation industry should calculate their annual emissions in 2021 in accordance with the requirements of the “Guidelines for Accounting and Reporting of Corporate Greenhouse Gas Emissions – Power Generation Facilities” before March 31, 2022, prepare the emission report, fill in relevant information and upload supporting materials to the environmental information

platform²¹. Key emission units in other industries should submit their 2021 emission reports before September 30. At the same time, the provincial eco-environmental departments shall disclose to the public the list of key emission units for quota management in the national carbon emissions trading market in 2022 on the official website of the department before June 30, 2022, then report the list to the Climate Change Division of the MEE, and make a copy to CCRC and CCETE. Key emission units newly included in the list should submit application materials for opening accounts for the national carbon emission rights registration system (CCRC) and trading system (CCETE) respectively before September 30, 2022.

On February 7, 2023, the MEE issued the “Notice on the Reporting and Management of Greenhouse Gas Emissions of Enterprises in the Power Generation Industry from 2023 to 2025”. The notice pointed out that each provincial eco-environmental department should determine the next year's list of annual key emission units for the power generation industry to be included in the national carbon emissions trading market before December 31 each year (the list for 2023 should be confirmed before March 10, 2023) and report the list to the MEE through the National Carbon Market Comprehensive Information Portal²²—the national carbon market management platform, and disclose it to the public through the platform. This platform publishes laws and regulations on carbon information, the latest national requirements on carbon information disclosure, the latest news on carbon emission at home and abroad, expert advice, etc. The “Notice” also pointed out that all provincial eco-environmental departments should organize and carry out work related to the management of greenhouse gas emissions reports by power generation companies in accordance with the relevant provisions of the “Measures for the Administration of Carbon Emissions Trading (for Trial Implementation)”²³. The relevant work arrangements for the reporting and management of greenhouse gas emissions of enterprises in petrochemical, chemical, building materials, steel, non-ferrous metals, papermaking, civil aviation and other industries will be notified separately. Key emitting units should submit the previous year's greenhouse gas emission report through the environmental information platform before March 31 each year.

²¹ <http://permit.mee.gov.cn>

²² www.cets.org.cn

²³ https://www.mee.gov.cn/gzk/gz/202112/t20211213_963865.shtml

In addition, the MEE and provincial ecological and environmental departments should regularly disclose information such as the annual carbon emission quota payment of key emission units according to the division of responsibilities. The public and news media are also encouraged to supervise the carbon emission trading and related activities of key emission units and other trading entities. Key emission units and other trading entities should, in accordance with the relevant regulations of the MEE, promptly disclose information on national carbon emission trading and related activities, and conscientiously accept public supervision. At present, in practice, the greenhouse gas information disclosure report of key emitting enterprises can be found on the environmental information platform, also known as the “National Pollution Discharge Permit Management Information Platform”, the information disclosed in the information sheet includes the classification of the enterprise industry, the determination of the low calorific value and elemental carbon content of each month, the testing equipment for self-monitoring, the frequency of testing, the frequency of equipment calibration, the formulation of method standards, the name of the entrusted institution entrusted for testing, the test report number, the test date, the spike method standard, etc. Among them, the greenhouse gas emission accounting methods of the power generation industry are based on the “Guidelines for Accounting Methods and Reporting of Corporate Greenhouse Gas Emissions - Power Generation Facilities (Revised in 2022)”, and the other industries are based on the first batch of enterprise greenhouse gas emission accounting methods and reporting guidelines for 10 industries issued by the National Development and Reform Commission in 2013. In addition to the reports disclosed by key emission units, the environmental information platform also discloses the information of technical service organizations, including their basic information, internal management, work results, and work quality, etc. These technical service organizations include technical assessment institutions that provide verification services, project development consulting institutions, project verification institutions and emission reduction certification institutions.

It can be seen that under the support of the “dual carbon” goal, the Chinese government has greatly accelerated the construction of the carbon emission trading market and the disclosure of carbon emission information. However, the latest accounting and disclosure rules have only been issued for the power generation industry, and it is expected to be extended to other industries in the future. However, for listed companies that are not key

emitting units, the regulations related to carbon information disclosure still only exist in annual reports and enterprise environmental information legal disclosure reports. Among them, the annual report has no mandatory disclosure requirements, while the enterprise environmental information legal disclosure report only has a binding effect on key pollutant-discharge units and listed companies that have received environmental penalties. In general, the required disclosure of information details in the two reports is relatively limited.

(5) Ecological and environmental emergency information

“Enterprises shall disclose information on the ecological and environmental emergency, including: 1) environmental emergency plan, filing authorities, and filing numbers; 2) Existing ecological and environmental emergency resources; 3) Environmental emergencies and the dealing process. Enterprises in the Beijing-Tianjin-Hebei region and surrounding areas, the Fenwei Plain and other regions that shall take emergency measures for heavily polluted weather need to disclose their emergency response to heavily polluted weather, including information such as response period, early warning level, performance grading results, requirements for early warning measures, and actual implementation of measures.” Judging from the disclosure requirements and the actual reports, the “Corporate Environmental Information Disclosure Report in accordance with the Law” should include information of four aspects: environmental emergency plan; environmental emergency resources; emergency response to heavy pollution weather; dealing process of environmental emergency.

In contrast, the “Corporate Environmental Information Disclosure Report in accordance with the Law” covers and specifies the disclosure requirements for the emergency plan of enterprises in the annual report. The annual report does not specify which type of information on environmental emergency plan the companies need to disclose, as a result, many enterprises only indicate that they have formulated emergency plans, but do not disclose details such as the filing number, filing authority, name and content of their emergency plans. The “Format Guidelines for Legal Disclosure of Enterprise Environmental Information” has made specific disclosure requirements for the first time. From the perspective of enterprises, it is the legal obligation of all enterprises to formulate environmental emergency plans. Article 47 of the “Environmental Protection Law” stipulates that enterprises and public institutions shall formulate contingency plans for

environmental emergencies in accordance with relevant state regulations, and report to the competent environmental protection department and other relevant departments for record. When environmental emergencies occur or may occur, enterprises and public institutions shall immediately take measures to deal with them, promptly notify the residents who may be harmed, and report to the competent environmental protection departments. Article 6 of the former MEP's "Measures for Environmental Emergency Management" (implemented on June 5, 2015) stipulates that enterprises and institutions shall fulfill the following obligations in accordance with the requirements of relevant laws, regulations and standards: conduct risk assessments of environmental emergencies; improve risk prevention and control measures for environmental emergencies; investigate and manage potential environmental safety hazards; formulate emergency response plans for environmental emergencies, record and drill; strengthen the construction of environmental emergency response capacity. When an environmental emergency occurs or may occur, enterprises and public institutions shall handle it in accordance with law and bear responsibility for the damage caused.

However, from the perspective of government supervision, the state has only made management requirements for the environmental emergency plans of part of the enterprises. Article 3 of the "Measures for the Administration of Filing Emergency Plans for Environmental Emergencies in Enterprises and Institutions (for Trial Implementation)" stipulates: "The following types of enterprises are applicable to the guidance and management of competent environmental protection departments regarding the registration of environmental emergency plan: pollutant discharging enterprises that may cause environmental emergencies, including enterprises operating centralized sewage and domestic waste treatment facilities; enterprises producing, storing, transporting and using hazardous chemicals; enterprises that generate, collect, store, transport, utilize and dispose of hazardous waste; tailings pond enterprises, including wet storage industrial waste slag warehouse, power plant ash storage enterprises; The "Measures" do not apply to the registration of nuclear and radiation environmental emergency plans. The provincial-level competent departments of environmental protection may, on the basis of actual conditions, publish a directory of enterprises that shall register their environmental emergency plans in accordance with law. This document excludes the government's supervision on enterprises that produce noise pollution, and enterprises that produce little pollutant or cause little harm. It also means that such companies may not prepare

environmental emergency plans.

The “Measures for the Administration of Filing Emergency Plans for Environmental Emergencies in Enterprises and Institutions (for Trial Implementation)” also clarifies other important details. First of all, enterprises are the responsible entity for formulating environmental emergency plans. Enterprises should carry out the formulation of environmental emergency plans according to their needs of dealing with environmental emergencies. Enterprises can prepare their own environmental emergency plans or entrust relevant professional and technical service institutions to prepare the plan. Secondly, enterprises should determine the enterprise environmental risk level in accordance with the “Classification Method for Environmental Accident Risk of Enterprise” issued by the MEE in 2018 (before March 1, 2018 it was the “Guidelines for Risk Assessment of Enterprise Environmental Emergencies (for Trial Implementation)”, then prepare an environmental risk assessment report and an emergency plan resource investigation report accordingly, and then prepare the environmental emergency plan. Finally, enterprises should conduct a retrospective assessment the environmental emergency plan at least once every three years based on the implementation of the environmental emergency plan. In any of the following circumstances, it shall be revised in a timely manner: the environmental risks faced by the face have undergone major changes and it is necessary to re-conduct the environmental risk assessment; major changes in the command system and responsibilities of the emergency management organization; major changes in environmental emergency monitoring, early warning and reporting mechanisms, response processes and measures, and emergency safeguard measures; major changes in important emergency response resources; problems are found in the actual response to emergencies and emergency drills, and major adjustments need to be made to the environmental emergency plan.

The “Corporate Environmental Information Disclosure Report in accordance with the Law” also requires enterprises to disclose information on environmental emergency resources. According to the “Guidelines for Investigation of Environmental Emergency Resources (for Trial Implementation)” issued by the MEE in 2019, environmental emergency resources are divided into seven categories according to the main operating methods or resource functions of environmental emergency, including: pollution source cutting, pollutant control, pollutant collection, pollutant degradation, safety protection,

emergency communication and command, as well as environmental monitoring. Ecological and environmental departments as well as enterprises and institutions need to investigate their environmental emergency resources, resources that can be used at the first time when an environmental emergency occurs or may occur, including those that can be used directly or can be used through coordination. They also need to investigate the management, maintenance, acquisition methods and storage time limit of environmental emergency resources. Among them, the investigation of enterprises and institutions mainly focus on the internal resources, including self-storage, agency storage, and agreement storage of environmental emergency resources. When necessary, products, raw materials, and auxiliary materials that can be used for environmental emergency can be included in the scope of investigation. Key environmental emergency resources should be investigated on-site. Investigators collect relevant information by filling in forms, questionnaires, and on-site investigations in accordance with the investigation plan, and fill in the investigation forms. Then they summarize the collected information, and check the completeness, authenticity, and validity of the data through logical analysis, personnel interviews, and on-site spot checks. Finally, the enterprise should prepare an investigation report based on the investigation results. The investigation report generally includes the investigation summary, investigation process and data verification, investigation results and conclusions, and is accompanied by necessary documents such as environmental emergency resource information list, distribution map, deployment process, and investigation plan. Among them, the list of environmental emergency resources should indicate the name, model, amount, scrap date, and main functions of the emergency resources. In the past, there were no regulations that require enterprises or the government to disclose information on environmental emergency resources. Enterprises only need to prepare reports, establish files in relevant departments and update data in a timely manner to prepare for spot checks by government departments. The “Corporate Environmental Information Disclosure Report in accordance with the Law” has required for the first time that enterprises need to disclose relevant information. In the legal disclosure reports that have been disclosed so far, some companies have disclosed information on environmental emergency resources, including the type, quantity and storage location of emergency resources, but some companies have not disclosed any relevant information.

Regarding environmental emergencies and emergency response, this kind of information is generally disclosed through temporary reports. According to the “Environmental

information disclosure guidance for listed companies” issued by the MEP in 2010, listed companies that have environmental emergencies should publish a temporary report within 1 day of the incident, disclosing the time and location of the environmental incident, the main pollutants and quantity, the impact of the incident on the environment, the personal injury, and the emergency response measures that have been taken. As for the response to heavily polluted weather, the Chinese government implements differentiated management. The obligations that companies need to undertake are related to the level of weather warning, the industry they belong to, and cleanliness of the production process. The warning levels are generally divided into yellow warning (predicted daily average value of Air Quality Index > 200 will last for 2 days and above, and does not meet the high-level warning conditions), orange warning (predicted daily average value of Air Quality Index > 200 will last for 3 days and above, and did not meet the high-level warning conditions) and red warning (the daily average AirQuality Index value > 200 is predicted to last for 4 days and above, and the daily average Air Quality Index value > 300 is predicted to last for 2 days and above, or predict that the Air Quality Index daily average will reach 500. Years ago, air pollution was severe in some areas of China. Therefore, the State Council publicly released the “Three-Year Action Plan for Winning the Blue Sky Defense War” in 2018. According to the action plan, starting from cities in key regions (Beijing-Tianjin-Hebei and surrounding areas, the Yangtze River Delta region, and the Fenwei Plain), all parts of the country are gradually implementing the revision of emergency plans for heavily polluted weather, and gradually improving emergency emission reduction measures and creating enterprise lists for emergency emission reduction. In 2019 and 2020, local governments successively introduced emergency plans for heavily polluted weather adapted to their responsible area, and launched management for enterprises emergency emission reduction. Enterprises in key areas implement “one factory, one policy”, that is, different enterprises adopt different methods to reduce pollution. In June 2020, the MEE issued the “Technical Guidelines for the Classification of Enterprises in Key Industries in Heavy Pollution Weather and the Formulation of Emission Reduction Measures”, which picked out 39 key industries, and divided enterprises in each industry into A, B, C and other levels based on their production processes as well as the type and quantity of pollutants. Enterprises of different classification are included in the corresponding emergency emission reduction list. The local governments implement differentiated control during periods of heavy pollution. Enterprises with advanced environmental performance levels can reduce or exempt

emission reduction measures, while enterprises with heavy pollution need to stop or limit production during heavy polluted weather. Previously, there were no laws and regulations requiring companies or the government to disclose information related to emergency response to heavily polluted weather, and it is the first time that enterprises in key area need to disclose relevant information in the “Corporate Environmental Information Disclosure Report in accordance with the Law”.

(6) Ecological and environmental violations

“1) Enterprises should disclose the information on the ecological and environmental administrative punishment received, including the time when the administrative punishment decision was issued, the punishment department, the document number of the administrative punishment decision, and the original text of the administrative punishment decision. 2) Enterprises should disclose the information on the ecological and environmental judicial judgments received, including information such as the time when the judgment was issued, the judgment authority, the document number of the judgment, and the original text of the judgment. Ecological and environmental judicial judgments include administrative litigation judgments arising from environmental administrative acts (including permits, penalties and compulsory measures) against enterprises; adjudication, mediation and negotiation of administrative litigation, civil public interest litigation and ecological environment damage compensation litigation caused by enterprises' environmental pollution and ecological damage; adjudication of tort civil lawsuits caused by environmental pollution and ecological damage by enterprises.”

Compared with the CSRC's requirements for the disclosure of environmental information in annual reports, the “Corporate Environmental Information Disclosure Report in accordance with the Law” not only specifies the requirements for information on ecological and environmental administrative punishments, but also requires information on ecological and environmental judicial judgments, which is a big improvement. However, the annual report's disclosure requirements for ecological and environmental administrative punishment information apply to all listed companies. While the “Corporate Environmental Information Disclosure Report in accordance with the Law” only aims at key pollutant-discharge enterprises, enterprises that implement mandatory cleaner production audits, and listed companies that have committed major ecological violations.

On April 13, 2023, the MEE passed the latest “Measures for Administrative Punishment of the Ecological Environment”, which will be implemented from July 1, 2023. Compared with the original version, the new “Measures” has more comprehensive punishment types, more standardized investigation and evidence collection, more perfect punishment procedures, and strengthened information disclosure. According to the document, the administrative punishment decision document shall indicate the following information: 1) The basic circumstances of the parties, including the parties' names or titles, resident identification numbers or unified social credit codes, addresses or residences, and the names of the legally-designated representatives (responsible persons); 2) Facts and evidence of violations of laws, regulations, or rules; 3) The circumstances and reasons for the adoption of the parties' statements and defenses; Where the requirements for a hearing are met, the circumstances of the hearing shall also be indicated; 4) The types and basis of administrative punishments, as well as the reasons and basis for the use of discretionary standards for administrative punishments; 5) The methods and time limits for performing administrative punishments; 6) The channels and time limits for applying for administrative reconsideration or initiating administrative litigation against administrative punishment decisions; 7) The name of the competent department for ecology and the environment that made the administrative punishment decision and the date of the decision, and affix a seal. Therefore, the administrative punishment decision disclosed by the relevant enterprise in the “Corporate Environmental Information Disclosure Report in accordance with the Law” should contain the above information. In addition, the competent ecological and environmental departments shall disclose the following information on the decision on the administrative punishment of the ecology and environment in accordance with the regulation: 1) the document number of the administrative punishment decision; 2) The name of the citizen being punished, the name of the legal person or other organization being punished, the unified social credit code, and the name of the legal representative (responsible person); 3) The main facts of the violation; 4) The result and basis of the administrative punishment; 5) The name of the competent department of ecology and environment that made the administrative punishment decision and the date when the decision was made. Information that involves state secrets or information that is prohibited from being disclosed by laws and administrative regulations, and information on administrative punishment decisions that may endanger national security, public security, economic security, and social stability

after disclosure, shall not be disclosed. The ecological environment administrative punishment decision shall be made public within seven days from the date of making it. Where laws and administrative regulations provide otherwise, those provisions shall prevail. Where the publicized administrative punishment decision is changed, revoked, confirmed to be illegal, or confirmed to be invalid according to law, the competent department of ecology and environment shall withdraw the information on the administrative punishment decision within three days and publicly explain the reasons.

(7) Mandatory cleaner production audit information

For enterprises that implement mandatory cleaner production audits, the “Format Guidelines for Legal Disclosure of Enterprise Environmental Information” requires the following information: 1) the reasons for implementing mandatory cleaner production audits; 2) the implementation, evaluation and acceptance results of mandatory cleaner production audits. Cleaner production audit refers to investigating and diagnosing the production and service process according to certain procedures, finding out the reasons for high energy consumption, high material consumption, and heavy pollution, and proposing to reduce the use and generation of toxic and harmful materials, and reduce energy consumption, material consumption, and waste generation. It’s the process of selecting a clean production plan that is technically feasible, cost-effective and conforms to environmental protection. The whole production process requires the use of non-toxic, low-toxic raw materials and non-polluting, less-polluting processes and equipment for industrial production. For the entire life cycle of the product, it is required that the raw material selection of the product to the treatment and disposal after use does not constitute or be able to reduce hazards to human health and the environment. The law on which production audits are based is the “Cleaner Production Promotion Law of the People's Republic of China”, with the purpose of improving the efficiency of resource utilization, reducing or avoiding the generation and discharge of pollutants in the process of production, service and product use, so as to reduce or eliminate hazard to human health and the environment.

Cleaner production audits are divided into voluntary audits and mandatory audits. In 2016, the National Development and Reform Commission and the National Environmental Protection Agency formulated and passed the “Measures for Cleaner Production Audit”, replacing the old “Temporary measures for Cleaner Production Audit” issued in 2004.

According to Articles 7 and 8 of the “Measures for Cleaner Production Audit”, enterprises whose pollutant emissions meet the national or local emission standards can voluntarily organize and implement cleaner production audits, and put forward goals for further saving resources and reducing pollutant emissions. While enterprises under any of the following circumstances shall implement mandatory clean production audits: 1) The discharge of pollutants exceeds the discharge standards stipulated by the state or local authorities, or exceeds the total discharge standards of key pollutants although it does not exceed the discharge standards stipulated by the state or local authorities; 2) Exceeding the energy consumption limit standard of a unit product constitutes high energy consumption; 3) Using toxic and harmful raw materials for production or discharging toxic and harmful substances during production. Among them, toxic and harmful raw materials or substances include the following categories: the first category is hazardous waste. Including hazardous waste listed in the ”National List of Hazardous Wastes”, and wastes with hazardous characteristics identified according to the national hazardous waste identification standards and identification methods; the second category is highly toxic chemicals, chemicals listed in the ”Catalogue of Key Environmental Management Hazardous Chemicals”, and substances containing the above chemicals; the third category is substances containing lead, mercury, cadmium, chromium and other heavy metals and metalloid arsenic; the fourth category is substances listed in the annex to the Stockholm Convention on Persistent Organic Pollutants; the fifth category is other toxic substances that may pollute the environment. The specific measures for implementing cleaner production audits shall be formulated by the comprehensive coordination department of cleaner production and the environmental protection department in conjunction with relevant departments of the State Council. The state has established a cleaner production commendation and reward system. Units and individuals that have made outstanding achievements in cleaner production shall be commended and rewarded by the people's government.

“Measures for Cleaner Production Audit” also made requirements for the mandatory cleaner production audit process and the information disclosure involved. The mandatory cleaner production audit is divided into four stages. In the first stage, the competent departments of environmental protection and energy conservation draw up a list of enterprises that implement mandatory cleaner production audits. In the second stage, enterprises disclose different types of information according to the reasons for

implementing mandatory cleaner production audits. The local environmental protection department and the energy conservation department check the information disclosure. In the third stage, the enterprises start the clean production audit work within two months after the list is announced, complete it within one year after the list is announced, and submit the “Clean Production Audit Report” and corresponding technical supporting materials to the local environmental protection department or energy conservation department; In the fourth stage, the local environmental protection department or energy conservation department organize experts or entrusts relevant institutes to set up an evaluation expert group to review the materials submitted by the enterprises. The expert group holds a collective meeting, defines the evaluation results and issues technical review opinions referring to the “clean production review and evaluation score table”. In the whole process, the audit responsibilities and information disclosure responsibilities of regulators and various enterprises are as follows:

First of all, the local environmental protection departments at or above the county level formulate the list of enterprises that will implement mandatory cleaner production audits for complying with the first and third circumstances, then report to the provincial environmental protection departments for approval and notify the enterprise in writing. While the local energy conservation departments at and above the county level formulate the list of enterprises that will implement mandatory cleaner production audits for complying with the second circumstances, then report to the provincial energy conservation departments for approval and notify the enterprise in writing. The competent departments of environmental protection and energy conservation at the provincial level shall summarize and propose the list of enterprises that should implement mandatory cleaner production audits respectively. The cleaner production comprehensive coordination department, in conjunction with the environmental protection departments or the energy conservation departments, will publish the list in batches on the official website or in other ways that are easy for the public to find.

Secondly, enterprises that carry out mandatory cleaner production audits shall disclose relevant information about the enterprise in major local media, official websites or other methods that are convenient for the public to know within one month after the publication of the list. Enterprises that implement mandatory cleaner production audits under the first category of circumstances need to published the following information: enterprise name,

legal representative, address, types of the pollutants discharged, discharge method, emission concentration and total amount, if there are situation of exceeding standard and total amount. The main information published by enterprises that implement mandatory cleaner production audits due to compliance with the second category of circumstances includes: enterprise name, legal representative, address, main energy varieties and consumption, energy consumption per unit output value, energy consumption per unit product, if there are situation of exceeding the energy consumption limit standard per unit product. The main information published by enterprises that implement mandatory cleaner production audits due to compliance with the third category includes: enterprise name, legal representative, address, the name, quantity and purpose of the toxic and harmful raw materials used, the name, concentration and quantity of toxic and harmful substances discharged, the generation and disposal of hazardous waste, and the implementation of environmental risk prevention and control measures in accordance with the law. Enterprises should be responsible for the information they disclose.

Thirdly, the enterprises needs to report the basic information of the audit plan, audit team and personnel to the local environmental protection departments within 45 working days after the list is announced (enterprises that entrust an intermediary agency to conduct cleaner production audits should submit the basic information of the audit institution and the materials that can prove the signing time of the clean production audit technical service contract and the time limit for fulfilling the contract to the local environmental protection departments within 45 working days). Then enterprises need to start the cleaner production audits work within two months after the list is announced and complete it within one year after the list is announced. Cleaner production audit work is divided into seven stages, including planning and organization, pre-audit, audit, program generation and screening, feasibility analysis, program implementation and continuous cleaner production, with a total of 35 steps. After the work is completed, the enterprises that need to conduct cleaner production audit acceptance should submit the acceptance materials to the competent departments of environmental protection or energy conservation in charge of acceptance, mainly including: 1) “Technical Review Opinions on Cleaner Production Review and Evaluation”; 2) “Cleaner Production Audit and Acceptance Report”; 3) monitoring reports on pollutant-discharge and energy consumption provided by the enterprise itself or entrusted by a qualified monitoring agency before and after the implementation of the cleaner production plan. Among them, the “Clean Production Audit

and Acceptance Report” should be completed by the enterprise or an entrusted consulting service agency, and its content should include the following aspects: 1) the basic information of the enterprise; 2) the implementation of the “Technical Opinions on Cleaner Production Audit and Assessment” ; 3) the completion of the clean production medium/high-cost plan and the summary of environmental and economic benefits; 4) the realization of the clean production goals and the clean production level; 5) the construction and operation of the continuous clean production work mechanism. Enterprises that implement mandatory cleaner production audits due to the third category of circumstances should conduct audits at least once every five years.

Finally, the competent departments of environmental protection or energy conservation responsible for the audit and acceptance of cleaner production organizes experts or entrusts relevant agencies to set up an expert group to carry out on-site acceptance according to the “Guidelines for Cleaner Production Audit Evaluation and Acceptance”. On-site acceptance procedures include listening to reports, material review, on-site verification, inquiry exchange, and forming acceptance opinions, etc. The prefecture-level environmental protection departments or energy conservation departments should promptly submit the list of “qualified” and “unqualified” enterprises to the provincial competent authority. The provincial competent authority will publish the list to the society in the form of a document on its official website. As for the “unqualified” enterprises in the acceptance inspection, they are required to carry out the clean production audit again.

To sum up, the public can learn about the following information about mandatory cleaner production audits: first, the list of companies that have implemented mandatory cleaner production audits through the official website of government departments; second, the basic enterprise information, pollutant information, energy consumption, etc. disclosed by enterprises under different circumstances through their official websites, local media or other channels; third, the government's audit assessment results and acceptance results. It is worth noting that the details of the cleaner production audit implemented by enterprises, such as production plans, cleaner production benefits and other information, are not publicly disclosed. This time, additional disclosure requirements is added for the “Corporate Environmental Information Disclosure Report in accordance with the Law” regarding the implementation of mandatory cleaner production audits. In the already published corporate environmental information disclosure reports, some enterprises

disclosed the details of cleaner production audit, such as the new production plans, cleaner production benefits, the cost of new production plans, etc. However, there are also companies that disclosed information on the “implementation, evaluation and acceptance results of mandatory cleaner production audits” in a very simple way, saying that they “carried out” the audit work and “passed” the evaluation and acceptance. Perhaps in the future, information disclosure on mandatory cleaner production audit in the “report” will be more standardized and detailed.

(8) Ecological and environmental protection information related to investment and financing

For eligible listed companies and bond-issuing enterprises, the “Format Guidelines for Legal Disclosure of Enterprise Environmental Information” requires the following information: 1) Where a listed company conducts financing through the issuance of stocks, bonds, depository receipts, medium-term notes, short-term financing bonds, ultra-short-term financing bonds, asset securitization, bank loans, etc., it shall disclose information such as the form, amount and investment direction of the financing, as well as relevant information on climate change and ecological environmental protection of the projects invested in the financing. 2) Where a bond-issuing enterprise conducts financing through the issuance of stocks, bonds, depository receipts, exchangeable bonds, medium-term notes, short-term financing bonds, ultra-short-term financing bonds, asset securitization, bank loans, etc., it shall disclose information such as the form, amount, and investment direction of the financing project, as well as relevant information on climate change and ecological environmental protection of the projects invested in the financing.

The above is the main information required by MEE for key pollutant-discharge enterprises, enterprises that implement mandatory cleaner production audits, and eligible listed companies and bond-issuing enterprises to disclose in the “Corporate Environmental Information Disclosure Report in accordance with the Law”. Since this is the first year of the compilation and publication of the report, and the disclosure platform is still under construction, it is impossible to make an empirical analysis of the reports of the sample companies. However, it can be seen that the MEE has given a lot of detailed requirements for the compilation of the report. Some information, such as the implementation of mandatory clean production audits, the response to heavily polluted weather, and the original text of the administrative penalty decision, are also the first time

to be disclosed. To some extent, “Corporate Environmental Information Disclosure Report in accordance with the Law” is like an index, which can enable the public to understand a company's environmental information more comprehensively, find out the concerns, and use other information disclosure platforms to further understand the situation. In practice, there are also some problems in the disclosure of the “Corporate Environmental Information Disclosure Report in accordance with the Law”. For example, some enterprises have not implemented some requirements of the environmental protection department, such as the pollutant-discharge license has expired and has not been renewed, so they do not publish this part of the information, or they do not disclose the situation of being notified or punished due to environmental protection issues. For the government, regulations alone are not enough, a supervision system and corresponding punishments are also needed to continuously improve the level of environmental information disclosure. In addition, the “Measures for the Administration of Legal Disclosure of Enterprise Environmental Information” stipulates that enterprises should disclose information such as the number of temporary reports issued and the main conditions of the temporary disclosure of environmental information.

3.5 Temporary Report

In addition to periodic reports, the “Securities Law of the People's Republic of China” and the “Measures for the Administration of Information Disclosure of Listed Companies” all stipulate environmental temporary reports and their trigger conditions, that is, the occurrence of major events that may have a greater impact on the trading prices of listed company securities and their derivatives. To understand the meaning of “major events”, we can refer to the disclosure requirements of the SSE and SZSE on the environmental information temporary reports of listed companies in different listing plate in table 9:

Table 9 Requirements of SSE and SZSE on the disclosure of temporary environmental reports

<p>Note: The table lists the requirements of Shanghai Stock Exchange (SSE) and Shenzhen Stock Exchange (SZSE) for the temporary disclosure of environmental information of listed companies, classified according to the listing plate and corresponding policies, and also attaches the latest policy implementation time and specific chapters involved.</p>	
SSE Main Board	SZSE Main Board
2022 “Rules Governing the Listing of Stocks on Shanghai Stock Exchange” 7.7.6	2022 “Rules Governing the Listing of Stocks on Shenzhen Stock Exchange” 7.7.6
<p>If a listed company suffers heavy losses due to environmental incidents, may bear large compensation liabilities, or causes major or all business to come to a standstill, is suspected of a crime and is investigated according to law, or is subject to criminal punishment or major administrative punishment, etc., it shall promptly disclose the relevant information and its impact on the company.</p>	
2022 “Rules Governing the Listing of Stocks on Shanghai Stock Exchange” 7.7.10	2022 “Rules Governing the Listing of Stocks on Shenzhen Stock Exchange” 7.7.6
<p>In case of any of the following situations, the company shall disclose the general situation of the incident, the cause of occurrence, the impact, countermeasures or solutions:</p> <ol style="list-style-type: none"> (1) Major environmental, production and product safety accidents occur; (2) Receive decisions or notices from relevant departments to rectify major violations, suspend production, relocate, or close down; (3) Improper use of science and technology or violation of scientific ethics; (4) Other major accidents or negative impacts of improperly fulfilling social responsibilities. 	
2022 “Shanghai Stock Exchange Listed Companies Self-Regulatory Guidelines No. 1 - Standardized Operation” 8.10	2022 “Shenzhen Stock Exchange Listed Companies Self-Regulatory Guidelines No. 1 - Standardized Operation of Main Board Listed Companies” 8.8

<p>Listed companies that have the following major events related to environmental protection that may have a significant impact on the prices of their stocks and derivatives shall disclose the circumstances of the event and the possible impact on the company's operations and stakeholders in a timely manner:</p> <ol style="list-style-type: none"> (1) The company has major investment behaviors such as new, reconstructed, and expanded construction projects with major environmental impacts; (2) The company is investigated by the environmental protection department due to violations of environmental laws and regulations, or is subject to major administrative punishment or criminal punishment, or is ordered by the relevant people's government or government department to deal with it within a time limit or suspend production, relocate, or close down; (3) The company is involved in a major lawsuit due to environmental issues or its main assets are sealed up, seized, frozen or mortgaged or pledged; (4) The company or its major subsidiaries are listed as key pollutant-discharge units by the national environmental protection department; (5) Newly announced environmental laws, regulations, rules, and industry policies may have a significant impact on the company's 	<p>When a company has a major environmental pollution accident, it shall promptly disclose the cause of the environmental pollution, the impact on the company's performance, the impact of the environmental pollution, and the rectification measures the company intends to take.</p>
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operations;

(6) Other major events related to environmental protection that may have a greater impact on the trading prices of the company's stocks and their derivatives.

2022 “Shanghai Stock Exchange Listed Companies Self-Regulatory Guidelines No. 1 - Standardized Operation” 8.12

Listed companies or their main subsidiaries that belong to the key pollutant-discharging units announced by the environmental protection department shall disclose the following information in a timely manner after the environmental protection department announces the list:

- (1) The name, discharge method, discharge concentration and total amount of the company's pollutants, and the situation of exceeding the standard and the total amount;
- (2) The construction and operation of the company's environmental protection facilities;
- (3) The company's emergency response plan for environmental pollution accidents;
- (4) Measures taken by the company to reduce pollutant-discharge and future work arrangements. A company may not refuse to disclose the environmental information listed in the preceding paragraph on the grounds of commercial secrets.

SSE Sci-Tech Innovation Market Market (STAR Market)	SZSE Growth Enterprises Board (GEB)
2020 “Rules Governing the Listing of Stocks on the Science and technology Innovation Board of Shanghai Stock Exchange” 8.2.5	2023 “Rules Governing the Listing of Stocks on the Growth Enterprises Board of Shenzhen Stock Exchange” 8.2.5
<p>Companies that have the following major accidents or negative events shall disclose the specific circumstances and their impact in a timely manner:</p> <p>(1) Major environmental, production and product safety accidents occur;</p> <p>(2) Receive a decision notice from the government department to manage within a time limit, suspend production, relocate, or close;</p> <p>(3) Improper use of science and technology or violation of scientific ethics;</p> <p>(4) Other major accidents or negative events in which social responsibilities are improperly performed.</p>	<p>When a listed company encounters any of the following risk events, it shall immediately disclose the relevant situation and its impact on the company:</p> <p>(15) Major environmental, production and product safety accidents occur;</p> <p>(16) Receipt of decision notices from government departments to manage within a time limit, suspend production, relocate, or close;</p> <p>(17) Improper use of science and technology, violating scientific ethics;</p> <p>(18) Other major risk situations, major accidents or negative events identified by the Exchange or the company.</p>
	2022 “Shenzhen Stock Exchange Listed Companies Self-Regulatory Guidelines No. 2 - Standardized Operation of GEM Listed Companies” 9.10
	<p>When a company has a major environmental pollution accident, it shall promptly disclose the cause of the environmental pollution, the impact on the company's performance, the impact of the environmental pollution, and the rectification measures the company intends to take.</p>

The “Shanghai Stock Exchange Listed Companies Self-Regulatory Guidelines No. 1 - Standardized Operation” issued by the SSE in 2022 lists possible “major events”, but in this description there are still some qualitative expressions, such as the company is subject to “significant administrative punishments”. At present, there is no uniform opinion on how to understand “ significant administrative punishments”, but according to the provisions of 7.7.10 and 6.1.2 of the “Rules Governing the Listing of Stocks on Shanghai Stock Exchange” (Revised in 2022), if the penalty is involved when companies listed on the SSE disclose environmental information, the minimum disclosure threshold is “the profit generated by the transaction accounts for more than 10% of the audited net profit of the listed company in the latest fiscal year, and the absolute amount exceeds 1 million yuan.” In practice, the vast majority of environmental administrative penalties are difficult to reach this amount, and cannot touch the threshold for mandatory disclosure of environmental administrative penalty information in the securities regulatory field. In addition to penalties, it should also be considered with comprehensive judgments regarding influences on production, operation, stock price, environment, and public opinion. The company should determine whether the relevant administrative punishment is an issue that may have a significant impact on the company's stock trading price or on investors' investment decisions. If it is a major issue, the company should disclose it in a timely manner even if the administrative penalty involves a very small amount. Finally, if the administrative punishment is identified by the competent authorities such as the environmental protection departments as a significant punishment, then the listed company should also disclose it.

The “Measures for the Administration of Legal Disclosure of Enterprise Environmental Information” issued by the MEE also stipulates the requirements for the disclosure of temporary environmental information reports for key pollutant-discharge units, companies that implement mandatory cleaning audits, and qualified listed companies. Article 17 of the “Measures” stipulates: “Enterprises shall disclose the following environmental information in the form of a temporary environmental information disclosure report within five working days from the date of receipt of the relevant legal documents: 1) the approval of the ecological environment administrative license, Information on change, continuation, revocation, etc.; 2) information on administrative punishments due to ecological and environmental violations; 3) information on administrative detention according to the law; 4) information on the criminal

responsibility of the enterprise or its legal representative, principal person in charge, directly responsible supervisor and other directly responsible persons for violations of the law on the ecological environment; 5) information on the ecological environment compensation for damages and agreement. In the event of an environmental emergency, an enterprise shall disclose relevant information in accordance with relevant laws and regulations.” The supporting “Format Guidelines for Legal Disclosure of Enterprise Environmental Information” further specifies that enterprises should disclose in the interim report: 1) enterprise Chinese name, legal representative, registered address, production address, industry category, enterprise contact person and contact information; 2) the nature of the enterprises, whether they are state-owned enterprises, private enterprises, foreign-funded enterprises, collective enterprises, listed companies, bond-issuing enterprises, etc., as well as the status of enterprises, whether they are key pollutant discharging units and implement mandatory clean production audits; 3) enterprises shall disclose the information such as the new acquisition, modification or revocation of ecological and environmental administrative licenses such as pollution discharge permits, environmental impact assessments of construction projects, hazardous waste operation licenses, and qualification permits for the disposal of waste electrical and electronic products, etc., and disclose the information such as the change matter, the approval department, the document number of the approval document, the approval time, and the content of the approval document; 4) enterprises shall disclose information such as the time of issuance of the administrative punishment decision, the punishment department, the document number of the administrative punishment decision, and the original text of the administrative punishment decision regarding the ecological and environmental administrative punishments received; 5) enterprises shall disclose information such as the time when the judgment was issued, the judgment authority, the document number of the judgment, and the original text of the judgment regarding the judicial judgment on the ecological environment received; 6) enterprises shall disclose information such as the time of signing the agreement, the facts of ecological and environmental damage, and the original text of the ecological and environmental damage compensation agreement regarding the ecological environment damage compensation agreement; 7) enterprises shall disclose information such as the time, location, major pollutants, and final certificated level of environmental emergencies that occur. 8) when an enterprise makes changes to the disclosed environmental information, it shall disclose the changes, the content of the changes, and the main basis.

3.6 Non-financial Report

3.6.1 Basic information on non-financial reports of sample companies

Among the 44 sample companies, 29 companies have issued non-financial reports, including ESG report, CSR report and sustainable development report (SD report), accounting for 65.9%. shows the Table 10 presents the basic situation of the companies and the non- financial reports.

Table 10 Basic information on non-financial reports of sample companies

Stock Code	Name (Report)	Page	Nature	English Version	Reference
600497	ESG	68	State-owned enterprise		State-owned Assets Supervision and Administration Commission of the State Council: “Guiding Opinions on the Fulfillment of Social Responsibility by State-owned Enterprises”; SSE “Guidelines for the preparation of the Corporate Social Responsibility Report”; CASS-CSR4.0; GRI-standards; SDGs
002128	ESG	55	Central enterprise		“Shenzhen Stock Exchange Listed Companies Self-Regulatory Guidelines No. 1 - Standardized Operation of Main Board Listed Companies”; HKEx “Environmental, Social and Governance (ESG) Reporting Guidelines”; GB/T 36001-2015

600259	CSR	76	State-owned enterprise	CASS-CSR4.0; ISO26000: Guidance on Social Responsibility; Ten Principles of the United Nations Global Compact
600256	CSR	71	Private Enterprise	SSE “Guidelines for the preparation of the Corporate Social Responsibility Report”
601969	CSR+ESG	79	Private Enterprise	SDGs; GRI-standards; CASS-CSR4.0; GB/T 36001-2015; SSE “Guidelines for Environmental Information Disclosure of Listed Companies”
600968	SD	108	State-owned enterprise	GRI-standards; Ten Principles of the United Nations Global Compact; SSE “Guidelines for Environmental Information Disclosure of Listed Companies”
600583	CSR	64	State-owned enterprise	“Shanghai Stock Exchange Listed Companies Self-Regulatory Guidelines No. 1 - Standardized Operation”
601101	CSR	49	State-owned enterprise	SDGs 2030; “ISO26000: Guidance on Social Responsibility”; GRI-standards; “Guiding Opinions on the Fulfillment of Social Responsibility by State-owned Enterprises”;

				<p>CASS-CSR4.0; SSE “Guidelines for Environmental Information Disclosure of Listed Companies”; SSE “Guidelines for the preparation of the Corporate Social Responsibility Report”</p>
600348	CSR	61	Others	<p>GRI-standards; “ISO26000: Guidance on Social Responsibility”; SDGs 2030; GB/T 36001-2015; SSE “Guidelines for Environmental Information Disclosure of Listed Companies”; CASS-CSR4.0</p>
600985	CSR	56	State-owned enterprise	<p>“Corporate Social Responsibility Report of China's Manufacturing Industry”; “Shanghai Stock Exchange Listed Companies Self-Regulatory Guidelines No. 1 - Standardized Operation”; “Notice on Further Improving Information Disclosure of Poverty Alleviation Work of Listed Companies”; “Guidelines for Social Responsibility of Chinese Coal Enterprises”; “Corporate Social Responsibility in Anhui Province”</p>

000937	CSR	54	State-owned enterprise	“Shenzhen Stock Exchange Listed Companies Self-Regulatory Guidelines No. 1 - Standardized Operation of Main Board Listed Companies”; GRI-standards 3.1
000655	CSR	7	Others	“Shenzhen Stock Exchange Listed Companies Self-Regulatory Guidelines No. 1 - Standardized Operation of Main Board Listed Companies”
601958	ESG	54	State-owned enterprise	SSE “Guidelines for the preparation of the Corporate Social Responsibility Report”; “Shanghai Stock Exchange Listed Companies Self-Regulatory Guidelines No. 1 - Standardized Operation”
600123	CSR	14	State-owned enterprise	
601699	CSR	52	State-owned enterprise	ISO26000: Guidance on Social Responsibility; SDGs; GRI-standards; GB/T 36001-2015; CASS-CSR4.0; “Guiding Opinions on the Fulfillment of Social Responsibility by State-owned Enterprises”; SSE “Guidelines for Environmental Information

					Disclosure of Listed Companies”; SSE “Guidelines for the preparation of the Corporate Social Responsibility Report”
603993	ESG	46	State- owned enterprise		SSE “Guidelines for Environmental Information Disclosure of Listed Companies”; HKEx “Environmental, Social and Governance (ESG) Reporting Guidelines”
600547	CSR	70	State- owned enterprise	√	HKEx “Environmental, Social and Governance (ESG) Reporting Guidelines”; SSE “Guidelines for Environmental Information Disclosure of Listed Companies”; SSE “Guidelines for the preparation of the Corporate Social Responsibility Report”; GRI-standards; GB/T 36001-2015; CASS-CSR4.0
000983	CSR	18	State- owned enterprise		
600508	CSR	16	State- owned enterprise		
600711	CSR	6	State- owned enterprise		
601168	ESG	97	State- owned		“Shanghai Stock Exchange Listed Companies Self-Regulatory

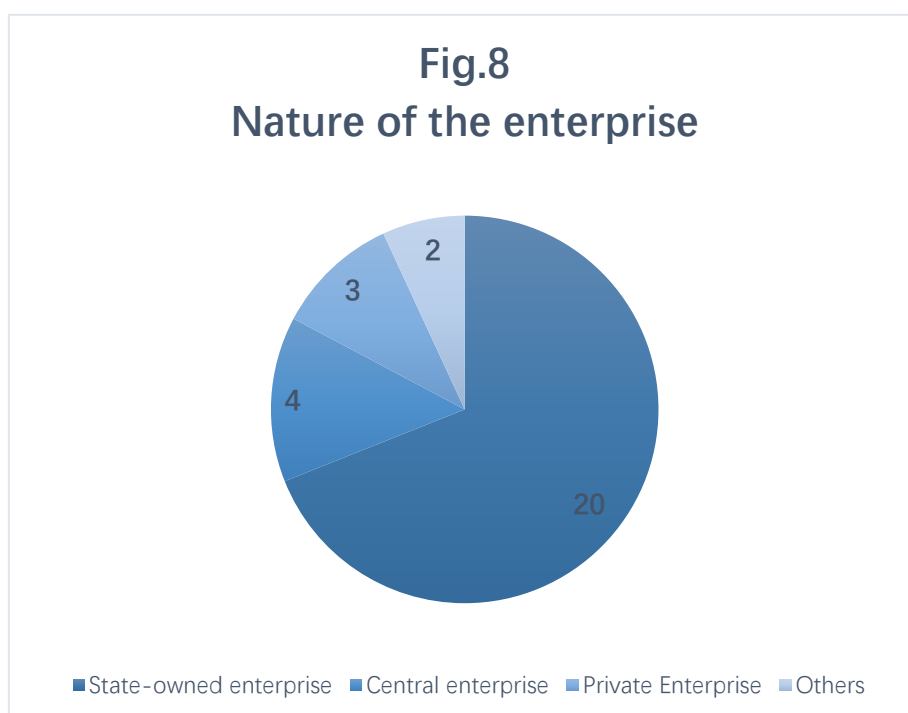
			enterprise		Guidelines No. 1 - Standardized Operation”; GRI-standards; SDGs; SASB Standards; International Council on Mining and Metals (ICMM): Sustainable Development Framework
000762	CSR	64	State-owned enterprise		“Shenzhen Stock Exchange Listed Companies Self-Regulatory Guidelines No. 1 - Standardized Operation of Main Board Listed Companies”; GRI-standards; HKEx “Environmental, Social and Governance (ESG) Reporting Guidelines”; CASS-CSR4.0
601918	CSR	49	State-owned enterprise		SSE “Guidelines for the preparation of the Corporate Social Responsibility Report”; CASS-CSR4.0
600188	ESG	76	State-owned enterprise	√	“Shanghai Stock Exchange Listed Companies Self-Regulatory Guidelines No. 1 - Standardized Operation”; HKEx “Environmental, Social and Governance (ESG) Reporting Guidelines”; GRI-standards; ISO26000: Guidance on Social Responsibility

601088	ESG	76	State-owned enterprise	√	SSE “Guidelines for the preparation of the Corporate Social Responsibility Report”; CASS-CSR4.0
600489	CSR	84	Central enterprise		SDGs; GRI-standards; ISO26000: Guidance on Social Responsibility; “Guiding Opinions on the Fulfillment of Social Responsibility by State-owned Enterprises”; CASS-CSR4.0; SSE “Guidelines for the preparation of the Corporate Social Responsibility Report”
601898	ESG	36	Central enterprise	√	SSE “Guidelines for Environmental Information Disclosure of Listed Companies”; HKEx “Environmental, Social and Governance (ESG) Reporting Guidelines”; GRI-standards; CASS-CSR3.0;
000758	CSR	13	Central enterprise		
601899	ESG	97	State-owned enterprise	√	SSE “Guidelines for Environmental Information Disclosure of Listed Companies”; SSE “Guidelines for the preparation of the Corporate Social Responsibility Report”; HKEx “Environmental, Social

					and Governance (ESG) Reporting Guidelines”; GRI-standards; SASB Standards; TCFD; CASS-CSR4.0
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Figure 8 shows the nature of the enterprises that issued non-financial report, we can see that most of the them are state-owned enterprises and central enterprises, which is also in line with the characteristics of mining industry. Central enterprises refer to wholly state-owned or state-holding enterprises that are entrusted by the Central People's Government (State Council) or the state-owned assets supervision and management agency to perform the investor's duties, and the leadership team is directly managed by the central government or entrusted to the Central Organization Department, the State-owned Assets Supervision and Administration Commission (SASAC) of the State Council and other central ministries and commissions. In 2005, the SASAC clearly defined the distribution areas of state-owned economy: central enterprises need to maintain "absolute control" over seven major industries, including military industry, power grid, petroleum and petrochemical, telecommunications, coal, civil aviation and shipping, and maintain "strong control" over nine major industries: equipment manufacturing and automobile, electronic information, construction, iron and steel and non-ferrous metals, chemical industry, exploration and technology. There are 14 industries in total, while mining industry overlaps with coal industry and non-ferrous metals industry, so state-owned enterprises account for a relatively high proportion of the mining industry. The release rate of non-financial reports of the sample companies is 65.9%, which is much higher than the 29.6% release rate of the overall listed companies in 2021, mainly for the following two reasons. On the one hand, the mining industry belongs to heavy polluting industries, and enterprises in the heavy polluting industries have been the key monitoring and supervision targets of the environmental protection departments for more than 10 years. The “Guidelines for Environmental Information Disclosure of Listed Companies” issued by the MEP in 2010 specified that A-share listed enterprises in high-pollution industries should publish annual environmental report on the company's website and website of the MEP. On the other hand, the state has higher requirements on the level of information disclosure of state-owned enterprises and central enterprises compared with

private enterprises. As early as 2007, the SASAC issued the “Guiding Opinions on the Fulfillment of Social Responsibility by Central Enterprises”, which mentioned that central enterprises should establish a social responsibility reporting system. Qualified enterprises should regularly issue social responsibility reports or sustainable development reports, announcing the status, plans and measures of corporate social responsibility fulfillment. In 2016, the SASAC issued the “Guiding Opinions on a Better Fulfillment of Social Responsibility by State-owned Enterprises”²⁴, which mentioned: "state-owned enterprises must establish and improve the social responsibility reporting system, release social responsibility report regularly referring to international and domestic standards, and continuously improve the quality of reports." On May 27, 2022, the SASAC issued the “Work Plan for Improving the Quality of Listed Companies Controlled by Central Enterprises”, which further standardizes the ESG information disclosure of central enterprises and promotes more central enterprises to disclose ESG special reports, aiming to realize the 100% percent disclosure rate of relevant reports among central enterprises by 2023.



In terms of the naming of the reports, 18 companies named their reports as CSR report, accounting for 62%. 9 companies named their reports as ESG report, as shown in Figure 9. This is consistent with the proportion of titles of the non-financial reports of the entire

²⁴ Source: <http://www.sasac.gov.cn/n2588035/n2588320/n2588335/c20234205/content.html>

A-share listed companies in 2021. Before 2021, the main focus of the Chinese government was to guide and encourage companies to publish CSR reports. As a result, CSR reports accounted for the vast majority of non-financial reports in the past years. But in the last two to three years, following the proposal of “30.60” carbon peak and carbon neutral goals, the government, regulators, exchanges and other parties are vigorously promoting the development of ESG and strengthening the supervision of ESG information disclosure of listed companies. More and more listed companies in China are changing their non-financial reports from CSR report to sustainable development report and ESG report. Table 11 shows the differences between CRS report and ESG report in terms of target audience as well as report purpose and focus.

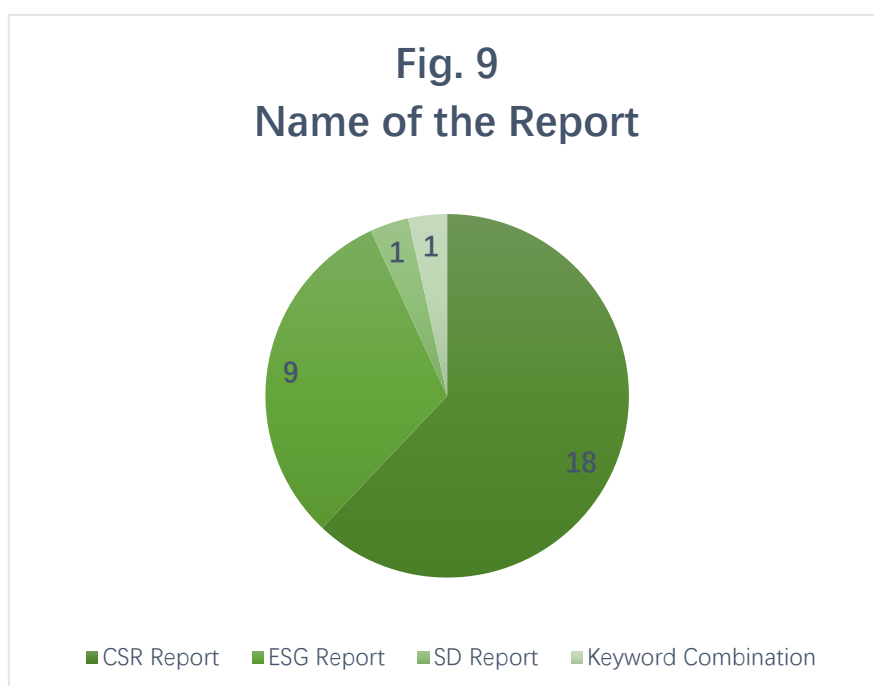


Table 11 Differences between CRS report and ESG report

Type	CSR report	ESG report
Target audience	More diverse stakeholders. Not only institutional investors, but also governments, customers, communities, etc.	For capital market participants, especially institutional investors.
Report purpose and focus	It has the function of external communication, and highlights the company's contribution to society on the basis of the ESG report.	For investor communication, the requirements for quantitative information disclosure are higher.

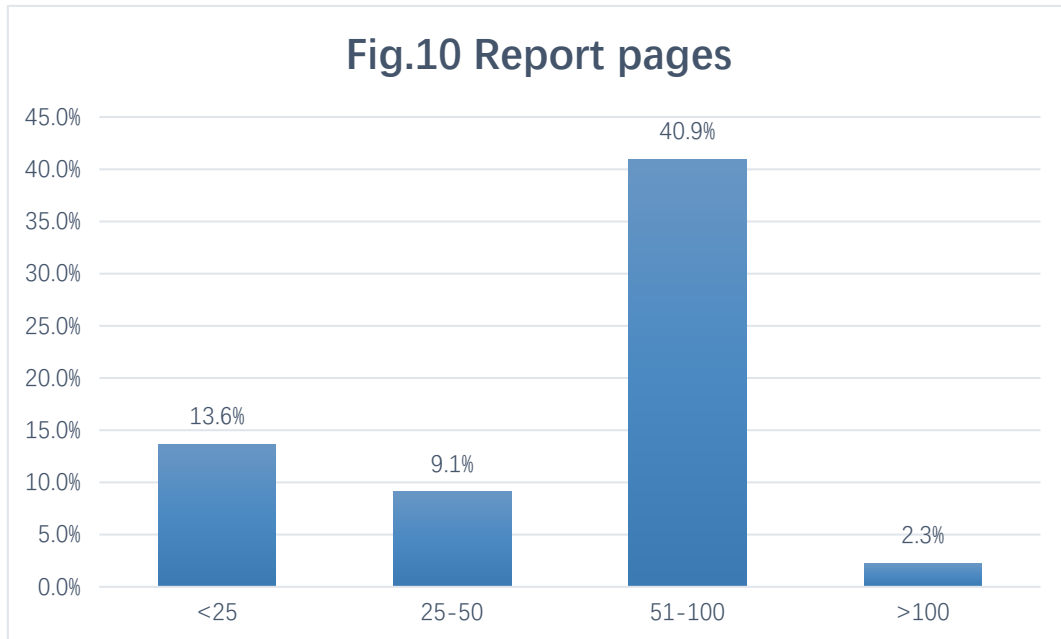


Figure 10 shows number of pages of the sample reports. We can see that 40.9% of the reports are between 50-100 pages, 9.1% are between 25-50 pages, and 13.6% are less than 25 pages. In general, reports with more than 50 pages have a more detailed content, and a relatively complete structure, the disclosure of substantive and quantitative performance of corporate governance performance is also more sufficient. While reports with less than 25 pages are all CSR reports, mainly text-only, lacking quantitative performance data such as data and charts, so the quality of these reports is poor. Therefore, when preparing non-financial reports, enterprises should pay attention to the integrity of the report structure, highlight comparable quantitative performance data and other substantive content, which is more conducive to improving the readability and practicality of the report

From the perspective of reference standards, the guidelines for the preparation of reports are very rich and diverse, and there are even emerging international standards. However, when preparing non-financial reports, enterprises should pay attention to the difference between “basis” and “reference”. “Basis” means that the company must follow the ESG information disclosure requirements issued by the CSRC and the stock exchanges when compiling the report, and it must be disclosed one by one, or "explain if it is not disclosed; and “reference” refers to the international ESG standards or guidelines that the company additionally complies with in order to improve the quality of reporting. Figure 11 shows the number of occurrences of the reporting guidelines. Of all the references, the Global

Reporting Initiative (GRI) standards appeared most frequently, there are 24 companies that have mentioned their report reference, 15 companies have used the GRI-standards. Followed by the “Guidelines for Compiling Chinese Corporate Social Responsibility Reports” issued by the Chinese Academy of Social Sciences (CASS-CSR4.0). The “Environmental, Social and Governance (ESG) Reporting Guidelines” issued by the HKEx, the “Guidance on Social Responsibility Reporting (GB/T 36001)” issued by China National Institute of Standardization as well as ISO26000 of the International organization for Standardization (ISO) also became common references. Table 12 shows the description of the references. In addition, some industry standards and provincial standards have also become an important reference for enterprises to prepare non-financial reports. For example, some sample reports refer to the “Corporate Social Responsibility Report of China's Manufacturing Industry”, “Guidelines for Social Responsibility of Chinese Coal Enterprises” and “Anhui Province Corporate Social Responsibility”.

Fig.11 Reporting Guidelines Statistics



Table 12 Description of references

Reference	Description
Global Reporting Initiative (GRI) GRI standards	(GRI) is an international organization established to promote the development of global sustainable development reports, and its main task is to formulate and promote the "Sustainability Reporting Guidelines". At present, GRI has released GRI standards 2021, which replaces GRI standards 2016.
Chinese Academy of Social Sciences (CASS) CASS-CSR4.0	The CASS is the highest academic institution and comprehensive research center for Chinese philosophy and social science research directly under the Central Committee of the Communist Party of China and directly under the State Council. CASS-CSR4.0 is the fourth generation of Chinese local social responsibility report writing guidelines.
Hong Kong Exchanges and Clearing Limited (HKEx) “Environmental, Social and Governance (ESG) Reporting Guidelines”	In 2019, the latest version of the “ESG Reporting Guidelines” released by HKEx added the "climate change" and related environmental objectives, and raised the disclosure responsibility of all “social” key performance indicators to “disclose or explain”.
Sustainable Development Goals (SDGs)	The Sustainable Development Goals of the United Nations are a series of new development goals that will continue to guide global development efforts from 2015 to 2030 after the Millennium Development Goals expire.
International organization for Standardization (ISO) ISO26000	In June 2004, the ISO decided to develop the "Social Responsibility" ISO guidelines applicable to all social organizations, including the government, and 54 countries and 24 international organizations participated in the

	formulation.
China National Institute of Standardization “Guidance on social responsibility reporting” (GB/T 36001-2015)	“GB/T 36001-2015 provides the basic principles, steps and methods for compiling social responsibility reports, aiming to provide guidance for various organizations in compiling social responsibility reports. This standard is not suitable for certification purposes.
Ten Principles of the United Nations Global Compact	The ten principles of the United Nations Global Compact on human rights, labour, the environment and anti-corruption enjoy global consensus and are the world's largest voluntary corporate responsibility initiative.
Sustainability Accounting Standards Board (SASB) SASB standards	SASB standards mainly include 26 topics in five sustainable themes including environment, social principles, human capital, business model and innovation, leadership and governance.

On the one hand, mainland China has completed some preliminary explorations in the preparation of non-financial reporting guidelines. For example, the CASS-CSR4.0 issued by the Chinese Academy of Social Sciences have been continuously revised on the basis of drawing on mainstream foreign guidelines, and have become operable guidelines; national standards “Guidance on Social Responsibility Reporting (GB/T 36001)” was deleted on the basis of the ISO guidelines, and the content that did not meet the national conditions was replaced, which to a certain extent dispelled the doubts that the ESG guidelines of foreign "genes" were not suitable for the national conditions; Private evaluation agencies such as Sino-Securities Index²⁵, SynTao Green Finance²⁶, China Alliance of Social Value Investment²⁷, Wind, etc. have also established independent ESG indicator systems. On the other hand, Mainland China has not issued mandatory ESG report disclosure requirements and disclosure standards. Except for specific industries and sectors, mainland listed companies are not required to disclose ESG information. Regulatory departments of listed companies such as the CSRC and stock exchanges have

²⁵ <https://www.chindices.com/>

²⁶ <https://www.syntaogf.com/>

²⁷ <https://www.casvi.org/>

not issued independent and complete ESG reporting guidelines. They only mention some ESG-related information disclosure requirements in the annual report and half-year report format guidelines and other listed company management measures. Therefore, mainland listed companies lack a unified and clear ESG information disclosure framework and indicator system.

At present, the ESG disclosure standards that A-share listed companies refer to are the “Guidelines for Environmental Information Disclosure of Listed Companies” issued by the Shanghai Stock Exchange in 2005 and the “Guidelines on Social Responsibility of Listed Companies on the Shenzhen Stock Exchange” issued in 2006. Both guidelines were released many years ago, none of which explicitly proposed ESG quantitative indicators. Although listed companies are encouraged to separately disclose environmental information such as resource consumption and waste disposal in social responsibility reports, they are not required to disclose negative information such as environmental pollution. Therefore, the content contained in the ESG reports of many listed companies is biased towards positive information, which is not conducive to investors' objective and complete understanding of the company's ESG performance. Compared with the mainland, Hong Kong's ESG report disclosure progress is much ahead. Hong Kong began to require listed companies to disclose ESG-related information in 2014, and has issued relatively complete ESG reporting guidelines and other related documents. Currently, more than 80% of listed companies publish ESG reports for the previous year on HKEx's website every year. At present, the “Environmental, Social and Governance (ESG) Reporting Guidelines” issued by the HKEx includes quantitative indicators such as corporate greenhouse gas emissions, total number of employees, and employee training hours to help listed companies prepare ESG reports. The Stock Exchange also released the document "How to Prepare an ESG Report". In the appendix, it clarifies the coefficients and calculation methods used by listed companies to calculate ESG, which improves the comparability and consistency of ESG data. The ESG information disclosure requirements of Hong Kong-listed companies follow the principle of “disclose or explain”, and some ESG key performance indicators are required to be disclosed compulsorily. In general, Hong Kong regulators pay more attention to the information disclosure of companies' climate-related risks and financial impacts, while the regulatory authorities of listed companies in the mainland pay more attention to the

poverty alleviation status and pollution reduction of enterprises.

3.6.2 Environmental information disclosure of the non-financial reports

The 29 non-financial reports of the sample companies show the following characteristics in terms of environmental information disclosure: 1) From the point of view of the disclosure theme, it is at the time of alternation between the old and the new. Reports with less than 25 pages used relatively conservative and traditional themes, and some of the themes overlap with the content required by “Corporate Environmental Information Disclosure Report in accordance with the Law”. Common topics include pollution discharge permit management, clean production review, implementation of environmental impact assessment, environmental emergency capacity building, and discharge of major pollutants. These are the themes that the environmental protection department has focused on over the past 20 years. At the same time, reports with more than 25 pages thematically diverse. Some companies draw on the international information disclosure framework and disclosed information according to the company's own characteristics. It is worth noting that most of the companies have disclosed their efforts in low-carbon management, energy-saving and emission classification management. It can be seen that with the proposal of dual carbon targets, how to reduce greenhouse gas emissions has become a mainstream issue, and carbon emissions have also become an important evaluation indicator. 2) From the perspective of quantitative information disclosure. 10 companies chose to disclose key ESG performance data according to the mainstream performance indicator system through a central and integrate table. Six companies disclosed part of the quantitative environmental information in scattered words or tables. While the EID of the remaining companies is of poor quality and lacks quantitative information. 3) From the perspective of the standardization of the disclosure format, the differences between the reports are very large. About one-third of the sample reports can hardly be classified as mainstream ESG reports or CSR reports. These reports are ultra-short and text-only reports, and some are corporate achievement recognition reports, which use a lot of pictures to occupy the space and have a top-heavy structure. There are also a small number of reports with beautiful layout and detailed content, in which information such as issues of concern to investors and other stakeholders, ESG performance data, rating report of the Chinese Expert Committee on CSR Report Rating, international index tables (GRI standards index table, HKEx index table, SASB index table, etc.) is disclosed in the appendix.

In general, the disclosure of non-financial reports in mainland China is in a period of rapid development, the disclosure rate is constantly increasing, the proportion of ESG reports is increasing, and the report format and content are gradually in line with international standards. However, a set of mandatory disclosure guidelines and a supporting regulatory system have not yet been formed. Except for some companies listed in special sectors, the rest of the listed companies issue reports entirely on their own initiative. However, the promotion of ESG and low carbon has been included in the government's work goals. It is expected that in the future, the regulatory authorities of listed companies will gradually introduce mandatory disclosure regulations that adapt to the development of the times and China's national conditions.

CHAPTER 4: Conclusions and Suggestions

Currently, China is establishing a new environmental information disclosure system through mandatory regulations. There are many factors that could affect the level of corporate EID, but due to China's development stage and social system, government policy has become the most important influencing factor. In the past, China's EID had many limitations. For example, many policies and regulations are not mandatory, and there is no unified disclosure standard, which have led to problems such as low disclosure rate, scattered information, and difficulty in quantifying environmental information. Since 2021, the Chinese government has greatly accelerated the introduction of environmental policies and the establishment of standards. The first ones are the “Measures for the Administration of Information Disclosure of Listed Companies” issued by the CSRC and the “Measures for the Administration of Legal Disclosure of Enterprise Environmental Information” issued by the MEE. Based on the analysis of this article, the current progress and shortcomings of China's EID are relatively obvious.

About progress. First of all, the disclosure of environmental information has been included in the company's annual report, reflecting the importance attached to environmental information disclosure. As the focus of the public and investors, the annual report has a wide audience and a mature system. As a carrier of environmental information, it can quickly meet the needs of disclosure. Secondly, the “Corporate Environmental Information Disclosure Report in accordance with the Law” disclosed by key pollutant-discharge units and other qualified companies are the most detailed and comprehensive environmental reports currently required in China, it integrates various environmental information disclosure systems established by the environment protection departments over the past years and adds some new disclosure requirements. At the same time, the “Report” collects environmental information from the original local environmental protection departments to a unified disclosure platform, which is more convenient for record management and public inspection. Finally, mandatory disclosure increases the disclosure rate and reduces the opportunistic underreporting of enterprises, considering that many companies did not disclose specific type of environmental information and environmental violations on their official websites as required. Now both CSRC and MEE require companies to disclose periodic reports and temporary reports, which largely guarantees the disclosure of environmental information. Finally, China has preliminarily

established a series of online EID platforms, including the official website of the central and local environmental protection departments, the "System on Corporate Environmental Information Disclosed in accordance with the Law", the "National Pollution Source Monitoring Information Management and Sharing Platform", the "National Key Monitoring Enterprise Self-Monitoring Information Release Platform" and the "National Pollutant Discharge Permit Management Information Platform". The government are optimizing information sharing among various departments to complete the digitization of environmental information management.

About deficiencies. First of all, the EID quality in annual reports and non-financial reports is very uneven. Taking the companies in this article as examples, the environmental information disclosure standards and formats of the reports are not uniform, which makes information collection difficult and inefficient for information users. Also, it's difficult to quantify the comparison between information of different companies. Secondly, the mandatory disclosure requirements apply only to a limited scope of companies. China has always implemented classified management of information disclosure, giving priority to companies that discharge large amounts of pollutants and are more prone to environmental violations. Therefore, there have been concepts like heavily polluting industries, key-monitoring enterprises, key pollutant-discharge units, and enterprises that implement mandatory clean production audits. In addition, the regulatory authorities have strict disclosure requirements for enterprises in the financial industry and central enterprises. But for general listed companies, environmental information disclosure by these enterprises is still a voluntary thing, the attitude of the government is just giving encouragement. Thirdly, environmental information lacks third-party verification and has low credibility. At present, most of the pollutant-discharge data disclosed by enterprises are monitored by the company itself. Although some companies use third-party agency or monitoring equipment that is connect to the Internet, there is still be the possibility of false disclosure, and it is difficult for the public to verify. Fourthly, many companies tend to report good news but not bad news, and only disclose information that is beneficial to the company, while omitting environmental hazards or environmental accidents. Fifthly, there is a lack of an effective reward and punishment mechanism. For companies that do not disclose environmental information or disclose untrue information, the amount of fines ranges from RMB 10,000 (US\$1,412) to RMB 100,000 (US\$14,118), which is quite low for the enterprise standard. For companies with high quality information disclosure,

the state currently does not provide any incentive policies. This has led most companies to take the attitude of completing tasks when disclosing environmental information.

There are some corresponding suggestions based on the above analysis and conclusions. First of all, the Chinese government can further improve the quality of information disclosure through multi-pronged approaches, including: 1) The introduction of clearer disclosure format requirements, such as strengthening the disclosure standardization of annual reports, making environmental information more quantifiable so as to facilitate data analysis by data users. 2) The conduction of appropriate training sessions to strengthen enterprises' understanding of EID, the skills of compiling the environmental report, unify the caliber of various types of data disclosure, and provide classified guidance for enterprises in different industries and enterprises classified into various special lists. 3) Carry out information disclosure evaluation, select high-quality environmental reports, and use them as examples of disclosure for other companies to learn from. Secondly, in order to ensure the authenticity of information disclosure, China should establish a bunch of third-party environmental information audit agencies and continuously encourage the public to participate in the supervision work. Enterprises may deliberately conceal environmental incidents and other non-compliance behaviors for the sake of reputation and interests, and the huge number of enterprises makes it difficult to effectively eliminate phenomenon like false and concealed disclosure only by relying on government supervision. Therefore, public supervision and third-party participation in audits can better ensure the authenticity of information disclosure. Thirdly, the government should establish an effective reward and punishment mechanism for environmental information disclosure. At present, there is no incentive mechanism for environmental information disclosure in China, which makes companies difficult to subjectively have the motivation to enhance the quality of information disclosure. Disclosing information has become a task. While the cost of not disclosing or disclosing false information is very low, which will lead to the behavior of “knowing the law and breaking the law”. Therefore, in the long run, a sound reward and punishment mechanism provide endogenous driving force for companies to better disclose environmental information. Fourthly, it is necessary to further expand the scope of application of mandatory EID and strengthen the disclosure requirements for non-financial reports. At present, the length and quality of non-financial reports released by enterprises are very

uneven, and some reports still maintain the disclosure mode of 10 years ago, which can hardly meet the raising and updating international standards. Although the disclosure rate of non-financial reports is increasing year by year, it is still at a low level of around 30%. Therefore, stock exchanges should expand the scope of mandatory disclosure of non-financial reports to improve the awareness and practice of ESG concepts by more companies. Appendix B shows the current non-financial report disclosure requirements of mainland stock exchanges. Except for a few companies in special sectors, most listed companies voluntarily disclose non-financial reports.

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APPENDIX A Chinese-English Glossary

“Action Plan for Peaking Carbon Emissions before 2030”
《2030年前碳达峰行动方案》
“Measures for the Administration of Environmental Pollution Compulsory Liability Insurance (Draft)”
《环境污染强制责任保险管理办法（征求意见稿）》
“Administrative Rules for Carbon Emission Allowance Registration (for Trial Implementation)”
《碳排放权登记管理规则（试行）》
“Administrative Rules for Carbon Emission Allowance Settlement (for Trial Implementation)”
《碳排放权结算管理规则（试行）》
“Administrative Rules for the Management of Carbon Emission Trading (for Trial Implementation)”
《碳排放权交易管理规则（试行）》
“Cleaner Production Promotion Law of the People's Republic of China”
《中华人民共和国清洁生产促进法》
“Corporate environmental credit evaluation (for Trial Implementation)”
《企业环境信用评价办法（试行）》
“Corporate Environmental Information Disclosure Report in accordance with the Law”
《企业环境信息依法披露报告》
“Corporate Social Responsibility Report of China's Manufacturing Industry”
《中国工业行业企业社会责任报告》
“Enterprise Environmental Emergencies Risk Classification Method”
《企业突发环境事件风险分级办法》
“Environmental information disclosure guidance for listed companies”
《上市公司环境信息披露指南》
“Environmental Pollution Compulsory Liability Insurance Pilot Enterprise Directory of Shenzhen”
《深圳市环境污染强制责任保险试点企业名录》
“Environmental Protection Law of the People’s Republic of China”

《中华人民共和国环境保护法》
“Environmental Protection Tax Law of the People's Republic of China”
《中华人民共和国环境保护税法》
“Environmental, Social and Governance (ESG) Reporting Guidelines”
《环境、社会及管制报告指引》
“Format Guidelines for Legal Disclosure of Enterprise Environmental Information”
《企业环境信息依法披露格式准则》
“Guangdong Province Carbon Emission Management Trial Measures”
《广东省碳排放管理试行办法》
“Guidelines for Accounting Methods and Reporting of Corporate Greenhouse Gas Emissions”
《企业温室气体排放核算方法和报告指南》
“Guidelines for Cleaner Production Audit Evaluation and Acceptance”
《清洁生产审核评估与验收指南》
“Guidelines for Environmental Information Disclosure of Listed Companies on the Shanghai Stock Exchange”
《上海证券交易所上市公司环境信息披露指引》
“Guidelines for Government Information Disclosure of Environmental Impact Assessment of Construction Projects (for Trial Implementation)”
《建设项目环境影响评价政府信息公开指南（试行）》
“Guidelines for Investigation of Environmental Emergency Resources (for Trial Implementation)”
《环境应急资源调查指南（试行）》
“Guidelines for Social Responsibility of Chinese Coal Enterprises”
《中国煤炭企业社会责任指南》
“Guidelines for the Investigation and Management of Environmental Emergencies in Enterprises (for Trial Implementation)”
《企业突发环境事件隐患排查和治理工作指南（试行）》
“Guidelines for the Management of Investor Relations of Listed Companies”
《上市公司投资者关系管理工作指引》
“Guidelines for the preparation of the Corporate Social Responsibility Report”

《公司履行社会责任的报告编制指引》
“Guidelines for the Review of Environmental Emergency Plans of Enterprises and Institutions (for Trial Implementation)”
《企业事业单位突发环境事件应急预案审查指南（试行）》
“Guidelines on Governance of Listed Companies
《上市公司治理准则》
“Guidelines on Social Responsibility of Listed Companies on the Shenzhen Stock Exchange”
《深圳证券交易所上市公司社会责任指引》
“Guiding Opinions on a Better Fulfillment of Social Responsibility by State-owned Enterprises”
《关于国有企业更好履行社会责任的指导意见》
“Guiding Opinions on Building a Modern Environmental Governance System”
《关于构建现代环境治理体系的指导意见》
“Guiding Opinions on the Fulfillment of Social Responsibility by Central Enterprises”
《关于中央企业履行社会责任的指导意见》
“Guiding Opinions on the Fulfillment of Social Responsibility by State-owned Enterprises”
《关于国有企业履行社会责任的指导意见》
“Law of the People's Republic of China on the Prevention and Control of Atmospheric Pollution”
《中华人民共和国大气污染防治法》
“Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Waste”
《中华人民共和国固体废物污染环境防治法》
“Law of the People's Republic of China on the Prevention and Control of Water Pollution”
《中华人民共和国水污染防治法》
“Measures for Administrative Punishment of the Ecological Environment”
《环境行政处罚办法》
“Measures for Auditing the Validity of Automatic Monitoring Data of Pollution

“Sources in National Monitoring Enterprises”
《国家监控企业污染源自动监测数据有效性审核办法》
“Measures for Cleaner Production Audit”
《清洁生产审核办法》
“Measures for Environmental Emergency Management”
《突发环境事件应急管理办法》
“Measures for Public Participation in Environmental Impact Assessment”
《环境影响评价公众参与办法》
“Measures for Self-monitoring and Information Disclosure of National Key Monitoring Enterprises (for Trial Implementation)”
《国家重点监控企业自行监测及信息公开办法（试行）》
“Measures for Supervisory Monitoring and Information Disclosure of Pollution Sources in Key National Monitoring Enterprises”
《国家重点监控企业污染源监督性监测及信息公开办法（试行）》
“Measures for the Administration of a Permit for Operation of Dangerous Waste”
《危险废物经营许可证管理办法》
“Measures for the Administration of Carbon Emissions Trading (for Trial Implementation)”
《碳排放权交易管理办法（试行）》
“Measures for the Administration of Filing Emergency Plans for Environmental Emergencies in Enterprises and Institutions (for Trial Implementation)”
《企业事业单位突发环境事件应急预案备案管理办法（试行）》
“Measures for the Administration of Information Disclosure of Listed Companies”
《上市公司信息披露管理办法》
“Measures for the Administration of Legal Disclosure of Enterprise Environmental Information”
《企业环境信息依法披露管理办法》
“Measures for the Administration of Qualification Permit for the Disposal of Waste Electrical and Electronic Products”
《废弃电器电子产品处置资质许可管理办法》
“Measures for the Management of Environmental Emergencies”

《突发环境事件应急管理办法》
“Measures for the Registration of Environmental Emergencies Plans in Enterprises and Institutions (for Trial Implementation)”
《企业事业单位突发环境事件应急预案备案管理办法》
“Measures for the Use of Qualified Marks for the Supervision and Assessment of Automatic Monitoring Equipment for Pollution Sources in Key National Monitoring Enterprises”
《国家重点监控企业污染源自动监测设备监督考核合格标志使用办法》
“Notice of the State Council on Approving the Measures for Statistical Monitoring and Assessment of Energy Conservation and Emission Reduction”
《国务院批转节能减排统计监测及考核实施方案和办法的通知》
“Opinions on Strengthening and Improving Environmental Statistics Work”
《关于加强和改进环境统计工作的意见》
“Opinions on the Accurate and Comprehensive Implementation of the Green Development Concept to fulfill the mission of Carbon Peaking and Carbon Neutrality”
《关于完整准确全面贯彻新发展理念做好碳达峰碳中和工作的意见》
“Regulations for the Supervision and Assessment of Automatic Monitoring Equipment for Pollution Sources in National Key Monitoring Enterprises”
《国家重点监控企业污染源自动监测设备监督考核规程》
“Regulations on the List of Key Pollutant-Discharge Units (for Trial Implementation)”
《重点排污单位名录管理办法（试行）》
“Regulations on the Management of Pollutant Discharge Permits”
《排污许可证管理条例》
“Rules Governing the Listing of Stocks on Shanghai Stock Exchange”
《上海证券交易所股票上市规则》
“Rules Governing the Listing of Stocks on Shenzhen Stock Exchange”
《深圳证券交易所股票上市规则》
“Rules Governing the Listing of Stocks on the Growth Enterprises Board of Shenzhen Stock Exchange”
《深圳证券交易所创业板股票上市规则》
“Rules Governing the Listing of Stocks on the Science and technology Innovation Board of Shanghai Stock Exchange”

《上海证券交易所科创板股票上市规则》
“Securities Law of the People's Republic of China”
《中华人民共和国证券法》
“Shandong Province Electric Power Industry Sulfur Dioxide Emission Rights Trading Temporary Management Measures”
《山东省电力行业二氧化硫排污权交易管理暂行办法》
“Shanghai Stock Exchange Listed Companies Self-Regulatory Guidelines No. 1 - Standardized Operation”
《上海证券交易所上市公司自律监管指引第 1 号——规范运作》
“Shenzhen Stock Exchange Listed Companies Self-Regulatory Guidelines No. 1 - Standardized Operation of Main Board Listed Companies”
《深圳证券交易所上市公司自律监管指引第 1 号——主板上市公司规范运作》
“Shenzhen Stock Exchange Listed Companies Self-Regulatory Guidelines No. 2 - Standardized Operation of GEM Listed Companies”
《深圳证券交易所上市公司自律监管指引第 2 号——创业板上市公司规范运作》
“Standards Concerning the Contents and Formats of Information Disclosure by Companies Offering Securities to the Public No.2 — Contents and Formats of Annual Reports”
《公开发行证券的公司信息披露内容与格式准则第 2 号-年度报告的内容与格式》
“Standards Concerning the Contents and Formats of Information Disclosure by Companies Offering Securities to the Public No.3 — Contents and Formats of Half-year Reports”
《公开发行证券的公司信息披露内容与格式准则第 3 号-半年度报告的内容与格式》
“Technical Guidelines for Self-monitoring of Pollutant Discharging Units”
《排污单位自行监测技术指南》
“Temporary measures for Cleaner Production Audit”
《清洁生产审核暂行办法》
“Temporary Regulations on the Administration of Carbon Emissions Trading”
《碳排放权交易管理暂行规定》
“Work Plan for Improving the Quality of Listed Companies Controlled by Central Enterprises”
《提升中央企业控股上市公司质量工作方案》

key pollutant-discharge units
重点排污单位
National Key Monitoring Enterprise Self-Monitoring Information Release Platform
国家重点监控企业自行监测信息发布平台“
National Pollutant Discharge Permit Management Information Platform
全国排污许可管理信息平台
National Pollution Source Monitoring Information Management and Sharing Platform
全国污染源监测数据管理与共享平台
System on Corporate Environmental Information Disclosed in accordance with the Law
企业环境信息依法披露系统

APPENDIX B Environmental disclosure regulations for non-financial reports

The SSE and the SZSE encourage listed companies to “voluntarily” disclose ESG information, while listed companies in specific industries and sectors should “mandatorily” disclose non-financial report. Under the voluntary disclosure model, if the company fails to disclose, it will have an impact on the ESG information disclosure assessment of the SSE and the SZSE even though it will not be punished by relevant departments. Under the mandatory disclosure model, if the company fails to disclose or discloses falsely, it needs to assume the corresponding legal responsibilities.

Regulations	Requirements
2006 “Guidelines on Social Responsibility of Listed Companies on the Shenzhen Stock Exchange”	Chapter 1 Article 5 Company shall actively fulfill its social responsibilities in accordance with the requirements of this “Guidelines”, regularly evaluate the performance of the company's social responsibilities, and voluntarily disclose CSR report.
2008 SSE “Guidelines for the preparation of the Corporate Social Responsibility Report”	<p>Article 2 Companies can determine the content and title of the above reports according to its own actual situation and the work practice of preparing relevant reports, including but not limited to: social responsibility report, sustainable development report, environmental responsibility report, corporate citizenship report, etc.</p> <p>Article 4 When compiling a social responsibility report, companies should at least pay attention to the following issues:</p> <p>(1) The company's work in promoting sustainable social development, such as the protection of employee health and safety, the protection and support of the community where it is located, and the control of product quality;</p>

	<p>(2) The company's work in promoting environmental and ecological sustainable development, such as how to prevent and reduce pollution, how to protect water resources and energy, how to ensure the livability of the area where it is located, and how to protect and improve the biodiversity of the area where it is located, etc.;</p> <p>(3) The company's work in promoting sustainable economic development, such as how to create value for customers through its products and services, how to create better job opportunities and future development for employees, and how to bring higher economic returns to its shareholders, etc.</p>
<p>2008 “Guidelines for Environmental Information Disclosure of Listed Companies on the Shanghai Stock Exchange”</p>	<p>Listed companies may, according to their own needs, disclose the following environmental information in their annual social responsibility reports:</p> <p>(1) The company's environmental protection policy, annual environmental protection goals and results;</p> <p>(2) The total annual resource consumption of the company;</p> <p>(3) The company's environmental protection investment and environmental technology development;</p> <p>(4) The type, quantity, concentration and whereabouts of pollutants discharged by the company;</p> <p>(5) The construction and operation of the company's environmental protection facilities;</p> <p>(6) The treatment and disposal of waste generated in the company's production process, and the recycling and comprehensive utilization of waste products;</p> <p>(7) Voluntary agreement signed with the environmental protection department to improve</p>

	<p>environmental behavior;</p> <p>(8) The situation of the company being rewarded by the environmental protection department;</p> <p>(9) Other environmental information that enterprises voluntarily disclose.</p> <p>For companies engaged in thermal power generation, steel, cement, electrolytic aluminum, mineral development and other industries that have a greater impact on the environment, they should disclose the environmental information listed in items (1) to (7) of the preceding paragraph, and should focus on explaining the company's work in environmental protection investment and environmental technology development.</p>
<p>2020 “Rules Governing the Listing of Stocks on the Science and technology Innovation Board of Shanghai Stock Exchange”</p>	<p>Article 3 Listed companies should disclose the performance of social responsibilities in their annual reports, and prepare and disclose social responsibility reports, sustainable development reports, environmental responsibility reports and other documents as appropriate.</p>
<p>2022 “Shanghai Stock Exchange Listed Companies Self-Regulatory Guidelines No. 1 - Standardized Operation”</p>	<p>8.5 Sample companies listed on the “SSE Corporate Governance Sector”, companies listed both domestically and overseas, and financial companies shall disclose the company's social responsibility fulfillment report (hereinafter referred to as the social responsibility report) at the same time as the annual report. The Exchange encourages other qualified listed companies to disclose non-financial reports such as social responsibility reports while disclosing their annual reports.</p> <p>8.9 Listed companies may, according to their own</p>

	<p>needs, disclose the following environmental information in their annual social responsibility reports:</p> <ol style="list-style-type: none"> (1) The company's environmental protection policy, annual environmental protection goals and results; (2) The total annual resource consumption of the company; (3) The company's environmental protection investment and environmental technology development; (4) The type, quantity, concentration and whereabouts of pollutants discharged by the company; (5) The construction and operation of the company's environmental protection facilities; (6) The treatment and disposal of waste generated in the company's production process, and the recycling and comprehensive utilization of waste products; (7) Voluntary agreement signed with the environmental protection department to improve environmental behavior; (8) The situation of the company being rewarded by the environmental protection department; (9) Other environmental information that enterprises voluntarily disclose. <p>For companies engaged in thermal power generation, steel, cement, electrolytic aluminum, mineral development and other industries that have a greater impact on the environment, they should disclose the environmental information listed in items (1) to (7) of the preceding paragraph, and should focus on explaining the company's work in environmental</p>
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	protection investment and environmental technology development.
2022 “Shenzhen Stock Exchange Listed Companies Self-Regulatory Guidelines No. 1 - Standardized Operation of Main Board Listed Companies”	<p>8.4 Listed companies should actively fulfill their social responsibilities, and regularly evaluate the performance of their social responsibilities. SZSE 100 sample companies shall disclose the report on fulfilling social responsibility (hereinafter referred to as the social responsibility report) at the same time as the annual report. The Exchange encourages other qualified listed companies to disclose their social responsibility reports while disclosing their annual reports.</p> <p>8.7 Same as 8.9 of the “Shanghai Stock Exchange Listed Companies Self-Regulatory Guidelines No. 1 - Standardized Operation”</p>