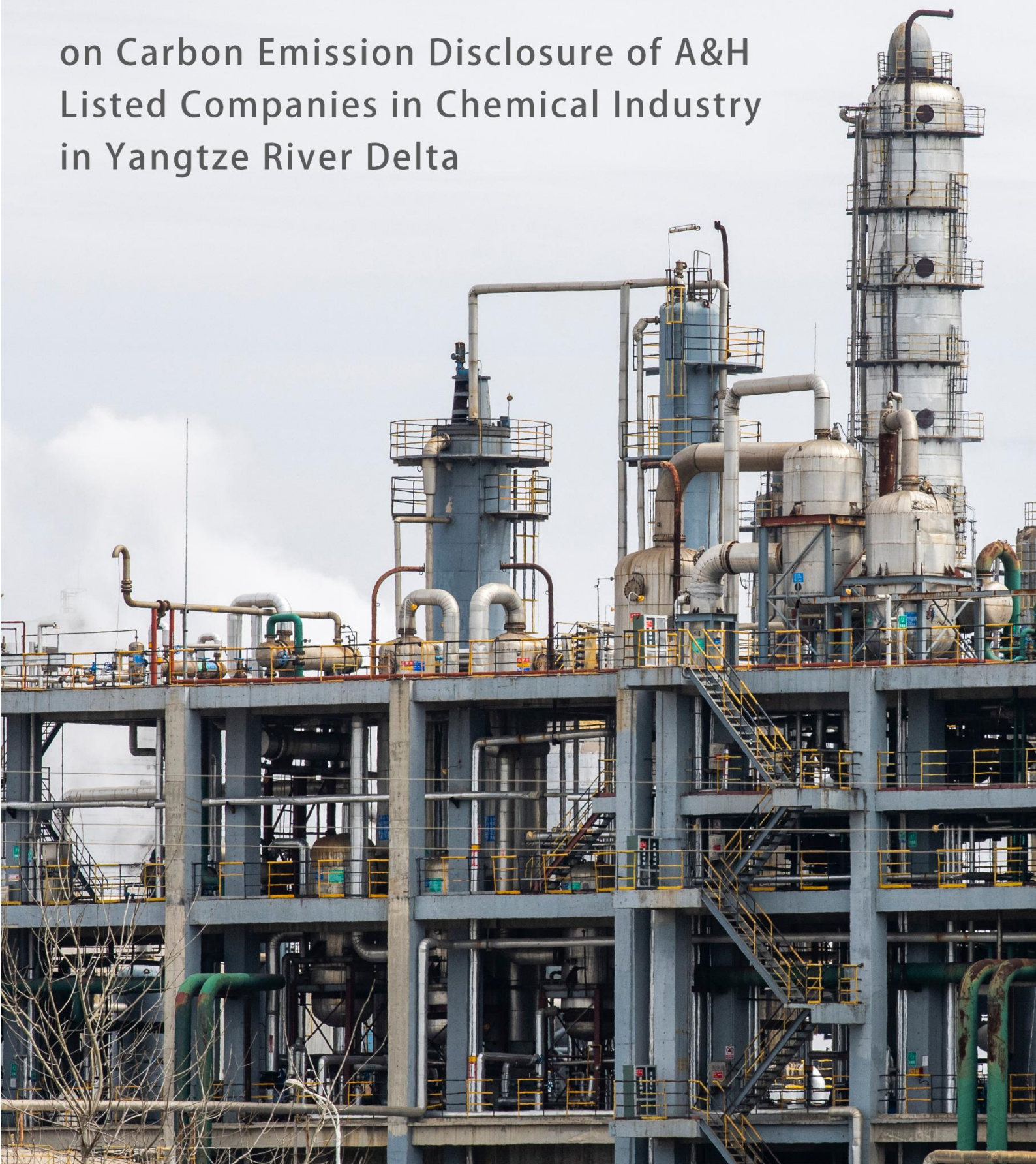


# Observation Report

on Carbon Emission Disclosure of A&H  
Listed Companies in Chemical Industry  
in Yangtze River Delta



PECC



## Research Background

The chemical industry is one of the major sources of greenhouse gases in the industrial sector, and is a high-energy-consuming and high-emission industry. Carbon management is more difficult than in other industries, but it is crucial for industrial carbon emission reduction. Globally, the chemical industry accounts for 5.8% of total carbon emissions (including 3.6% of industrial energy emissions and 2.2% of direct industrial emissions). As the world's largest producer of chemicals, China's chemical industry accounts for about 5.3% of the country's total carbon emissions, with high carbon emissions per unit of GDP.

At a time when the global climate crisis is becoming increasingly severe, environmental protection standards and green low-carbon initiatives are sweeping the world with unprecedented vigor, and higher requirements are being placed on the sustainable development of the chemical industry. Taking the European Union as an example, its enactment of the New Battery Act has come into force on August 17, 2023, and since July 2024, power batteries and industrial batteries are required to declare the carbon footprint of their products before they are sold in the European market. In 2023, China's exports of basic organic chemicals amounted to 5,751,035.6 million U.S. dollars, the current international trade development situation is good overall, but also by the impact of international policies and regulations. Governments have introduced stringent

carbon management policies, such as the EU's carbon tariff (CBAM), which require imported goods to meet certain carbon emission standards, thus putting direct pressure on exporters. China has also introduced a series of policies and regulations under the guidance of the dual-carbon target, such as the State Council issued the 2024-2025 Energy Saving and Carbon Reduction Action Program on May 23, 2024, which requires accelerating the energy-saving and carbon-reducing transformation of the petrochemical and chemical industries. Therefore, carbon reduction is not only the embodiment of chemical enterprises' responsibility for environmental protection, but also an inevitable choice in the face of market pressure, and a necessary way to comply with the development trend of the times. Therefore, carbon reduction is not only the embodiment of chemical enterprises' responsibility for environmental protection, but also an inevitable choice in the face of market pressure, and a necessary way to comply with the development trend of the times.

As one of the most economically developed regions in China, the Yangtze River Delta (YRD) region is not only the leader of the national economy, but also the frontier of opening up to the outside world. The development of its chemical industry has been particularly remarkable, but it is also facing the major challenge of how to ensure sustained economic growth while realizing carbon reduction and pollution reduction at the same time. In view of this, it is particularly important to explore the actual level of carbon reduction in chemical

companies in the Yangtze River Delta region.

Based on the accumulation of previous field research and the guidance of the “Yangtze River Delta Eco-Green Integrated Development Demonstration Zone Carbon Peak Implementation Program”, which clearly proposes the establishment of a perfect corporate carbon disclosure system, Lvse Jiangnan Public Environmental Concerned Centre (hereinafter referred to as “PECC”) has made efforts to carry out a study on the disclosure of carbon emissions of the chemical industry in the Yangtze River Delta. By combing and analyzing the public information of 149 A-share and H-share listed companies in the chemical industry in the Yangtze River Delta, we aim to analyze the actual status of carbon disclosure in the industry, and to raise the level of attention and emphasis on carbon disclosure by enterprises, as well as to put forward targeted suggestions on this basis. We expect to promote enterprises to strengthen the disclosure of climate and environmental information, encourage the assumption of corresponding social responsibility, stimulate consensus and action on green transformation within the industry, guide more enterprises to join the practice of carbon reduction and pollution reduction, and promote the chemical industry in the Yangtze River Delta to draw a beautiful blueprint for the harmonious coexistence of economic development and environmental protection, so as to jointly build an environmentally friendly chemical industry ecosystem.

## **1. Object of Research**

PECC's current research focuses on the chemical industry, and the research targets all listed companies in the chemical industry located in the Yangtze River Delta region. Based on the support of Blue Map Environmental Database ([www.ipe.org.cn](http://www.ipe.org.cn)) established by the Public Environmental Research Center (IPE), which is a domestic environmental data public welfare platform that includes official and authoritative data, PECC selected and analyzed a total of 149 listed chemical companies in the Yangtze River Delta, covering 141 A-share listed companies and 8 H-share listed companies. PECC selected and analyzed a total of 149 chemical companies listed in the Yangtze River Delta, covering 141 A-share listed companies and 8 H-share listed companies in 2023, including annual reports, social responsibility reports, ESG reports, etc., as well as the status of carbon disclosure and ecological and environmental administrative penalties of 338 affiliates (including those with equity ratio of at least 50%) in the corporate environmental information disclosure system according to the law (hereinafter referred to as the "Disclosure System").

## **2. Field Research**

Prior to this carbon disclosure study, as a high-energy-consuming and high-emission industry, carbon reduction and pollution abatement in the

chemical industry has also been a focus of attention in PECC's work. Since 2020, PECC has been conducting field research on chemical parks across China, and up to now, hundreds of chemical parks have been researched. The Yangtze River Delta Chemical Park is the key focus area of PECC, which includes most of the chemical companies in this study, and has promoted the effective management and improvement of environmental problems in dozens of chemical parks in the past four years. In response to the environmental problems identified, we have submitted nearly 100 environmental research reports to ecological and environmental departments at all levels, which have been highly valued by the local ecological and environmental departments and have made positive replies, urging enterprises to implement the main responsibility for environmental governance.



Figure 1 A chemical park site research scene

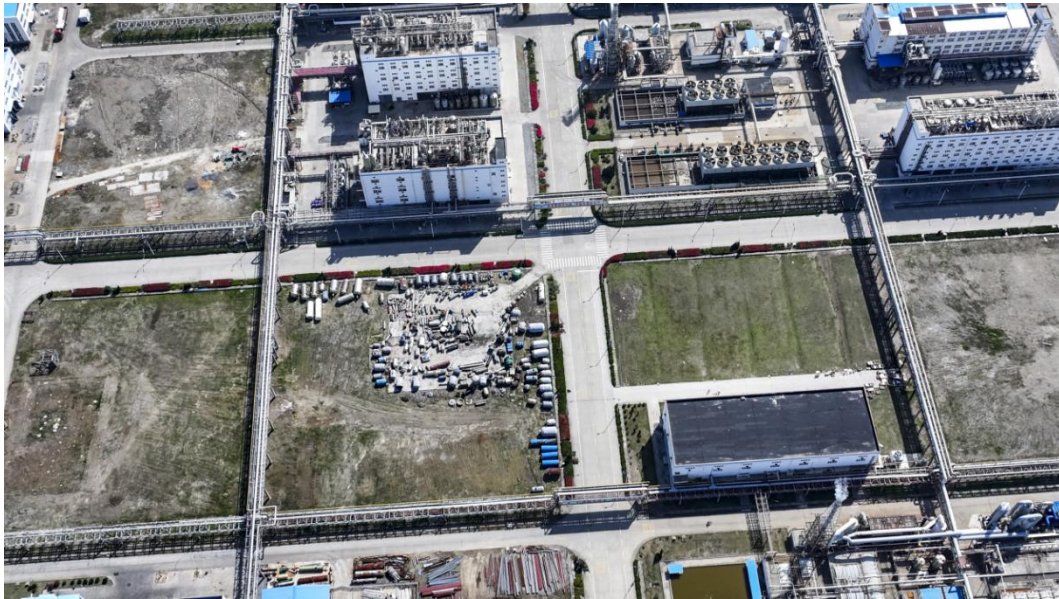


Figure 2 Deficiencies in on-site environmental management at a chemical park enterprise

During our research we found chemical enterprises with good environmental site performance, such as Jiangsu Hailun Petrochemical Company Limited, Jiangsu Xinhua Chemical Company Limited, and Anhui Liuguo Chemical Company Limited. These companies are located in chemical parks, with a high level of on-site environmental management, good environmental performance, no obvious pollution, showing a strong sense of environmental management.

Table 1 Good Case

corporation	Affiliated chemical park
Jiangsu Hailun Petrochemical Co.	Jiangyin Lingang Chemical Park
Jiangsu Xinhua Chemical Co.	Coastal Industrial Park, Binhai Economic Development Zone, Jiangsu



Figure 3 A chemical park enterprise site research scene



Figure 4 A chemical park enterprise site research scene





Figure 5 A chemical park enterprise site research scene

### 3. Carbon disclosure performance of parent companies of listed companies

#### 3.1 A-share carbon disclosure performance

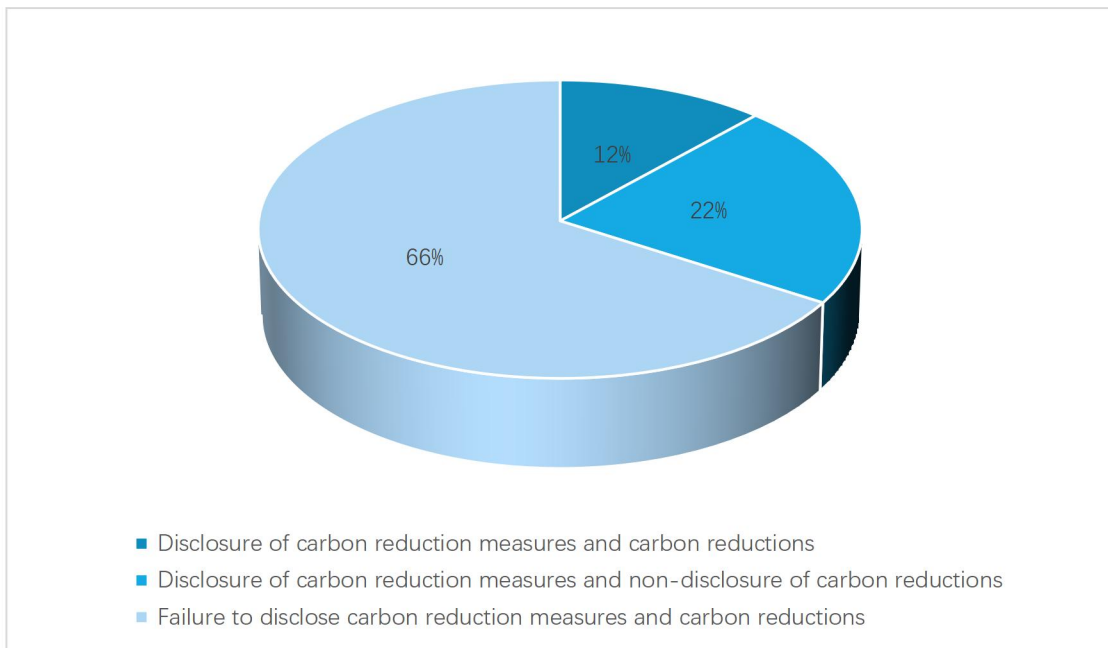


Figure 6 A-share 2023 Annual Report Carbon Disclosure Performance

(1) 36 disclosed CO<sub>2</sub> equivalent emission reductions and carbon reduction measures

In the 2023 Annual Report, 36 listed companies in the chemical industry located in the Yangtze River Delta region have disclosed the amount of carbon reduction and carbon reduction measures, demonstrating their strong commitment and practical actions to reduce carbon emissions. From the observation of the carbon reduction data disclosed by 36 enterprises, their total carbon reduction reached 10,829,238.02 tons, indicating that these enterprises have made certain achievements in reducing carbon emissions, however, the difference in carbon reduction between different enterprises is more obvious, and is related to the scale of the enterprise, the effectiveness of carbon reduction measures and other factors.

Disclosure of carbon reductions not only reflects the implementation of transparent governance, but also quantifies the actual effectiveness of carbon reductions, enabling the public, investors and other stakeholders to have a clear understanding of the company's emissions reductions. These enterprises have actively responded to the national green development strategy and effectively cut carbon emissions during their operations through diversified means such as renewable energy utilization, energy efficiency enhancement and recycling, setting a responsible example for the industry and beyond.

Table 2 List of Listed Companies Disclosing Carbon Reductions and Carbon Reduction Measures

stock code	listed company	Carbon reduction (tons)	stock code	listed company	Carbon reduction (tons)
600500	Sinochem International	42886	600160	Juhua Corporation	244816
600618	Chlor-alkali chemical	50458	605020	Yonghe Stocks	9529251.68
600623	Huayi Group	179324	603379	Sammy's share	5228.12
603330	Tianyang New Material	1750	002250	Lianhua Technology	7193
603378	Asia Cuanon	6699	688571	Hanghua Stock	1300
603650	Tongcheng New Material	3415.2	603155	Xin Yaqiang	3775
603790	YaYun stock	1634.21	603879	Yongyue Technology	3400
600315	Shanghai Jahwa	1211.75	603968	Acetic Acid Chemical	8290.11
600935	Sinoplasma Corporation	21123	600746	Jiangsu Sopo	4000
002057	China Steel Tianyuan	2002.5	600078	ST Chengxing	59921.25
600470	Liuguo Chemical	171659.7	002274	Huachang Chemical	90400
688350	Fumiao Technology	1691.81	600796	Qianjiang Biochemistry	123000

603867	Xinhua Corporation	1069.5	301518	Changhua Chemical	2028
605166	Juheshun	1146	301090	CR Materials	2662.1
603948	Jianye shares	2238	688585	Shangwei New Materials	9528.337
603823	Lily Group	190315.13	688116	Tiannai Technologies	4300
002915	Zhongxin Fluorine Material	31850	688106	Jinhong Gas	381.17
600352	Zhejiang Longsheng	11405	603213	Zhenyang Development	7884.45

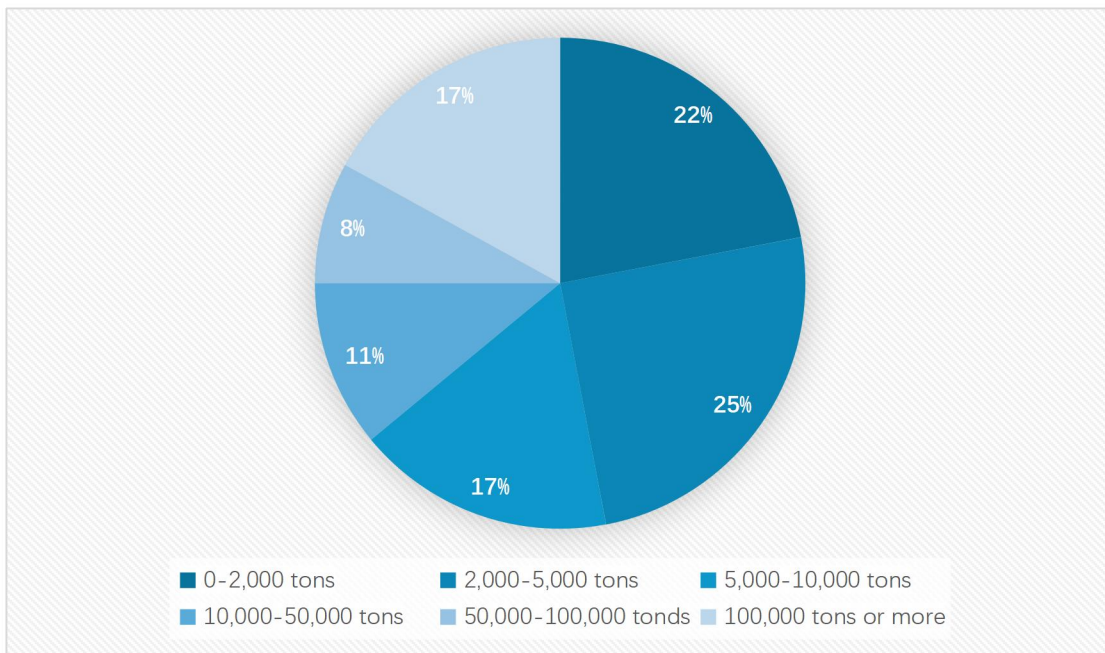


Figure 7 Carbon reduction disclosed by A shares

在报告期内为减少其碳排放所采取的措施及效果  
适用 不适用

1、珠海华润材料屋顶分布式光伏发电项目二期。二期光伏发电项目于 2023 年 7 月底并网发电，至 2023 年底已发电 152.44 万 KW·h。按等价值折算节约标准煤 503 吨，减少碳排放量 885 吨。

2、珠海华润材料天然气节能降耗项目。2023 年 1 月份，珠海华润材料对部分热媒炉燃烧器喷嘴进行更换（ $\phi 6.0$  更换  $\phi 3.8$  小喷嘴），三台热媒炉小喷嘴更换完成后，天然气单耗有所下降，目前还在持续优化运行参数，以求达到天然气单耗最低值。2023 年 2 月 16 日，将热媒循环泵 51-P401/501 频率由 47Hz 调整为 49Hz，调整后热媒流量和压力得到提升，热媒流速变快，系统回管温度升高，炉子热效率得到提升，天然气用量减少。工艺运行参数调整后，用电量有所增加但天然气用量下降，下降的天然气用量与增加的用电量折算后比较，年可节省用能 1043 吨标准煤。



3、鼓风零气耗吸附式干燥机节能改造项目。公司公用工程仪表用组合式冷冻干燥机已投用 18 年，存在机组换热器列管结垢，换热效率下降严重，冷媒过滤器经常堵塞等问题；公司投资 48 万元新购鼓风零气耗吸附式干燥机 1 台替代原组合式冷冻干燥机，8 月份进行了改造，相比原组合式冷冻干燥机组舍弃了制冷压缩机、空气换热器、氟利昂换热器等复杂的热交换设备，项目实施后每年可节约用电约 9.3 万 KW·h，年可节约标煤约 27 吨（等价值），年可减少二氧化碳排放量约 53 吨。

4、节能灯能效提升改造项目。为节约每一度电，减少每一吨碳排放，公司投资 1.719 万元，于 9 月份对 60 万吨煤棚至热媒站管架处普通路灯 15 盏更新成太阳能灯；公司投资 13.13 万元，10 月份在 40 万吨原料库更新二级能效节能灯 130 盏，淘汰原有照明灯具；项目实施后年可节约用电约 9.7 万 KW·h，年可节约标煤约 28.1 吨（等价值），年可减少二氧化碳排放量约 55.3 吨。

Figure 8 CR Materials 2023 Annual Report Carbon Disclosure

<b>(四) 在报告期内为减少其碳排放所采取的措施及效果</b>	
是否采取减碳措施	是
减少排放二氧化碳当量(单位:吨)	1,691.81
减碳措施类型(如使用清洁能源发电、在生产过程中使用减碳技术、研发生产助于减碳的新产品等)	使用节能措施和技术, 详见下方关于碳减排方面的新技术、新产品、新服务情况

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2023 年年度报告

具体说明  
适用 不适用  
 2023 年公司在不断完善碳排放数据质量控制的同时, 建立健全碳排放管理部门, 持续加强碳排放体系建设工作。报告期内, 公司开展了配电系统无功补偿改造和更换高效电机等节能改造项目, 并对耗能设备进行了全面的摸排, 针对高能耗设备制定了淘汰计划和使用时间优化调整。热电生产单元对固体车间蒸汽冷凝水进行回用, 提高余热利用率。

**(五) 碳减排方面的新技术、新产品、新服务情况**  
适用 不适用  
 报告期内, 公司采用高效电机、LED 节能照明、变频装置和余热利用等节能措施和技术, 可节约能源、减少碳排放。公司通过加装能源计量器具、计量器具智能化改造及能源数据远程在线监测等措施, 提升了能源管理信息化水平, 为公司碳减排提供数据支持。

Figure 9 Fumiao Technology 2023 Annual Report Carbon Disclosure

(2) 66 disclosed carbon reduction measures but not CO2 equivalent emission reductions

Silt, Longpan Technology and other 66 companies mainly focus on the expression of carbon reduction measures and do not mention the specific amount of carbon reduction. In addition, our observation also found that the disclosure of three companies, namely Red Sun, Besmear and Jinlitai, focused on pollution reduction, and the disclosure of Arbonne Chemical was mainly related to hazardous waste, which was not very relevant to carbon reduction.

在报告期内为减少其碳排放所采取的措施及效果

适用 不适用

### 1、安徽国星

①新建2套VOCs吸收装置用于罐区尾气和灌装间处理，减少VOCs排放，对污水厂高浓预处理装置池体进行加盖，并增加1套尾气吸收装置，进一步减少无组织废气的排放。

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南京红太阳股份有限公司 2023 年年度报告全文

②安徽购买VOCs密封点检测设备，定期开展涉VOCs动静密封点泄漏检测与修复工作，加强设备设施动态管理，减少动、静密封点VOCs排放。

### 2、南京生化

①对加工水剂车间及无机罐区储罐尾气进行升级改造，并将加工车间的12个百草枯水剂成品储罐的尾气及18个百草枯液液储存罐的尾气接入总管，与无机罐区尾气及加工车间的尾气混合接入新建的一套尾气处理设施(一级水吸收活性炭吸附)进行处置，减少VOCs排放。

②LDAR检漏与修复工作，每季度一次，减少无组织排放中污染物排放。

### 3、重庆华歌

①新建蒸汽冷凝水回收系统

充分回收冷凝水二次闪蒸汽，使能源回收利用率达95%以上，减少二次蒸汽排放的热污染和噪声污染及烟气污染物烟尘、SO<sub>2</sub>，系统热效率提高，节省15%蒸汽消耗，减少水处理设备投资和运行费用。

②天然气减量工程

通过废液焚烧炉设备优化，焚烧工艺升级改造，使天然气用量由400立方米/小时降低为300立方米/小时，每年减少天然气72万立方米。

### 4、山东科信

新增一台RTO处理尾气设施。改造后非甲烷总烃排放由原来的55mg/m<sup>3</sup>降低至30mg/m<sup>3</sup>以下。大大减少了挥发性有机物的排放量。

### 5、安徽红太阳

新增一台RTO尾气处理设施。改造后非甲烷总烃排放浓度由原来的58.1mg/m<sup>3</sup>降低至16.7mg/m<sup>3</sup>。大大减少了挥发性有机物的排放量。

Figure 10 Red Sun 2023 Annual Report Carbon Disclosure

在报告期内为减少其碳排放所采取的措施及效果

适用 不适用

母公司绍兴贝斯美：

公司在日常生产过程中，针对厂区污染物排放情况采取三类监测措施。

第一类为污染物排放在线监测。公司在废水排口安装有在线监测系统，24小时不间断监测，数据实时上传至浙江省污染源自动监控信息管理平台；在雨水排放口安装有环保自动取样设备，以定时和随机两种方式自动取样。

第二类为公司自行监测。公司委托有资质第三方监测机构，每月对公司污水、废气排放进行检测，每月、每季度对公司废气、噪声进行定期检测，并出具环境监测报告。

第三类监测为环保局监督检测，绍兴市上虞区生态环境局每半年对公司环保情况进行一次随机监督检测。同时，公司加大环保设施投入，即购买、安装环保设施、设备等固定资产的投入；根据环保监管部门的在线监测数据和现场检查情况、第三方环保检测机构出具的检测报告以及公司环保设施运行记录，报告期内公司环保设施运行正常、有效，能够确保各项污染物得到有效处理并达标排放。

控股子公司江苏永安：

公司在日常生产过程中，针对厂区污染物排放情况采取三类监测措施。

第一类为污染物排放在线监测。公司在废水总排放口、雨水排放口、废气排放口按排污许可证要求安装了在线监测装置；废水在线监测包括：COD、氨氮、总氮、总磷、PH计、流量计、水温等，废气有3个排气筒，分别安装了非甲烷总烃、氮氧化物、颗粒物等在线监测装置，24小时不间断在线监测，数据实时上传至省、市、县生态环境部门的环境监测平台；在雨水排放口安装有COD在线监测设备，采取与流量联动的方式自动取样并分析数值。

第二类为自行监测。公司委托有资质第三方检测机构自行监测，要求按月、季度、半年、年的频次对废水、废气的不同污染因子及噪声定期进行检测，出具检测报告，并即时完成生态环境部门的监测平台数据填报。

第三类为各级生态环境部门的监督检测，涟水县生态环境局每半年对公司的废水、废气相关污染因子的排放情况进行两次随机监督抽测，并完成监测报告。

公司每年根据现场环保要求，对相应的环保设施进行不同程度的技术改造，确保环保设施安全、稳定运行；根据环保监管部门的在线监测数据和现场检查情况、第三方环保检测机构出具的检测报告以及公司环保设施运行记录，报告期内公司环保设施运行正常、有效，能够确保各项污染物得到有效处理并达标排放。

Figure 11 Bessemer's 2023 Annual Report Carbon Disclosure

在报告期内为减少其碳排放所采取的措施及效果

适用 不适用

公司每季度都会进行泄漏检测与修复（LDAR检测）。

2023年，公司已完成四个季度LDAR检测。通过检测，可以及时发现泄漏并进行修复，从而达到减少VOC的排放。其中，一季度经检测修复而减少的排放量为12.07kg，二季度减排量为42.84kg，三季度减排量为17.11kg，四季度减排量为58.94kg。

Figure 12 Carbon Disclosure in the 2023 Annual Report of Jinlitai



在报告期内为减少其碳排放所采取的措施及效果  
适用 不适用

- 1、报告期内，南通雅本化学有限公司配合集团公司开展了 ESG 体系的构建，在第三方专业机构的指导下，南通雅本初步构建了碳盘查小组，并初步进行了碳盘查工作，建立相关碳排放的台账记录。
- 2、报告期内，绍兴雅本制定了危废减量化计划和措施，为减少危废产生量和降低危险性的措施如下：
  - 1) 加强危废管理；
  - 2) 加强生产装置的操作运行，确保生产平稳，减少危废的产生；
  - 3) 做好危废分类标识，送往有资质的处理单位处理；
  - 4) 加强危废储存库的防渗、防火、防漏、防盗的工作。

Figure 13 Arbonne Chemicals 2023 Annual Report Carbon Disclosure

(3) 39 failed to disclose carbon reduction measures and CO2 equivalent emission reductions

Although more and more companies are beginning to realize the importance of carbon reduction and include relevant content in their annual reports, there are still some listed companies that fail to disclose information on their carbon emissions in their annual reports. Thirty-nine of the companies in this study did not disclose any carbon reduction measures and reductions in their 2023 annual reports. This phenomenon not only highlights the obvious gaps in the management of carbon emissions by these companies, but may also reflect their lack of preparedness to meet the challenges of climate change. The lack of transparent information on carbon emissions means that it is difficult for investors and the public to assess the climate change resilience to risk and sustainability of these companies, increasing investment risk. We call on these enterprises to strengthen their internal environmental management, take effective measures to reduce greenhouse gas emissions as soon as possible, and enhance the disclosure of environmental information to improve the transparency of their carbon emission information, so as to jointly promote the

green transformation and sustainable development of the chemical industry in the Yangtze River Delta and even the whole country.

#### (4) Other reporting of carbon disclosure performance

In addition to the 2023 annual report, we observed that 40 A-share listed companies disclosed social responsibility reports, ESG reports, etc., but 8 of them did not cover any climate change related information in their reports. 2024 Shanghai and Shenzhen North Exchanges (A-shares) have officially released the guidelines for sustainability reports (for trial implementation) respectively, in which the chapter on addressing climate change is one of the key disclosures. Therefore, listed companies that have not yet taken action should actively prepare and accelerate the public disclosure of carbon emission data and related emission reduction plans.

### **3.2 H-share carbon disclosure performance**

Upon observation, all eight H-share listed companies have actively disclosed carbon emission-related information in their ESG reports, reflecting the importance attached to climate issues. Most of the companies not only elaborated on the climate risks they face, but also provided data on their own carbon emissions and the reduction strategies they are implementing. It is worth mentioning that CSC United is particularly outstanding in terms of carbon

emissions disclosure. The company not only measured and disclosed Scope 1&2&3 emissions, being the only company to disclose Scope 3 carbon emissions, but also set an emission reduction target of a cumulative 20% reduction in greenhouse gas emissions, using the average greenhouse gas emissions for 2019-2021 as the baseline value. Through clear and comprehensive carbon disclosure, C&C United not only demonstrates the importance it places on environmental sustainability, but also sets an example for its peers and the market as a whole, pushing more companies to take action and work together to address the challenges posed by climate change. This not only helps to improve the company's environmental performance, but also enhances its attractiveness in the eyes of investors and promotes the development of a green economy.

The HKEx has set higher requirements and stricter disclosure standards for ESG reporting, introducing the Environmental, Social and Governance Reporting Guidelines in 2015 and continuously updating them to require listed companies to publish regular ESG reports that provide data on a number of environmental performances, including carbon emissions. Rule 2024 further reinforces the importance of ESG reporting, with particular emphasis on climate-related disclosures and disclosure requirements aligned with the International Sustainability Standards Board (ISSB) standards. These changes reflect the HKEx's commitment to market transparency and its focus on sustainable investment and responsible business practices.

**Environmental, Social and Governance Report**  
**環境、社會及管治報告**

Set forth was our greenhouse gas emission during the Reporting Period: 報告期內，我們的溫室氣體排放情況如下：

Greenhouse gas <sup>3</sup> Category	溫室氣體 <sup>3</sup> 類別	Emission 排放量			Unit 單位
		2021	2022	2023	
Greenhouse gas emission Scope I	範疇一溫室氣體排放	70.48	64.69	<b>92.98</b>	Tonnes of CO <sub>2</sub> eq 噸 CO <sub>2</sub> 當量
Greenhouse gas emission Scope II	範疇二溫室氣體排放	653.62	876.10	<b>858.23</b>	Tonnes of CO <sub>2</sub> eq 噸 CO <sub>2</sub> 當量
Greenhouse gas emission Scope III	範疇三溫室氣體排放	48.68	58.04	<b>151.72</b>	Tonnes of CO <sub>2</sub> eq 噸 CO <sub>2</sub> 當量
<b>Total greenhouse gas emissions</b>	<b>溫室氣體排放總量</b>	772.78	998.83	<b>1,102.93</b>	Tonnes of CO <sub>2</sub> eq 噸 CO <sub>2</sub> 當量
<b>Greenhouse gas emissions per revenue of RMB10,000</b>	<b>萬元收益溫室 氣體排放量</b>	30.63	36.33	<b>19.56</b>	Kilogram of CO <sub>2</sub> eq Per RMB10,000 千克 CO <sub>2</sub> 當量/萬元

Figure 14 Carbon Disclosure in CSC United's 2023 ESG Report

### 3.3 summary

Overall, carbon disclosure by H-share listed companies is better, while carbon disclosure by A-share listed companies, although enhanced in the past few years, still lags behind H-share listed companies in terms of mandatory and exhaustive disclosure. Although the disclosure of carbon emission information is encouraged in the annual report disclosure requirements of A-share listed companies, the actual situation shows that close to 30% of companies still have not disclosed any carbon reduction information, and carbon disclosure on the A-share market relies more on the voluntariness of companies. As for the information that has been disclosed, its quality varies and lacks uniform standards. In addition, unlike financial reports, which are subject to audit, carbon disclosures have not yet been audited by a third party, which raises questions about their credibility. Therefore, upgrading the quality and transparency of

carbon emission information disclosure, establishing a unified disclosure standard and introducing a third-party auditing mechanism will be the key steps to improve the credibility of corporate carbon emission information. We expect the gap between A-share and H-share disclosure to narrow gradually, pushing A-share listed companies to increase autonomous information disclosure and conduct more transparent and responsible operations.

In addition, we found that some A-share listed companies, such as Huaheng Bio, disclosed two sections of carbon emission information in their annual reports, namely, “new technologies, products and services for carbon emission reduction” and “greenhouse gas emissions”. In this regard, we consulted the Shanghai Stock Exchange with the intention of finding out whether there are any new policy regulations requiring listed companies to disclose relevant information, and the SSE indicated that the disclosure was made in order to implement the relevant requirements of the State and the Securities and Futures Commission in respect of the disclosure of information on green finance, science and technology innovation, and ESG information, in conjunction with the actual situation of the KTB. We highly approve of these companies’ positive response to national policies and regulatory requirements to expand their carbon disclosures. They have demonstrated their efforts and achievements in sustainable development, which is conducive to enhancing market confidence and attracting investors.

<b>(四) 在报告期内为减少其碳排放所采取的措施及效果</b>	
是否采取减碳措施	是
减少排放二氧化碳当量（单位：吨）	不适用
减碳措施类型（如使用清洁能源发电、在生产过程中使用减碳技术、研发生产有助于减碳的新产品等）	清洁燃料替代、能源优化、工艺优化、水资源循环利用等
<p>具体说明</p> <p><input checked="" type="checkbox"/>适用 <input type="checkbox"/>不适用</p> <p>公司坚持“以可再生生物资源替代不可再生石化资源，以绿色清洁的生物制造工艺替代高能耗高污染的传统工艺”的发展路径，将“绿色智造，低碳先行”的理念贯彻绿色工厂、绿色产品和绿色服务的全生命周期管理体系。同时，公司将低碳环保、绿色可持续发展理念，融入到企业日常经营管理中，倡导全体员工参与环境管理，提高员工环保意识，注重培养员工养成良好的环保习惯，比如，报告期内，公司通过推广无纸化办公、节电、节水等环保办公活动，努力实现资源及能源消耗最小化，减少碳排放。</p> <p><b>(五) 碳减排方面的新技术、新产品、新服务情况</b></p> <p><input checked="" type="checkbox"/>适用 <input type="checkbox"/>不适用</p> <p>1. 在生产制造方面，公司一直秉持可持续发展的原则和绿色生产的承诺，以最小的环境影响和最大的资源效益为目标，推动企业绿色发展。目前，华恒生物三家生产基地均已获得绿色工厂，其中长丰和秦皇岛基地更荣获国家绿色工厂。</p> <p>2. 在技术方面，公司 L-丙氨酸的厌氧生物制造技术颠覆了传统的氨基酸有氧发酵生产模式，解决了对不可再生石化原料的依赖问题，发酵过程无二氧化碳排放。</p> <p>3. 在资源循环利用方面，公司引入磁混凝预处理系统、超滤膜和 RO 反渗透膜处理设备对污水站出水进行进一步处理，实现水资源循环回用至生产系统，降低生产用水成本，可实现年节约 19.8 万吨自来水，每天可减少废水排放 5,700 吨。同时，公司积极采用多种方式减少包装材料的使用，通过包装材料管理和生产工艺优化，从源头上进行包装减量。</p> <p>未来，公司将继续遵从“探底、摸清潜力、实施减排、绿色转型”的科学降碳方法，对核心产品开展碳足迹核算与评价工作。从原料获取和产品加工阶段开始，我们通过原材料绿色采购、生物质燃料锅炉等方式积极推动产品减排工作，并计划扩大碳足迹核查范围完成所有产品的碳足迹排查，覆盖所有产品从种植、养殖、运输、生产、废气等全生命周期的碳足迹核算，逐年降低产品的碳足迹。</p>	

Figure 15 Huaheng Bio 2023 Annual Report Carbon Disclosure (1)

<p><b>1. 温室气体排放情况</b></p> <p><input checked="" type="checkbox"/>适用 <input type="checkbox"/>不适用</p> <p>本公司业务营运产生的温室气体排放包括来自车辆的汽油及柴油燃烧及来自逸散源排放（包含化粪池、污水厌氧处理、甲烷燃烧、灭火器、空调制冷剂）的直接排放，来自外购电力及蒸汽的间接排放，及来自员工商务差旅（铁路和飞机）的其他间接排放。具体详见公司同期披露的《安徽华恒生物科技股份有限公司 2023 年环境、社会和管治报告》。</p>
---

Figure 16 Huaheng Bio 2023 Annual Report Carbon Disclosure (2)



Figure 17 Shanghai Stock Exchange replied

#### 4. Carbon Disclosure Performance of the Affiliate Disclosure System

This study involves a total of 338 affiliates of listed companies in the chemical industry in the Yangtze River Delta, and focuses on the carbon disclosure of companies subject to carbon emission regulation in the information and disclosure system. Enterprises subject to carbon emission regulation refer to those listed in the 2023 list of key greenhouse gas emitting units in each province and city or the local carbon market list, meaning that these enterprises have been recognized by the national or local ecological and environmental authorities as requiring special management and regulation due to the fact that their greenhouse gas emissions have reached a certain scale.

According to the statistics, a total of 61 enterprises in this study were listed in the 2023 list of key greenhouse gas emission units in each province and city as well

as the list of local carbon markets, of which 41 have disclosed carbon emission information in accordance with the regulations in the letter and disclosure system and 20 have not disclosed in accordance with the regulations, which indicates that one-third of the enterprises have not yet implemented the requirements for environmental information disclosure. Further analysis revealed significant differences in the level of disclosure even among those enterprises that had made disclosures. Some enterprises made brief disclosures, while others provided more detailed information, including specific information on emission facilities and accounting methods, a difference that reflects the different attitudes and levels of practice in information disclosure. Enterprises should disclose environmental information in accordance with regulations, and strengthening carbon disclosure is not only a sign of responsibility for their own long-term interests, but also a commitment to social and environmental responsibility.



Figure 18 Jiangsu Ruiheng New Material Technology Co., Ltd. letter disclosure system carbon disclosure situation



I 碳排放情况	
本年度实际排放量(kg): 279934000	上年度实际排放量(kg): 301464000
配额清缴信息: 完成配额清缴	是否编制发布报告: 是
发布网址: <a href="https://enterprise.cets.org.cn/">https://enterprise.cets.org.cn/</a>	报告发布信息:
排放设施信息: 主要包括3台75t/h循环硫化床锅炉、2台背压式汽轮发电机组(1台6MW、1台12MW), 以及配套的控制装置和脱硫脱硝等装置。	温室气体排放核算方法: 《企业温室气体排放核算与报告指南 发电设施》

Figure 19 Systematic Carbon Disclosure of Zhejiang Xin'an Chemical Group Co.

## 5. Disclosure of ecological and environmental administrative penalties

In addition to the issue of lack of carbon disclosure, PECC also found that some enterprises have failed to disclose ecological and environmental administrative penalties when observing the disclosure of listed companies' annual reports and related enterprises' disclosure systems.

### 5.1 Lack of annual report disclosure

Three listed companies, Jaco Technology, Xin Yaqiang and Anada, failed to disclose ecological and environmental administrative penalties in their 2023 annual reports. The *Guidelines on the Content and Format of Information Disclosure for Companies Issuing Public Securities No. 2 - Content and Format of Annual Report (Revised in 2021)* issued by the CSRC in 2021 explicitly requires that the Company or its major subsidiaries which are key emission units announced by the environmental protection department shall disclose, in

accordance with the provisions of the laws, administrative regulations, departmental rules and normative documents, the following The information on the administrative penalties imposed on the Company for environmental issues during the reporting period.

Table 3 Regulatory record of undisclosed annual reports of listed companies in 2023

Listed Companies	Affiliated Enterprises	Type of offense	Regulatory records	Regulatory Links
YAK Technology	Jiangsu YAK Technology Co.	gas	Xiyi Environmental Penalty Decision [2023] No. 235 Fine: 193,000 Yuan	<a href="http://u6v.cn/5yLXcP">http://u6v.cn/5yLXcP</a>
Xin Yaqiang	Xin Yaqiang Silicon Chemical Co.	water	Su Environmental Penalty [2023] (1) No. 141 Fine: 59,600 yuan	<a href="http://u6v.cn/5zwqAE">http://u6v.cn/5zwqAE</a>
		EIA	Su Environmental Penalty [2023] (1)	

			No. 120 Fine: 16,568, yuan	
Annada	Tongling Nayuan Material Technology Co.	water	Anhui Copper Environmental Penalty [ 2023 ] No.15 Fine: 34,400 yuan	<a href="http://u6v.cn/5H2DFI">http://u6v.cn/5H2DFI</a>

报告期内因环境问题受到行政处罚的情况					
公司或子公司名称	处罚原因	违规情形	处罚结果	对上市公司生产经营的影响	公司的整改措施
不适用	不适用	不适用	不适用	不适用	不适用

Figure 20 Yaktech's 2023 Annual Report Administrative Penalty Disclosure

<p><b>6. 报告期内因环境问题受到行政处罚的情况</b></p> <p><input type="checkbox"/>适用 <input checked="" type="checkbox"/>不适用</p>
--

Figure 21 Xin Yaqiang 2023 Annual Report Administrative Penalty Disclosure

报告期内因环境问题受到行政处罚的情况					
公司或子公司名称	处罚原因	违规情形	处罚结果	对上市公司生产经营的影响	公司的整改措施
安徽安纳达钛业股份有限公司	无	无	无	无	无
铜陵纳源材料科技有限公司	无	无	无	无	无
铜陵安伟宁新能源材料有限公司	无	无	无	无	无
铜陵安轩达新能源科技有限公司	无	无	无	无	无

Figure 22 Disclosure of Administrative Penalties in Anada's 2023 Annual Report

## 5.2 Lack of disclosure in the information disclosure system

Shanghai Huayi Energy Chemical Co., Ltd. and 9 other enterprises failed to

disclose ecological and environmental administrative penalties in the information disclosure system. Article 23 of the Format Guidelines for the Legal Disclosure of Environmental Information of Enterprises stipulates that enterprises should disclose information on the ecological and environmental administrative penalties imposed on them, including the time of issuance of the decision on administrative penalties, the penalizing department, the number of the decision on administrative penalties, the original text of the decision on administrative penalties, and other information.

Table 4 Undisclosed Regulatory Records from the 2023 Letter System Annual Report

Listed Companies	Affiliated Enterprises	Type of offense	Regulatory records	Regulatory Links
YAK Technology	Jiangsu YAK Technology Co.	gas	Xiyi Environmental Penalty Decision [2023] No. 235 Fine: 193,000 Yuan	<a href="http://u6v.cn/5yLXcP">http://u6v.cn/5yLXcP</a>
Evergreen (Group) Co.	Jiangsu Evergreen Agrochemicals Nantong Co.	gas	Tong 03 Environmental Penalty (2023) No. 117 Fine: 59,600 Yuan	<a href="http://u6v.cn/5OyAx">http://u6v.cn/5OyAx</a> <a href="#">Q</a>

Huayi Group	Shanghai Huayi Energy Chemical Co.	water	Shanghai 0112 Environmental Penalty [2023] No. 6 Fine: 384,000 Yuan	<a href="http://u6v.cn/63B0FC">http://u6v.cn/63B0FC</a>
Huide Technology	Shanghai Huide Technology Co.	water	Shanghai 0116 Environmental Penalty [ 2023 ] No.6 Fine: 200,000 yuan	<a href="http://u6v.cn/6hThdO">http://u6v.cn/6hThdO</a>
Xin Yaqiang	Xin Yaqiang Silicon Chemical Co.	water	Su Environmental Penalty [2023] (1) No. 141 Fine: 59,600 yuan	<a href="http://u6v.cn/5W4ND">http://u6v.cn/5W4ND</a>
		EIA	Su Environmental Penalty [2023] (1) No. 120 Fine: 16,568, yuan	
Chenhua Corporation	Yangzhou Chenhua New Material Co.	gas	Yang environmental penalty [ 2023 ]	<a href="http://u6v.cn/5OyAyY">http://u6v.cn/5OyAyY</a>

			No. 01-02 Fine: 59,600 Yuan	
Liuguo Chemical	Hubei Liuguo Chemical Co.	gas	Yidang Environmental Penalty [ 2023 ] No. 11 Fine: 100,000 Yuan	<a href="http://u6v.cn/6wVEwK">http://u6v.cn/6wVEwK</a>
		solid waste	Yidang Environmental Penalty [ 2023 ] No. 7 Fine: 350,000 Yuan	
Lianhetech	Lianhua Technology Co.	EIA	Salt ringing penalty word [2023] No. 2 Fine: 310,000 Yuan	<a href="http://u6v.cn/5OyAzi">http://u6v.cn/5OyAzi</a>
		Online monitori- ng	Fine: 20,000 yuan	
Yangfan New Material	Inner Mongolia Yangfan New Material Co.	gas	Fine: 40,000 yuan	<a href="http://u6v.cn/6hTgYY">http://u6v.cn/6hTgYY</a>
		emission permit	Fine: 10,000 yuan	



Figure 23 Yangzhou Chenhua New Material Co., Ltd. disclosure of administrative penalties in the information and disclosure system

## 6. Active communication by letter

PECC on the lack of corporate environmental information disclosure, in July 2024 successively sent letters to 92 enterprises (see Table 2 for the specific list), except for Inner Mongolia Yangfan New Material Co. Among them, the lack of disclosure in the letter and disclosure system involves a total of 27 enterprises (17 lack of carbon disclosure; 10 lack of disclosure of ecological and environmental administrative penalties), and the lack of disclosure in the annual reports of listed companies involves a total of 68 enterprises (65 lack of carbon disclosure; 3 lack of disclosure of ecological and environmental administrative penalties). Up to now, PECC has communicated with and explained to a total of 58 enterprises.

### 6.1 Disclosure of missing responses in the information and disclosure system

(1) Subjective factors not disclosed

Jiangsu Evergreen Agrochemicals Nantong Co., Ltd: The reply letter indicated that it did not involve other provisions of Article 8 of the Administrative Measures for the Legal Disclosure of Enterprise Environmental Information, so it did not fill in the letter disclosure system. In this regard, PECC again called to communicate, emphasizing that the *Enterprise environmental information disclosure management measures according to law* Article 12 clearly stipulates that the enterprise's annual environmental information disclosure report according to law should contain ecological and environmental violations of the information and other content, and does not qualify that only fines of more than 100,000 yuan need to be disclosed. The company still said that according to their understanding, only penalties exceeding 100,000 yuan need to be disclosed in the information system, and this penalty has been disclosed in the annual report of listed companies.



## 情况回复

苏州工业园区绿色江南公众环境关注中心：

我司已收悉贵中心信件，公司高度重视，经认真核查，现回复如下：

在填报企业环境依法披露系统之前，公司认真学习环境部印发的《企业环境信息依法披露管理办法》和《企业环境信息依法披露格式准则》，根据《企业环境信息依法披露管理办法》相关条款，认真填报，具体条款如下：

**第八条** 上一年度有下列情形之一的上市公司和发债企业，应当按照本办法的规定披露环境信息：

- （一）因生态环境违法行为被追究刑事责任的；
- （二）因生态环境违法行为被依法处以十万元以上罚款的；
- （三）因生态环境违法行为被依法实施按日连续处罚的；
- （四）因生态环境违法行为被依法实施限制生产、停产整治的；
- （五）因生态环境违法行为被依法吊销生态环境相关许可证件的；
- （六）因生态环境违法行为，其法定代表人、主要负责人、直接负责的主管人员或者其他直接责任人员被依法处以行政拘留的。

我司为上市公司江苏长青农化股份有限公司的全资子公司，2023年因大气问题被处罚5.96万元，低于10万元，并不涉及第八条其它条款，所以未在企业环境依法披露系统进行填报。

以上回复如有不当，敬请指正。

感谢贵中心的关心与关注！

此致

敬礼！

江苏长青农化南通有限公司

2024年7月12日

Figure 24 Reply from Jiangsu Evergreen Agrochemicals Nantong Co.

Xin Yaqiang Chemical Co., Ltd: stated that the letter has been received and thanked PECC very much for the reminder. Since the amount of administrative penalty is relatively small and has been repaired in Credit China, it is felt that there is no need to disclose it in the annual report. PECC said that according to the requirements of the *Management Measures*, regardless of the size of the amount should be disclosed, and many listed companies will be temporary disclosure after the issuance of the penalty documents, asked Xin Yaqiang whether it can be temporary disclosure of last year's penalties, the company still said that the amount of money is relatively small, do not carry out additional disclosure, but if a similar situation occurs again in 2024, it will be disclosed.

(2) Objective factors not disclosed

Shanghai Huide Science and Technology Co., Ltd: I would like to make additional disclosure in the interim report, but the current system background shows that only 2024 data can be filled in. PECC said the specific supplementary disclosure can consult the local ecological environment department.

Jiangsu Fumiao Technology Co., Ltd: Carbon emission data for 2023 has been accounted for, but the company's internal accounting data is inaccurate and needs to be based on third-party verification data at the end of 2024, so it has not been disclosed. PECC reminds the verification results can be explained before the non-disclosure of the reasons, to be verified after the results of the timely

supplemental disclosure.

Nanjing Red Sun Biochemistry Co., Ltd: The company filled in the information disclosure system in January 2024, when there was no result of the carbon emission verification report, and has filled in the national carbon market management platform at the end of March. The company said that it also wanted to make additional disclosure in the letter disclosure system, but it did not find a column specialized in disclosure of carbon emission information in the background of the system, one of the columns is the change of disclosed environmental information, which will be disclosed in this column, and after that, it will notify PECC after additional disclosure.

Anhui Huayi Chemical Co., Ltd: Not disclosed due to the lack of results in the previous carbon emission verification report, will be disclosed as soon as possible.

Haining Guangyao Cogeneration Co., Ltd: There is no accounting of carbon emission data because there is no production, and subsequent production will be accounted for.

(3) Additional disclosures completed

Nantong Baichuan New Material Co., Ltd: After receiving the letter and meeting

on the same day to discuss, additional disclosure has been made.

The screenshot displays the profile of Nantong Baichuan New Material Co. with the following details:

- 统一社会信用代码: 913206827986239190
- 法定代表人:
- 企业性质:
- 行业: 制造业 / 化学原料和化学制品制造业 / 基础化学原料制造 / 有机化学原料制造
- 注册地址: 如皋市长江镇 (如皋港区) 香江路6号

A warning banner states: 以下信息由企业提供, 企业对其报送内容的真实性、合法性负责 (The following information is provided by the enterprise, and the enterprise is responsible for the truthfulness and legality of the information submitted).

The interface shows a navigation menu with options: 年度报告, 临时披露, and 2024. The main content area is titled "已披露环境信息变更情况" (Changes in Disclosed Environmental Information) and contains the following table:

变更事项	变更内容
补充2023年企业环境信息依法披露年度报告中的碳排放信息。	本年度实际排放量 (kg) :284344350,上年度实际排放量 (kg) :276006160;配额清缴完成情况: 不涉及; 温室气体排放核算方法: 中国化学生产企业温室气体排放核算方法及指南; 排放设施信息: 法人边界: 化石燃料、净购入使用的热力、净购入使用的电力。地理边界: 偏酞车间、三羟车间、醇醚车间、醋酸酐车间、绝缘树脂车间、丙烯酸酐车间。

Figure 25 Supplementary disclosure of Nantong Baichuan New Material Co.

In response to the feedback from some enterprises that the amount of penalty is small, i.e., not disclosed in the information disclosure system, we consulted the Ministry of Ecology and Environment, which replied clearly that the amount should be disclosed regardless of the size of the amount. We have provided feedback on the lack of disclosure of administrative penalties to six ecological environment departments through online applications and letters, hoping to promote timely disclosure by enterprises through the regulatory authorities.

Table 5 Response from the ecosystem sector

Ecological environment sector	Enterprises	Status of responses
Anhui Provincial Department of Ecology and Environment	Huangshan Excalibur New Material Co.	replied
Department of Ecology and Environment of Jiangsu Province	Jiangsu Evergreen Agrochemicals Nantong Co.	Under verification
	Yangzhou Chenhua New Material Co.	Under verification
	Xin Yaqiang Silicon Chemical Co.	Under verification
	Jiangsu YAK Technology Co.	Under verification
Alxa League Bureau of Ecology and Environment	Inner Mongolia Yangfan New Material Co.	Under verification
Shanghai Municipal Bureau of Ecology and Environment	Shanghai Huayi Energy Chemical Co.	Under verification
	Shanghai Huide Technology Co.	Under verification
Taizhou Ecological Environment Bureau	Lianhua Technology Co.	No reply yet
Yichang Eco-Environmental Bureau	Hubei Liuguo Chemical Co.	replied

At present, two replies have been received, and PECC will continue to follow the progress.

Anhui Provincial Department of Ecology and Environment: Huangshan Excalibur New Material Co., Ltd. has disclosed the administrative penalty information in the Huangshan City information system, the system problems caused by the municipal information system information is not synchronized to the Anhui Provincial information system, not the enterprise itself, is currently dealing with system problems.

Yichang City Bureau of Ecology and Environment: After verifying that the missing information on ecological and environmental administrative penalties in the annual environmental information disclosure report of the key enterprise Hubei Liuguo Chemical Industry Company Limited is true, the Bureau has instructed the company to supplement the relevant information on administrative penalties through the interim report issued by the platform of "Enterprise Environmental Information Disclosure System (Hubei)". Our Bureau has ordered the company to supplement the relevant administrative penalty information through the interim report published on the platform of "Enterprise Environmental Information Disclosure System (Hubei)".



Figure 26 Supplementary disclosure of the letter and disclosure system of Hubei Liuguo Chemical Co.

## 6.2 Annual report under-disclosure responses

In response to the insufficient disclosure of carbon emissions information in the annual reports of listed companies in 2023, the types of positive responses not given by companies can be broadly categorized into the following four types:

- (1) Reporting to management: Some enterprises indicated that they would convey this concern to management, but no specific action plan has been given.
- (2) Suggested electronic communication: Some companies suggested further communication via email, but there was no response despite Green Gangnam's attempts to do so.
- (3) Not to be taken into consideration: Some companies clearly indicated that they are not considering enhancing carbon disclosure at this time, and that their awareness of environmental responsibility has yet to be raised.
- (4) Compliance with stock exchange regulations: Some companies emphasized

that their disclosure behavior strictly complies with the requirements of the stock exchange, which shows compliance, but the level of disclosure only meets the minimum standards and lacks initiative and transparency.

Specific responses from businesses that gave positive responses are listed below:

(1) Enhanced Carbon Disclosure 2024

Jiangsu Evergreen Agrochemical Co., Ltd: Committed to increase the disclosure of carbon emission related information in the 2024 half-year report.

Donglai Coating Technology (Shanghai) Co., Ltd: plans to make carbon disclosure in the 2024 half-year report, and has realized that many of its own practices already fall into this category by referring to many reports of the same industry.

Arbonne Chemical Company Limited: In view of the characteristics of the industry, the company has tried carbon disclosure for the first time in its 2023 annual report, and has realized that there is still much room for improvement.

(2) Constructing and promoting ESG

Jiangsu Guangxin Sensory New Material Co., Ltd: It is clear that ESG is an important direction for the company's future development, and the process is currently being accelerated.



Nanjing Kossi Chemical Co., Ltd: Although it is uncertain whether timely disclosure can be made in 2024, it has begun to implement a plan to disclose carbon emission information in the annual report and ESG report, including energy saving and emission reduction.

Shanghai Jinghua Adhesive New Material Co., Ltd: It is in the early stage of constructing the ESG framework, and is currently focusing on sorting out the relevant contents, aiming to lay the foundation for future continuous disclosure.

## **7. Recommendation**

### **7.1 Establishment of additional channels for the disclosure of information**

In February 2023, the National Carbon Market Management Platform was officially launched and operated as an integrated management platform serving the whole business and process of carbon emission data management, quality supervision and verification management. Some of the enterprises that responded to PECC's letter also indicated that they had made disclosures on the national carbon market management platform. However, access to information on the current platform is mainly limited to competent authorities, key emission units and technical service organizations, which meets the core management needs but fails to adequately respond to broader social expectations. At present,

there is a general desire in society to understand the environmental status of enterprises, and in particular, there is a growing demand from the public to obtain details of their carbon emissions. In view of this, we sincerely suggest that the national carbon market management platform further broaden the boundaries of information transparency and add a public-facing channel for inquiring about carbon emission information. This move will not only enhance the public participation of the platform and strengthen the confidence of the society in the management of carbon emissions, but will also motivate enterprises to be more active in emission reduction actions and jointly build an open, transparent and green market environment. Through such improvements, the national carbon market management platform will better serve the whole society, accelerate China's transition to a low-carbon economy, and contribute to the realization of global climate goals.

## **7.2 Establishment of a sound carbon disclosure system**

In addition to building an information-sharing platform, the establishment of a sound carbon disclosure system is a prerequisite for promoting green transformation and sustainable development of enterprises. Relevant government departments need to clarify the legal and regulatory framework, formulate or revise relevant laws and regulations to ensure that enterprises have laws to follow, and clarify the requirements and responsibilities for carbon

emission reporting. In addition, incentives and constraints should be formulated, with incentives such as tax reductions and financial subsidies given to enterprises that take the initiative to disclose information on carbon emissions, and penalties such as fines and public exposure imposed on those that fail to disclose in accordance with the regulations, so as to promote the participation of enterprises in the reduction of greenhouse gas emissions and the response to climate change through effective regulation.

### **7.3 Enterprises should establish open communication channels**

During the communication process, we found that some enterprises had ineffective means of public contact, unanswered phone calls, and a lack of positive feedback on the community's concerns about their environmental information. As a listed company, it is all the more important to set a good example and accept public supervision with an open attitude. We suggest that enterprises establish effective information communication channels, such as hotlines and e-mail boxes, to facilitate contact between external organizations and the public and enterprises. In addition, we recommend that companies set up a special working group to be responsible for work related to carbon emissions management, as well as to handle external communications related to carbon emissions to ensure accuracy and consistency in the delivery of information.

## **7.4 Enterprises should actively focus on and respond to the international market**

The current international situation is extremely complex and tense, and this uncertainty has far-reaching implications for the global economy. In particular, in recent years the European Union has introduced a series of new bills aimed at strengthening regulations and restrictions on specific sectors in order to promote a more sustainable development path. The EU Carbon Tariff (CBAM), which began trial operation on October 1, 2023 and officially came into force on January 1, 2026, has had a significant impact on the export of organic chemicals from China, resulting in increased costs for companies. For the chemical industry, it is important to pay close attention to these changes as its products are widely used in the global market and are an important part of international trade. In this context, in view of the increasing low-carbon standards in the international market, chemical enterprises need to prepare for rainy days, accelerate the pace of carbon reduction and enhance carbon disclosure, which not only proves that their products comply with the corresponding low-carbon standards, but also requires them to conduct a detailed assessment of their own production processes, which can help to identify inefficiencies and improve them so as to reduce costs and circumvent possible trade barriers in the future. This not only proves that their products comply with the appropriate low-carbon standards,

but also helps them to identify inefficiencies and make improvements, thereby reducing costs, avoiding possible future trade barriers, and opening up broader market space.