



Observation report

on carbon emission information disclosure of
A-share listed companies in copper industry



PECC

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Abstract

The Earth has witnessed a series of extreme weather events over the past year. The Canadian wildfires, the Libyan floods, the Myanmar cyclones, the unusual temperature conditions at the North and South Poles and the melting of glaciers These extreme weather occurrences are all closely linked to global climate change. Greenhouse gas emissions are one of the main causes of climate change, and industry is a major source of anthropogenic greenhouse gas emissions. With the increasing global concern over climate change, in order to meet the demand of the society to strengthen the supervision of listed companies' environmental protection work, the information disclosure mechanism promotes listed companies to strengthen the awareness of environmental information disclosure, and facilitates listed companies to actively fulfill their social responsibility of protecting the environment and practicing the concept of green development. The Ministry of Ecology and Environment issued *the Administrative Measures for the Legal Disclosure of Environmental Information of Enterprises* and *the Format Guidelines for the Legal Disclosure of Environmental Information of Enterprises* in December 2021, explicitly proposing that enterprises disclose information on carbon emissions. *The Government Work Report of 2024* states that carbon peaking and carbon neutrality should be actively and steadily promoted. The "Ten Actions for Carbon Peak Achievement" will be carried out in earnest. It will enhance the capacity for statistical accounting and verification of carbon emissions, establish a carbon footprint management system, and expand the coverage of industries in the national carbon market. Against this background, on April 12, 2024, the Shanghai and Shenzhen Stock Exchanges (A-shares) officially released the guidelines for sustainability reports (for trial implementation) to further promote the improvement of the quality of listed companies, guide listed companies to practice the concept of sustainable development, standardize the disclosure of information related to sustainable

development, and help build a standardized and unified system of rules on the sustainable development of listed companies with Chinese characteristics and international influence.

The non-ferrous metals industrial sector, as a representative of energy-intensive and resource-dependent industries, is often accompanied by large amounts of carbon emissions and energy consumption from mining, smelting to processing. Given the fundamental and indispensable nature of non-ferrous metals in the modern economy, progress in reducing emissions in their sector is of great significance to global climate change response strategies. Copper, as one of the representative metals, is a key industrial raw material and plays an important role in the global economy and infrastructure development. However, the development of the copper industry is also accompanied by a certain amount of environmental and energy consumption, which has a certain impact on the climate. In 2020, the total carbon emissions of the copper industry will reach 29.682 million tCO₂e, and now the copper industry accounts for about 0.2% of the global greenhouse gas emissions. In the future, under the background of the clean energy revolution, the demand for copper in the fields of photovoltaic, wind power, energy storage, new energy vehicles and ancillary equipment will have a greater increase. Therefore, the disclosure of carbon emission information of listed companies in the copper industry has become a focus of concern for investors, regulators and the public.

By combing and analyzing the public information of 16 A-share listed companies in the copper industry, this report aims to deeply analyze the current situation of A-share listed companies in the copper industry in terms of carbon emission disclosure, understand the efforts and shortcomings of the relevant enterprises in combating climate change and reducing carbon emissions, and put forward suggestions, so as to provide objective references for investors, industry participants and the public. It is expected to promote the related

enterprises to deepen the degree of carbon emission information disclosure, and jointly promote the copper industry to take more solid steps on the journey of combating climate change, and take the road of sustainable development.

1. Referenced legislation

Article 12 of *the Administrative Measures for the Legal Disclosure of Environmental Information by Enterprises*: An enterprise's annual report on the legal disclosure of environmental information shall include the following: (d) information on carbon emissions, including information on emissions, emission facilities and the like.

Article 19 of *the Format Guidelines for the Legal Disclosure of Environmental Information of Enterprises* states that key greenhouse gas emitting units that are included in the management of quotas in the carbon emissions trading market shall disclose information relating to carbon emissions: (a) actual annual carbon emissions and actual emissions of the previous year; (b) the status of quota clearing; and (c) disclosure of information such as emission facilities and accounting methods, in accordance with the standards or technical specifications for greenhouse gas emissions accounting and reporting.

Article 29 of *the Guidelines on the Content and Format of Information Disclosure by Companies Issuing Public Securities No. 3 - Content and Format of Semi-Annual Reports (Revised in 2021)*: encourages companies to voluntarily disclose the measures taken to reduce their carbon emissions during the reporting period and their effects.

Article 11 of *the Interim Regulations on the Administration of Carbon Emission Trading*: Key emission units shall, in accordance with the relevant provisions of the State, disclose to the public information on emissions, emission facilities, statistical accounting methods and other information contained in their annual emission reports.

2. Object of study

SIP Lvse Jiangnan Public Environment Concerned Centre (hereinafter referred to as "Lvse Jiangnan") focuses on the copper industry in this study, based on the Azure Map Environmental Database () established by the Public Environmental Research Center (IPE), which is a domestic environmental data platform that collects official and authoritative data. database (www.ipe.org.cn) established by the Public Environmental Research Center (IPE), 16 A-share listed companies in the copper industry were selected as the research objects to analyze and study the current status of carbon disclosure in the corporate environmental information disclosure system in their 2023 semi-annual reports as well as in the list of legally disclosed environmental information enterprises (see the attached table for the list of specific enterprises with more than 50% of the shareholding ratio).

Table 1 List of Listed Companies

No.	stock code	Abbreviation	Full name
1	603979	JCHX	JCHX Mingninb Managemenyt CO., LTD
2	220300	Hailiang	Zhejiang Hailiang Company Limited
3	000630	Tongling Nonferrous	TongLing Nonferrous Metals Group Holdings Co.,Ltd
4	601899	Zijin Mining	Zijin Mining Group Co., Ltd
5	601168	Western Mininfg	Western Mining Group Co., Ltd
6	000878	Yunnan Copper	Yunnan Copper Co., Ltd
7	603527	Zhongyuan New Material	Anhui Zhongyuan New Material Co., Ltd
8	000737	Northern Copper	Northern Copper Co., Ltd

9	002171	Chujiang New Material	Anhui Chujiang Technology New Material Co., Ltd
10	601212	Baiyin Nonferrous	Baiyin Nonferrous Metals Group Holdings Co.,Ltd
11	600362	Jiangxi Copper	Jiangxi Copper Co., Ltd
12	601609	Jintian	Ningbo Jintian Copper (Group) Co., Ltd
13	600490	Pengxin	Pengxin Global Resources Co., Ltd
14	300697	Electric Alloy	Jiangyin Electric Alloy Co., Ltd
15	002295	Jingyi Metal	Guangdong Jingyi Metal Co., Ltd
16	600255	Xinke Material	Anhui Xinke New Material Co., Ltd

3. Carbon Disclosure Performance of Parent Companies of Listed Companies

3.1 6 companies disclosed reductions in CO2 equivalent emissions and carbon reduction measures

Hailiang disclosed in its 2023 semi-annual report that installing photovoltaics on the roof of the plant reduced 18,331.69 tons of CO2. However, other carbon reduction measures were not described in detail, and the quality of carbon disclosure needs to be improved.

<p>在报告期内为减少其碳排放所采取的措施及效果</p> <p><input checked="" type="checkbox"/>适用 <input type="checkbox"/>不适用</p> <p>1、清洁能源</p> <p>公司已在厂房屋顶安装大量多晶硅光伏组件，用于光伏发电，国内基地总装机容量约 68.9MWp，报告期内国内基地发电量 3155.20 万 kwh，可减少 18331.69t 二氧化碳排放。</p> <p>2、节能技改</p> <p>公司一直注重节能改造，在节能技改方面投入了大量资金。公司每年都制定能耗下降考核指标，积极进行节能改造，淘汰落后设备，优化工艺流程，使产品成材率不断增加，产品能耗不断下降。</p> <p>3、碳排放</p> <p>公司已按照《其他有色金属冶炼和压延加工业温室气体行业指南》要求进行了温室气体核算，并且每年进行报送，并接受第三方核查单位进行了温室气体第三方核查，并应用了碳足迹评价结果对产品各环节碳排放进行改善。</p> <p>其他环保相关信息</p>
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Figure 1 Carbon Disclosure in Hailiang's 2023 Semi-Annual Report

Tongling Nonferrous disclosed in its 2023 semi-annual report that energy consumption from January to June 2023 decreased by 3.24% year-on-year, energy consumption of 10,000 yuan output value decreased by 7.55% year-on-year, and carbon emission intensity decreased by 9.04% year-on-year. The data clearly illustrates the effect of carbon reduction, for which we suggest disclosing information such as the specific amount of carbon reduction at the same time.



Figure 2 Tongling Nonferrous Metals 2023 Semi-Annual Report Carbon Disclosure

Western Mining disclosed the energy-saving and carbon-reducing measures and effects of its affiliates Tongxin Chemical, Western Magnesium, and Hami Bolun in the 2023 Semi-Annual Report, and we recognize Western Mining's disclosure of the respective carbon-reducing situations of its affiliates respectively, but the description of the specific carbon-reducing projects is not yet detailed.

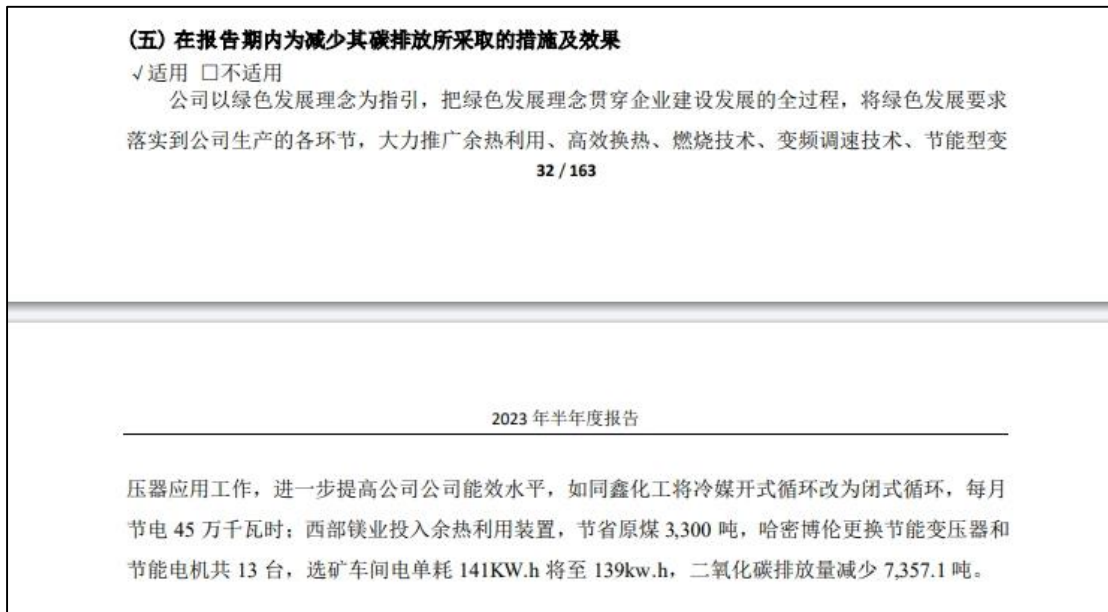


Figure 3 Western Mining 2023 Semi-Annual Report Carbon Disclosure

Northern Copper disclosed in its 2023 semi-annual report that the company's consolidated energy consumption for the first half of 2023 was 49,612.40 metric tons of standard coal, a decrease of 34,646 metric tons of standard coal compared to the first half of 2022, but the description of the measures taken to reduce its carbon emissions was rather sketchy.



Figure 4 Northern Copper 2023 Semi-Annual Report Carbon Disclosure

Yunnan Copper disclosed in its 2023 semi-annual report a series of measures taken in the first half of the year to promote energy saving and carbon reduction, and to reduce energy intensity and carbon emissions per unit of product through specific actions. It specifically elaborated on the energy saving and carbon reduction levels of its associated enterprises, Southwest Copper and Yimen Copper, and provided performance data for the first half of the year, including

the decline in the integrated coal consumption of crude copper, the decline in the use of coal for combustion, and the reduction in energy consumption, as well as comparisons with the same period of the previous years, which demonstrated the progress made by the enterprise in terms of energy saving and carbon reduction. Overall, Yunnan Copper has demonstrated a certain degree of transparency and effort in carbon disclosure, and has achieved certain results through concrete actions.

It is worth mentioning that Yunnan Copper has also released the "2022 Ecological and Environmental Annual Work Report" to proactively disclose its environmental management and performance information, which we recognize. The 2022 Eco-Environmental Annual Work Report discloses in detail carbon emission related information such as the actual annual carbon emissions, the actual emissions of the previous year, the status of quota payment and other carbon emission related information, as well as disclosing the specific carbon reduction measures and effects of the associated enterprises in the section of carbon emission information. The environmental information of Yunnan Copper can be clearly understood in this report, which fully reflects the company's proactive attitude and practical actions in environmental protection management, which is conducive to enhancing the company's green image in the capital market and the public, and also helps to promote the company's continuous improvement in the level of carbon management and realize deeper carbon emission reduction.

(十) 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

2023年上半年,云南铜业将节能与降碳工作合并推进,以能源管理体系为主导工具,提高能源管理基础能力,降低单位产品能耗强度,同步促进节能降碳双成效。一是发挥云南铜业事业部制改革后的专业管理能力,建立、修改、废止了能源管理方面的管理制度,对工作机制和职责做了进一步的完善。二是坚持指导在前,采取驻点、调研、培训、专项检查的方式,帮助企业查摆能源管理体系组织建设、能力提升、规范化运行等方面的问题,与企业共同研究改进措施,专项跟踪与指导帮扶,促进企业能源管理能力的不断提升。三是建立公司、企业、主要用能单位的三级节能降碳管理团队,公司组织开展了1期能源管理体系专题培训,各企业结合自身实际开展多次培训工作,提高了节能降碳管理骨干的理论水平。四是积极开展能效提升促进源头降碳,通过开展工艺技术攻关、电机变频改造、生产组织优化等方式促进节能降碳。五是针对拟建、在建项目,对照相应的能效标准,优化项目设计方案,严格按照固定资产投资项目节能审查办法、环评评估等法律法规要求开展项目前期审批工作,实现本质性节能与降碳。六是细化碳排放月度核算及跟踪,按照政府监管部门要求,各企业配合完成上年度碳排放报告核查工作,公司内部按照标准方法将碳排放数据划分到月度核算及跟踪,万元产值碳排放强度、单位产品碳排放强度纳入年度绩效考核。

西南铜业通过优化配料,强化工艺控制等攻关,上半年粗铜综合能耗比2022年同期下降35.1%,燃煤用量下降4230吨,降低碳排放量10670吨,在主要用能单位开展节能降碳专项激励措施,号召全员参与,全工序联动,上半年度铜冶炼综合能耗同比下降2.8%,矿产阴极铜能耗降低534.1吨标准煤。

易门铜业抓住2022年底大修机会,余热发电机组维护后发电效率得到明显提升,较2022年同期发电量增加了512.3万kwh;余热转炉风机、硫酸转化风机变频改造项目实施投运后,外购电能消耗较去年降低了2万kwh/日;制氧系统变压吸附剂等措施能耗下降明显,易门铜业粗铜综合能耗同比下降6.1%,综合能耗降低441.2吨标准煤,降碳排放量约1104.9吨。

Figure 5 Yunnan Copper 2023 Semi-Annual Report Carbon Disclosure

1. 年度碳实际排放量及上一年度实际排放量

根据《国家发展改革委办公厅关于印发第三批10个行业企业温室气体核算方法与报告指南(试行)的通知》(发改办气候〔2015〕1722号)的核算方法,2022年温室气体排放总量214万吨CO₂,2021年温室气体排放总量208万吨CO₂。

2. 配额清缴情况

东南铜业根据2022年11月29日下发的《福建省生态环境厅关于印发福建省2021年度碳排放配额分配实施方案的通知》(闽环保大气【2022】8号),2021年度碳排放配额为396841(tCO₂e)。东南铜业2021年纳入碳排放交易量376182(tCO₂e),2022年12月19日完成碳排放履约,履约后碳配额剩余20659(tCO₂e)。

目前云南省、内蒙古自治区及铜行业尚未实施碳配额。

3. 排放设施、核算方法等信息

冶炼企业的能源有电力、煤、天然气、柴油、汽油;矿山企业消耗的能源有电力、柴油、汽油,90%以上是电力。根据《国家发展改革委办公厅关于印发第三批10个行业企业温室气体核算方法与报告指南(试行)的通知》(发改办气候〔2015〕1722号),各生产企业均采用属地排放因子的缺省值对本企业当年消耗各种能源的实际值进行温室气体排放量计算。

Figure 6 Yunnan Copper's Annual Report on Ecology and Environment 2022

In its 2023 semi-annual report, Zijin Mining indicated that it had incorporated climate change issues into its daily management, continued to promote the transformation of its energy structure, and implemented the "quality improvement, cost control and efficiency enhancement" to help reduce carbon emissions, and introduced the carbon reduction projects and achievements of its affiliates. In addition, we also observe that in 2023 Zijin Mining released its Climate Change Report, which discloses the company's climate change-related information in four areas: governance, strategy, risk management, and indicators and targets. We can see in this report that Zijin Mining has proposed the goal of achieving carbon peaking by 2029 and carbon neutrality by 2050. It also illustrates the combined Scope I and Scope II emissions of 7.78 million tons of carbon dioxide equivalent in 2022, and proposes to focus on and build the carbon emissions data for Scope III. Zijin Mining has demonstrated comprehensiveness in carbon disclosure, reflecting the company's maturity and professionalism in the field of carbon management, which is in line with mainstream international carbon disclosure standards (e.g., TCFD), and is conducive to enhancing the company's image of carbon management in the eyes of investors, regulators, the public, and other parties, and lays a solid foundation of information for it to win a competitive edge in the transition to a low-carbon economy.

(五) 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

- **将气候变化议题纳入日常管理**
 建立“能耗与碳排”统计平台，统计分析不同矿种、不同生产类型企业各生产工序的碳排情况，以加强对高能耗、高碳排工序的监控，持续优化生产工艺过程。将“双碳”考核机制，与经济责任制考核进行挂钩，增设“双碳”专项考核，实施“一票否决”制，鼓励各权属企业积极降碳减排。
- **持续推进能源结构转型**
 持续推进能源结构转型，鼓励各分（子）公司争取绿电直供或开发建设新能源项目。累计安装光伏发电项目约 76.78MW，上半年发电量约 3301.05 万度，实现减排二氧化碳约 32317 吨。报告期，新疆 1GW“牧光互补光储一体化”项目获批，建成后年发电量可达 20.58 亿 kwh，年减少二氧化碳排放 160.43 万吨；西藏拉果错盐湖锂矿与中广核合作打造拉果错“零碳提锂”源网荷储示范项目于 7 月开工，规模约 340MW 光伏、540MWh 储能、10MW 背压机+熔盐储热，预计到 2025 年项目将实现 100% 可再生能源供应。福大紫金自主研发的“氨-氢”能源催化转换成套技术、绿色低碳“氨-氢”能源产业链技术示范项目分别被评为“2022 年度绿色低碳颠覆性创新技术”及“2022 年度绿色低碳重大创新技术示范项目”。
- **实施“提质、控本、增效”助力碳减排**
 报告期，西藏巨龙实施选矿厂磨矿系统技改工程，降低顽石额外能耗，预计年可减排二氧化碳约 1900 吨；贵州紫金实施制氧系统工艺升级，提高产氧利用率，较改造前年可减排二氧化碳 1637 吨；吉林紫金铜业开展转炉密闭烟罩改造项目，减少漏风率，年可减排二氧化碳约 2000 吨。

Figure 7 Zijin Mining 2023 Semi-Annual Report Carbon Disclosure

报告亮点

◀ **我们的目标**

- 2029年 实现 **碳达峰**
- 2050年 实现 **碳中和**
- 致力于能源结构优化，到 2030年 **可再生能源** 使用占比达到 **30%** 以上
- 致力于温室气体排放强度逐步下降 (以2020年为基准年)
 - 到 2025年 单位工业增加值温室气体排放量 **↓20%**
 - 到 2029年 单位工业增加值温室气体排放量 **↓38%**

◀ **战略部署**

面向世界 为人类美好生活提供低碳矿物原料，助力全球 2°C 目标实现 我们将打通从上游关键矿产到下游新材料的全产业链，为世界提供优质的高品质金属和材料，助力全球低碳转型。	壮大产业 构建清洁低碳的产业链经济，让更多的人因紫金而受益 我们将与合作伙伴一起，拥抱绿色金融发展机遇，加强技术合作与突破，带动全产业链低碳经济转型。	立足自身 绿色高质量可持续发展道路，全流程减少产业发展的碳足迹 我们将以更加透明和负责任的方式提升对气候变化的管理能力，实施具有竞争性的节能降碳措施，减少产品碳足迹。
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◀ **转型路径**

短期 2023~2029 年 我们将在业务规模大幅增长的基础上，实施以清洁能源替代、电气化比例提高、清洁能源替代等为主的减排措施，实现碳达峰。	中期 2030~2045 年 依托自身工艺改进、能源管理、清洁能源等措施齐头并进，实现温室气体快速减排，低于全球2°C路径情景。	长期 2046~2050 年 在清洁能源大范围实施的情况下，加强碳捕集技术的应用，并通过生态碳汇、碳交易等措施实现碳中和。
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Figure 8 Zijin Mining Climate Change Report

3.2.8 companies disclosed carbon reduction measures but not CO2 equivalent emission reductions

Eight enterprises, including JCHX and Pengxin Resources, focused mainly on the presentation of carbon reduction measures and did not mention the specific

amount of carbon reduction. For the disclosed carbon reduction measures, most of these enterprises only provided a brief overview without in-depth description of the implementation process and specific effects. Without mentioning the amount of carbon reduction, it is difficult to assess the reduction effect of enterprises and the degree of achievement of their targets. The amount of carbon reduction is a key indicator to objectively measure the results of carbon emission reduction, which is of great significance to the results of enterprises in combating climate change. The lack of such data may make a company's carbon reduction efforts appear insubstantial in the eyes of the public and investors. To enhance transparency and comprehensiveness, we propose that these enterprises should provide more detailed descriptions of the amount of carbon reduction and carbon reduction measures, including information on specific implementation steps, inputs and effects.

(五) 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
公司严格执行国家关于节能减排的政策法规，始终将节能减碳作为公司高质量发展的重要支撑，全面落实节能目标责任，加强节能管理，通过研究开发新能源铲运机以减少污染、提高能源利用率；引进先进低污染设备，加大对原有落后及高能耗设备的淘汰更新力度；严格按照节能设计规范和用能标准进行生产建设并采用国内外先进的采矿、掘进、竖井施工工艺，进一步降低在生产、施工中的无形浪费，不断推进矿山设计、建设、管理的安全化、生态化、数字化。

Figure 9 JCHX 2023 Semi-Annual Report Carbon Disclosure

(五) 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
鹏欣资源致力于保护环境、积极减碳，十分重视厂区大气环境治理、水环境治理及能源再利用。本报告期内，公司开展了如硫酸生产蒸汽发电供给等节能减排措施，从而达到控制和减少碳排放的目的，为全球低碳化发展理念、我国碳达峰、碳中和的绿色发展目标持续努力。

Figure 10 Carbon Disclosure in the 2023 Semi-Annual Report of Pengxin Resources

3.3 Carbon reduction measures and CO₂ equivalent emission reductions of the two companies were not disclosed.

Chujiang New Material and Jingyi Shares have inadequate disclosure of carbon emission information in their 2023 half-year reports. These two companies did not mention any specific actions or measures regarding carbon emission reduction in their half-year reports, nor did they disclose detailed information about the amount of carbon reduction. The lack of disclosure of carbon reduction measures and the amount of carbon reduction means that these companies have failed to adequately demonstrate their contribution to combating climate change. This may reduce investor and stakeholder recognition of corporate environmental responsibility, as well as limit the overall assessment of corporate sustainability strategies. We recommend that these companies disclose carbon reduction measures and the amount of carbon reduction in their subsequent annual and half-yearly reports, which will help establish a more credible and measurable environmental performance to meet the needs of sustainable development.

3.4 summary

By observing the 2023 semi-annual reports disclosed by 16 A-share listed companies in the copper industry, we find that the overall carbon disclosure of A-share listed companies in this industry still has more room for improvement, among which Yunnan Copper and Zijin Mining have higher carbon disclosure levels. As industry leaders, the demonstration effect of carbon disclosure by listed companies will drive the whole industry to improve carbon management standards and promote industry chain synergy to reduce emissions, so listed companies should set a good example and increase carbon disclosure.

This observation also found that, i.e., overall the half-yearly carbon disclosure performance of SOEs is better than that of private enterprises. 8 out of 16 listed companies are SOEs, and the other 8 are private enterprises. Five of the state-owned enterprises' 2023 half-yearly reports disclosed carbon reductions and

three did not, while only one of the private enterprises disclosed carbon reductions and seven did not, which is a clear contrast. On the other hand, all state-owned enterprises disclosed carbon reduction measures in their 2023 semi-annual reports, while six private enterprises disclosed carbon reduction measures and two did not. As an important pillar of the national economy and the main force of the national development strategy, SOEs shoulder special missions and responsibilities in addressing climate change and promoting green and low-carbon development. Good carbon disclosure is not only a concrete action for SOEs to respond to the national carbon peak and carbon neutrality targets, but also a key initiative for them to play an exemplary role and lead the green transformation of the economy and society.

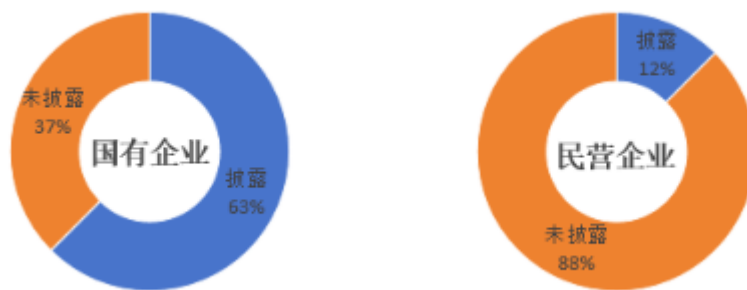


Figure 11 Disclosure of carbon reductions

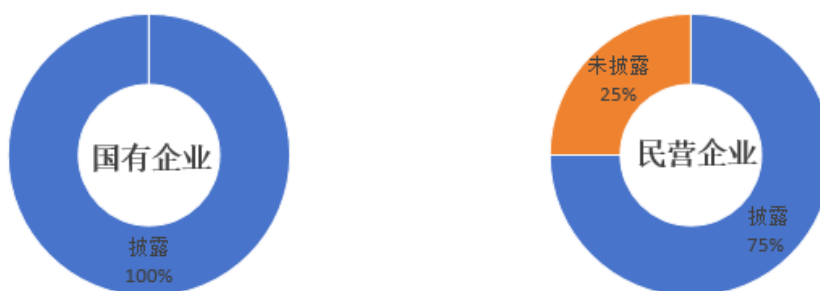


Figure 12 Disclosure of carbon reduction measures

4. Carbon Disclosure Performance of the Affiliate Disclosure System

This study categorizes affiliated enterprises into two main groups based on carbon emission regulation: enterprises subject to carbon emission regulation and enterprises not subject to carbon emission regulation, involving a total of 73 affiliated enterprises. Enterprises listed in the 2023 list of key greenhouse gas emitters in each province and city or in the local carbon market list are those subject to carbon emission supervision, which means that these enterprises have been recognized by national or local ecological and environmental authorities as requiring special management and supervision due to the fact that their greenhouse gas emissions have reached a certain scale.

4.1 Disclosure by enterprises subject to carbon emissions regulation

According to the statistics, there are 9 enterprises in this study belong to the list of key greenhouse gas emission units in 2023 and the list of local carbon market in each province and city. When Lvse Jiangnan searched the information disclosure system of each province and city, it found that all 9 enterprises disclosed carbon emission related information, but one of them did not disclose the carbon emission in 2023. With the growing global concern over climate change, many countries and regions have introduced or are in the process of introducing laws and regulations requiring enterprises, especially listed companies, to disclose information on their carbon emissions. Taking the initiative to participate in carbon disclosure is a necessary action to comply with the relevant environmental regulations and respond to the policy direction, which helps to avoid legal risks and penalties arising from failure to fulfill the legal disclosure obligations.

According to the list of key greenhouse gas emission units in Jiangsu Province in 2023 published by the National Carbon Market Information Network, Zhangjiagang United Copper Co. However, Lvse Jiangnan found that the actual

emissions of the current year are missing from the column of carbon emissions in the annual report of the enterprise in 2023 through the letter and disclosure system of Jiangsu Province. If there are special circumstances that cannot be disclosed, such as the province or city where the verification of the current year has not yet begun, Lvse Jiangnan suggests that the enterprise specify in the annual report and make additional disclosure in a timely manner, so as to avoid administrative penalties.



Figure 13 Systematic Carbon Disclosure of Zhangjiagang United Copper Co.

4.2 Disclosure by non-carbon regulated enterprises

Lvse Jiangnan Observation found that 36 of the 64 non-carbon regulated copper industry listed affiliates have actively disclosed carbon emission information in the letter disclosure system, while 28 have not. 29 of the 36 actively disclosed companies have disclosed carbon emission related information such as carbon emissions for the current year, carbon emissions for the previous year, emission facilities, etc., while 7 have disclosed carbon emissions for the year 2023 only.

Disclosure of carbon emissions data helps to enhance the transparency of

corporate operations, satisfy the right to know about corporate environmental performance of investors, consumers, environmental organizations and other stakeholders, and enhance public trust in corporations. Proactive disclosure of carbon information is a sign of corporate social responsibility and demonstration of climate leadership, especially in a market environment where environmental awareness is growing, and good carbon performance can be translated into brand value.

I 碳排放情况			
本年度实际排放量	97327 吨	上年度实际排放量	97393.06 吨
配额清缴完成情况	未纳入碳交易		
排放设施信息	易门铜业有限公司排放源主要来源于熔炼工艺、硫酸工艺及其公辅设施耗电产生的二氧化碳和熔炼工艺消耗的粉煤和天然气等化石燃料产生的二氧化碳。		
温室气体排放核算方法	易门铜业碳排放核算依据《其他有色金属冶炼和压延加工企业温室气体核算排放方法与报告指南》。		

Figure 14 Systematic Carbon Disclosure of Yimen Copper Limited

I 碳排放情况	
本年度实际排放量(kg): 41863750	上年度实际排放量(kg): 46046087
配额清缴信息: -	是否编制发布报告: 否
发布网址:	报告发布信息:
排放设施信息: 公司近三年碳排放源以净购电、呷村自备发电站为主, 汽油、柴油消耗为辅。电力由甘孜州国家电网35 kv昌呷线及公司自备呷村水电站35KV瓦呷线供应, 引入35/10kv矿山总降压变电站, 降压至10kv后分别输送至矿山、选矿、生活区等配电站, 为生产、生活提供电力供应; (清洁能源), 柴油主要用作矿山及选厂的内燃式无轨运输车辆及轮式工程机械燃料; 汽油主要用作公务用车。	温室气体排放核算方法: 柴油按照行业《温室气体排放核算方法与报告指南》进行计算, 电量区域电网平均供电二氧化碳排放因子EF电选择《2019年度减排项目中国区域电网基准线排放因子》中“减排项目所在电力系统的简单电量边际排放因子”公布值计算, 区域电网平均供电二氧化碳排放因子EF电@=0.8587 (单位: 吨CO ₂ / MWh)。

Figure 15 Systematic Carbon Disclosure of Sichuan Xinyuan Mining Co., Ltd

企业环境信息依法披露系统 (江苏)
System on Corporate Environmental Information Disclosed in accordance with the Law

江苏兴荣铜业有限公司
统一社会信用代码: 91320413781269212W
法定代表人: 梁刚
企业性质: 民营企业
行业: 制造业 / 金属制品业
注册地址: 常州市金坛区建材路16号

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

年度报告 临时披露 2023

年度报告封面及扉页 专业名词及术语解释 关键环境信息摘要 企业基本信息 企业环境管理信息 企业污染物产生、治理与排放 **碳排放情况**

碳排放情况

不涉及

Figure 16 Systematic Carbon Disclosure of Jiangsu Xingrong Copper Co.

4.3 Summary

The carbon disclosure situation of the associated enterprises in the copper industry is good, with more than half of the enterprises disclosing carbon emission information in the information disclosure system, and only less than 40% of the enterprises failing to disclose, which is better than that of the building materials and glass industry and the fertilizer industry that we have studied before. Through policy guidance and financial support, the state has been encouraging enterprises to build carbon management systems and improve the accounting and management of carbon emission data, laying a solid foundation for high-quality carbon disclosure. Carbon disclosure by enterprises is the future development trend. On the one hand, carbon disclosure is out of obligation, i.e., enterprises need to fulfill their responsibility to reduce emissions and realize green transformation; on the other hand, enterprises take the initiative to increase information disclosure, which is conducive to establishing the brand image of green enterprises.

5. Communicate

Lvse Jiangnan sent letters to 14 enterprises in April 2024 regarding the above situation, all of which showed that the letters had been signed and received. Among them, 12 enterprises did not disclose carbon emission information in the letter system, Zhangjiagang United Copper Co., Ltd. did not disclose carbon emission in 2023 in the letter system, and Anhui Chujiang Science and Technology New Material Co., Ltd. did not disclose any carbon emission information in the 2023 semi-annual report of the listed company.

Table 2 List of companies to which letters have been sent

No.	companies
1	Anhui Chujiang Technology New Material Co. Ltd
2	Anhui Xinke New Material Co., Ltd
3	Xinguhe Metal (Wuxi) Co.
4	Anhui Zhongyuan New Material Co., Ltd
5	Baiyin Nonferrous Metals Group Holdings Co.,Ltd
6	Tongling Nonferrous Metals Co., Ltd
7	Tongling Tongguan Electronic Copper Foil Co.
8	Anhui Tongguan Copper Foil Group Co., Ltd
9	Hefei Tongguan Electronic Copper Foil Co., Ltd
10	Qinghai Xiyu Nonferrous Metals Co., Ltd
11	Qinghai Copper Co., Ltd
12	Qinghai Xianghe Nonferrous Metals Co., Ltd
13	Zhangjiagang United Copper Co., Ltd
14	Anhui Chujiang Technology New Material Co., Ltd

Up to now, Lvse Jiangnan has communicated and explained with 5 enterprises, and the enterprises' replies and additional disclosures are as follows:

On April 12, 2024, Qinghai Xiyu Nonferrous Metals Co., Ltd. took the initiative to contact Lvse Jiangnan, stating that the company carries out carbon verification every year, which will be disclosed within the group and submitted to the local ecological environment department. Lvse Jiangnan reminded it that

it had not disclosed carbon emission information in the letter and disclosure system, and kindly prompted the enterprise to make additional disclosure in the interim report, and the company indicated that it would disclose as soon as possible and publicly disclose carbon emission information in the subsequent years. As of the release of this report, Lvse Jiangnan did not observe the additional disclosure in the Qinghai Province letter disclosure system.

On April 15, 2024, Zhangjiagang United Copper Co. Ltd. called Lvse Jiangnan, saying that local regulators require companies to fill out and complete the letter disclosure system by the end of February. The company itself has completed carbon accounting, but this data is not the final emissions, but to the ecological and environmental departments required by the third-party verification organization verification results shall prevail. The enterprise said that the verification had not been completed when filling out the information disclosure system, and Lvse Jiangnan suggested that additional disclosure be made in time after the verification results came out.

On April 26, 2024, Lvse Jiangnan called Anhui Chujiang Science and Technology New Material Co., Ltd. which indicated that the annual report had disclosed information related to environmental safety. Lvse Jiangnan elaborated that the enterprise did not disclose information related to carbon emissions in the 2023 semi-annual report and suggested that carbon disclosure should be made in the 2023 annual report and subsequent annual reports. After confirming that carbon emission information is not a mandatory disclosure, the enterprise indicated that it had received the recommendation. Regrettably, Lvse Jiangnan observed that Chujiang Xincui still failed to disclose the measures and effects taken to reduce its carbon emissions during the reporting period in its latest 2023 annual report, and we are looking forward to seeing Chujiang Xincui's carbon disclosure in its subsequent annual reports.



Figure 17 Chujang New Materials 2023 Annual Report Carbon Disclosure

April 26, 2024 Lvse Jiangnan called Anhui Copper Crown Copper Foil Group Co., Ltd. and the staff member who answered the phone said he was not clear about the situation and refused to provide contact information for the person in charge of environmental protection and hung up the phone.

Lvse Jiangnan has contacted Hefei Copper Crown Electronic Copper Foil Co. on April 26, 2024 and May 10, 2024, but has not received a positive response.

As of the issuance of this report, no other business responses have been received.

6. Recommendation

6.1 Increase recycling of copper and other non-ferrous metals

For the copper industry production process of carbon emissions, the recycling of renewable resources can effectively reduce carbon emissions in the initial production process, compared with the primary copper (mine - electrolytic copper) production, copper smelting with waste copper as raw material can save energy by 87%, compared with the refined copper rod (copper concentrate

- electrolytic copper - copper rod) compared to the direct use of waste copper regeneration production of 1 ton of copper rods can be reduced by 0.637 tons of carbon emissions, Energy saving 53%. Therefore, by increasing copper recycling efforts, it helps to reduce new copper resource extraction, reduce the environmental burden, and promote the transformation of the whole industrial chain to a more environmentally friendly and sustainable direction while reducing the carbon footprint of the copper industry. In other non-ferrous metals including aluminum, lead, zinc and other non-ferrous metals are likewise recommended to promote the concept of circular economy, the implementation of recycling and reuse, and the construction of a complete industrial chain from recycling, sorting, processing to reproduction, forming a closed loop of efficient recycling of resources. In the long run, the practice of energy saving and carbon reduction in the non-ferrous metal industry is not only crucial to alleviating the global warming trend, but also ensures the sustainable use of resources and the harmonious coexistence of the ecological environment, and opens a new chapter of the harmonious development of man and nature.

6.2 Sound carbon accounting and information disclosure systems

There is still much room for improvement in the overall carbon disclosure of A-share listed companies in the copper industry. As the main body of economic activities, the carbon emissions of enterprises are directly related to the realization of global climate change and sustainability goals. Therefore, the establishment of a comprehensive carbon accounting system is crucial for enterprises to quantify and monitor their carbon emissions. Such a system should cover production, supply chains and product life cycles to ensure that enterprises can fully understand and manage their carbon footprint. At the same time, a sound information disclosure system is also crucial. Through clear information disclosure requirements, enterprises can transparently demonstrate to stakeholders their carbon emissions, carbon reduction targets

and actual results. This not only helps to enhance the sense of social responsibility of enterprises, but also motivates them to take more active measures to reduce emissions and promote the transformation of their business model towards a more sustainable one.

6.3 Establishment of cooperative mechanisms to address climate change

At a time when global carbon emissions are increasing rather than decreasing, combating climate change is a global challenge that requires the joint efforts of the international community and the establishment of an effective cooperation mechanism. Countries should strengthen their political will and work together to formulate sustainable climate policies and action plans, promote global mitigation of greenhouse gas emissions and promote the development and utilization of clean energy. In addition, the establishment of a cooperative mechanism to address climate change requires the strengthening of scientific and technological innovation and the promotion of knowledge-sharing in order to better adapt to the constant challenges of climate change. Only through global cooperation can climate change be addressed in a truly effective manner, protecting the Earth's ecosystem and ensuring a sustainable life for future generations.

6.4 Establishment of public communication and monitoring channels

There is limited public understanding of and participation in corporate emissions reductions. Enterprises are the main source of greenhouse gas emissions, but it is all of humanity that suffers from the effects of climate change. By providing transparent access to information, the public can obtain data on corporate carbon emissions, thereby stimulating broad social participation and monitoring. As part of society, the public is directly concerned about climate change, and their participation will encourage enterprises to fulfill their obligations more

responsibly, and push them to actively carry out carbon-reduction actions and take the path of green and sustainable development.