

# ***ESG Information Disclosure and Innovation in New Energy Enterprises: A Case Study of CATL***

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**Abstract:** In recent years, ESG (Environmental, Social, and Governance) information disclosure and related ratings have garnered increasing attention from the public and enterprises. ESG information disclosure has gradually become an important way for enterprises to fulfill social responsibility. It not only meets the information needs of various stakeholders but is also closely related to corporate innovation, bearing significant implications for long-term corporate development. This paper employs a combination of literature research and case study methods, selecting CATL (Contemporary Ampere Technology Co., Limited), a representative enterprise in the new energy sector, as a typical case study. By analyzing data and business activities from CATL's ESG reports over the past five years, the relationship between ESG information disclosure and corporate innovation is explored. Additionally, this study incorporates LONGi Green Energy, another industry benchmark, for horizontal comparative analysis to reinforce the research findings. Based on the existing conclusions, the paper further delves into the long-term impacts of the mechanism of ESG information disclosure and corporate innovation. The research results indicate that ESG information disclosure can promote corporate innovation, fostering a virtuous cycle between the two and laying a foundation for the future development of enterprises.

**Keywords:** ESG Information Disclosure, CATL, Corporate Innovation, Environment, Society

## **1. Introduction**

ESG stands for Environmental, Social, and Governance, representing an investment philosophy and corporate evaluation standard that emphasizes a company's performance in these areas rather than its financial performance [1]. ESG information disclosure refers to the disclosure of information by companies regarding their environmental, social, and governance practices. In recent years, the new energy industry has held a significant position both domestically and internationally. Innovation is considered a pathway for new energy enterprises to achieve sustainable development goals by expanding market share and reducing costs. ESG information disclosure, as a means for companies to fulfill social responsibility, helps stakeholders gain a clearer understanding of the company, thereby

subtly influencing innovation. This paper employs a case study method to demonstrate that new energy enterprises can enhance their innovation capabilities through transparent ESG information disclosure, thereby achieving more innovative outcomes. Furthermore, through both horizontal and vertical comparisons, this paper delves into the impact of ESG information disclosure on the future development of enterprises and the new energy industry.

## 2. Theoretical Foundation

Several theories in management can provide insights for the study of ESG information disclosure and corporate innovation. According to innovation theory, innovation is a key factor for companies to gain a competitive advantage and improve performance. By driving ESG improvements through innovation, companies can spur development. Social responsibility theory emphasizes that companies should not only pursue economic benefits but also consider their impact on society and the environment, and undertake social responsibilities. In the new energy industry, this theory is applied in various aspects such as sustainable development, community contributions, and employee welfare. Resource dependence theory posits that organizations need to acquire resources from their external environment to survive and develop. This theory highlights the relationship between organizations and their external environment, indicating that corporate development relies on external assistance. In the new energy industry, companies need to focus on the stability of resource supply, price fluctuations, and the sustainability of supply chains to reduce the risks associated with resource dependence. At the same time, companies must meet the interests of stakeholders, especially shareholders and creditors, to safeguard corporate development. Governments and industry organizations can also promote the rational use of resources and sustainable development through policy guidance and industry norms. Innovation theory, social responsibility theory, and resource dependence theory all suggest that companies actively taking on social responsibilities and fulfilling social obligations can provide new ideas and opportunities, enhancing their innovation capabilities and promoting sustainable development.

## 3. Research Background

On a macro level, relevant domestic government departments have actively introduced policies to encourage enterprises to disclose ESG information and strengthen the demonstration effect of leading enterprises [2]. In 2018, the China Securities Regulatory Commission (CSRC) issued the “Code of Corporate Governance for Listed Companies,” establishing a basic framework for the disclosure of environmental, social responsibility, and governance information, marking the beginning of a “semi-mandatory” disclosure system. In 2020, the State Council issued the “Guiding Opinions on Building a Modern Environmental Governance System,” which clearly stipulates the establishment and improvement of a mandatory environmental governance information and disclosure system for listed companies and bond-issuing enterprises.

From an industry perspective, it is not difficult to see that the ESG report disclosure rate of listed companies in sectors such as new energy vehicles, photovoltaics, energy storage, and new materials is relatively lagging. However, in the new energy lithium battery sector, leading companies such as CATL and FinDreams Battery have regarded ESG as an important indicator for corporate development to accelerate their entry into the EU and North American markets, achieving an overall ESG disclosure rate of 57.9% [2]. In other new energy application fields, the ESG disclosure rate of listed companies remains relatively low.

Many scholars in the academic community have also studied the impact of ESG information disclosure on enterprises. Domestic scholars Zhang Jie and Zhang Xin, in their work “ESG Information Disclosure, Green Innovation, and High-Quality Corporate Development,” demonstrated

a strong positive correlation between the disclosure of environmental information, social information, and governance information and high-quality corporate development [3], concluding that green innovation plays a mediating role among the three. In the article “Research on the Green Innovation Effect of Corporate Information Disclosure—From the Perspective of Environment, Society, and Governance” by scholars Huang Heng [4] and Qi Baolei, it is argued that ESG information disclosure promotes corporate green innovation mainly by alleviating corporate financing constraints and enhancing external supervision. With the influence of ESG information disclosure on corporate innovation, the domestic academic community has already established a substantial foundation and a relatively clear research direction.

## 4. Case Analysis

### 4.1. Company Overview

CATL (Contemporary Amperex Technology Co., Limited) is a globally leading company in the development and manufacturing of lithium-ion batteries. It focuses on the research, production, and sales of power battery systems for new energy vehicles and energy storage systems, dedicated to providing world-class solutions for global new energy applications. After going public in 2018, CATL proactively disclosed its social responsibility reports and began publishing comprehensive ESG (Environmental, Social, and Governance) reports starting in 2021. In 2022, the length of its ESG report increased by 324% compared to the previous year, with sections on environmental protection and sustainable development governance accounting for about 19%, thereby establishing a relatively complete set of indicators. Over the past three years, CATL has continually expanded the range of topics covered, including customer rights, social welfare, employee performance evaluation, and corporate governance, thus enriching the disclosed content [5].

Additionally, CATL has established a top-down ESG management structure. The highest governing body is the Sustainable Development Management Committee, and the company has newly formed a Corporate Sustainable Development Management Council. This council, composed of key personnel from various core business departments, operates under the committee’s guidance and is responsible for planning and managing the company’s sustainable development initiatives [6]. As an essential part of the ESG management system, this framework helps the company identify and manage ESG-related risks and opportunities, thereby better addressing social and environmental challenges and enhancing long-term competitiveness.

### 4.2. Indicator Construction

Based on documents such as the “Contemporary Amperex Technology Co., Limited 2022 Environmental, Social, and Governance (ESG) Report” and the “Guidelines for the Management of High-Tech Enterprise Certification” [7], this paper selects a two-tier evaluation index system, shown in Table 1, to comprehensively measure CATL’s corporate innovation capability. Current data reveals that CATL began publishing social responsibility reports in 2018 and started disclosing comprehensive ESG information in 2021. By referencing the latest publicly available data from the company, this paper constructs a two-tier analysis index [8], aiming to provide an objective longitudinal evaluation of the company’s innovation activities from 2018 to 2022 and facilitate horizontal comparisons with other companies in the same industry.

Table 1: Evaluation Index of Enterprise Innovation Ability

Primary Evaluation Indicators	Secondary Evaluation Indicators	Indicator Description
<b>R&amp;D Investment</b>	Material	Material performance, industry ecological chain development, intellectual property
	Manufacturing Team Building	Professional research platforms and R&D teams
<b>Multidimensional Management</b>	Green Management	Energy and resource management, promotion of carbon neutrality, environmental protection concepts and practices
	Digital Intelligence	Intelligent manufacturing, digital management, and applications
	Quality Supervision	Quality management systems, product safety control, safety concepts
	Talent Growth	Internal training, external recruitment, retention, and incentive mechanisms
<b>Employee Development</b>	Employee Benefits	Protection of employee rights and basic benefits
	Social Welfare	Stable employment, industry revitalization, social volunteer services
<b>Social Contribution</b>	Commercial Culture	Sustainable development culture, business ethics

### 4.3. Mechanisms of Influence

In April 2019, CATL publicly released its first social responsibility report, comprehensively summarizing the company's implementation of social responsibilities over the past year. This report allowed stakeholders to clearly access the information they needed. Over the five years, increased investment in innovation has made CATL a global leader in new energy lithium battery manufacturing, supporting the global energy transition and green ecological construction. These significant achievements are inseparable from the company's efforts in ESG information disclosure. Based on the content and indicators of the reports, this paper explores the driving forces behind the continuous development of CATL's innovation capabilities from three main aspects.

#### 4.3.1. Impact of External Environmental Changes

Changes in the external environment have heightened the requirements for ESG information disclosure, compelling companies to innovate.

As a new energy enterprise, CATL has consistently adhered to the concepts of green development and sustainable development. Guided by these concepts, the company actively responded to national calls in its ESG reports, vigorously promoting clean energy. Over time, CATL has achieved technical maturity in the development and application of lithium batteries, becoming a key player in environmental responsibility disclosure and green strategy implementation. When the COVID-19 pandemic hit in 2020, CATL promptly implemented epidemic prevention and resumed production, providing reassurance to employees and society, which became a major focus in the 2020 social responsibility report. Effective epidemic control highlighted the company's emergency response and crisis management capabilities, strengthening its cohesion and laying a solid foundation for managing larger risks in the future. Additionally, the company's public welfare support for local employee communities during the pandemic became a regular practice, expanding the forms of social responsibility fulfillment. With the launch of the 14th Five-Year Plan, there is increasing emphasis on environmental protection and efficient energy use, and the "dual carbon" goals of carbon neutrality

and peak carbon emissions stimulate every new energy high-tech enterprise. CATL has leveraged its scale advantage and external resources to significantly reduce carbon emissions and improve resource utilization efficiency, transforming its production methods. The ESG reports for 2021 and 2022 detail the company's carbon resource management techniques and regulatory models, demonstrating the further development of low-carbon technologies over these two years, progressively integrating low-carbon environmental protection into the company's ecosystem.

#### 4.3.2. Stakeholders' Mandatory Requirements

Stakeholders' demands specify the angles of ESG information disclosure, promoting comprehensive innovation.

According to theories related to accounting information disclosure, the content disclosed by a company aims to meet the demands of its stakeholders. This includes increasing opportunities for financial support from investors and financing institutions, demonstrating its social contributions and responsibilities to the public, and respecting the trust of customers and consumers in its products or services. Each section of CATL's ESG reports invariably aligns with the demands of its stakeholders. To better meet these demands and gain upward development space, the company has committed to comprehensive innovation and improvement in product quality, technological upgrades, employee development, and social responsibility fulfillment, thereby securing more development opportunities for itself.

Table 2: The Stakeholders of the Business and Their Demands

Stakeholders	Government and Regulatory Bodies	Customers and Consumers	Creditors and Shareholders	Employees	Suppliers	Ecological Environment	General Public
<b>Related Demands</b>	Compliance in Operations Energy Conservation and Emission Reduction Job Creation Fair Competition Legal Tax Obligations	Product Quality and Safety Protection of Consumer Rights Information Security and Privacy Protection	Corporate Governance Operational Performance Return on Investment Core Competencies	Basic Rights Employee Welfare Incentive Mechanisms Occupational Health Human Capital	Compliance in Operations Responsible Supply Chain Management Information Security and Privacy Protection	Sustainable Development Green, Pollution-Free Low-Carbon Environmental Protection	Social Welfare Resource and Environmental Management Clean Technology

Through the above table, it is not difficult to find that the demands of various stakeholders share commonalities. For instance, the government, society, and the environment all hope that companies can utilize clean technologies to achieve energy conservation and emission reduction, thereby promoting environmental protection. Customers and suppliers place greater emphasis on personal privacy and information security. Investors and employees are more concerned about the company's internal management practices and the benefits they can receive. In the daily course of production and operation, companies have reasonably integrated these demands and presented the response results in their annual ESG reports.

The completeness of corporate ESG disclosure lies in the ability to distinguish the demands of various stakeholders and promptly list responses. At the macro level, the calls from the government and society have led companies to further transform their energy and resource utilization methods, adjusting high-energy-consumption production structures. Companies have gradually improved



product performance, increased investment in battery recycling, and fostered professional technical teams, striving to promote green technological innovation. Throughout this process, companies' awareness of rights protection has been enhanced, leading to the application for multiple patents and enrichment of experience in intellectual property management. Facing demands from both upstream and downstream in the industry chain, companies have vigorously promoted digitalized intelligent control, strictly strengthened personal information protection and privacy protection, while building a comprehensive quality supervision system for products, strictly implementing safety and responsibility in production, and striving to meet individualized demands, and carrying out differentiated treatment for different categories of suppliers. Internally, companies have gradually improved employee salary and welfare levels, perfected talent introduction systems, and cultivated innovative driving forces for the enterprise. For investors' rights, companies have detailed reasonable profit distribution policies, methods, and dividend plans, actively repaying shareholders by increasing research and development efforts and continuously expanding production scale to create economic benefits. From the inside out, from the table to the core, companies have achieved comprehensive innovation while taking care of the needs of interests.

In the ESG reports from 2018 to 2021, companies separately outlined a portion of the region, briefly explaining stakeholders' demands and basic responses. As the refinement level of various demands continues to deepen, the content mentioned in the previous year's ESG report will be supplemented in the next year's report, and new modules will also emerge. In the 2022 ESG report, spanning 144 pages, companies have completely dispersed various stakeholders' demands into various innovation fields for comprehensive exposition, fully reflecting the company's significant innovation achievements and confidence in its own strength, which is conducive to enhancing the company's cohesion and driving force for innovation in the next stage.

#### **4.3.3. Corporate Goal Pursuit**

ESG disclosure is inspiring for a company's development direction and promotes continuous innovation.

At the beginning of the report, the chairman or president of the company often delivers a message, expressing the company's development goals to facilitate the maintenance of the company's brand image and good reputation. Every year's new experiences, technologies, and concepts are also presented in the reports made in the following year. Invisibly, the company has formed a sound corporate culture including integrity management, information disclosure, and prioritizing responsibilities. Based on signaling theory, proactively disclosing ESG information is a positive signal to the government, investors, and the public, emphasizing the importance of environmental protection, strengthening social responsibility, and improving corporate governance. Therefore, the cultural soft power demonstrated in the ESG report helps to strengthen external stakeholders' recognition and support for the company, firmly consolidating the emotional bond between the company and its partners for future development. A well-structured ESG report is not only visually appealing and vividly descriptive but also serves as a summary of the company's gains and losses in the previous stage of operations, allowing the company to learn lessons, extract experiences, and enter the next stage of work with a better posture and confidence to achieve higher goals.

#### **4.4. Conclusion Summary**

After thoroughly studying the mechanisms that drive corporate innovation, this paper will summarize and conclude the above analysis from the perspective of the relationship between ESG disclosure and corporate innovation. Based on this, it will analyze the current development dilemmas and shortcomings of CATL.

#### **4.4.1. Mutual Promotion between ESG Disclosure and Corporate Innovation**

On one hand, ESG disclosure promotes corporate innovation in various aspects.

Building upon the annual enhancement of CATL' ESG reports, high-quality information disclosure provided to investors has gained unanimous recognition from decision-makers, facilitating front-end capital support. The consecutive years of innovative achievements validate the realization of innovation on the back end.

On the other hand, the results of corporate innovation positively influence ESG disclosure.

From an overall perspective, CATL' 2022 ESG report covers sustainable development governance, corporate governance, products and services, environmental protection, sustainable supply chains, talent growth, community contributions, among other sectors, showing a strong correlation with its innovation activities. With more companies in the industry implementing ESG disclosure, the pressure of peer competition drives companies to continually break through themselves. As a result, the content and perspectives of ESG disclosure are constantly improving, complementing and promoting each other.

#### **4.4.2. Development Dilemmas and Shortcomings**

Through the study of CATL' ESG disclosure, this paper identified deficiencies in the company's ESG report indicator system and evaluation system, as well as shortcomings in controlling supply chain carbon emissions.

Firstly, there is an imbalance in the content weighting of CATL' indicator system. The ESG report of CATL spans 144 pages, approximately 104 pages after excluding various sections such as report compilation instructions, substantive topic management, report compilation indexes, glossaries, and attestation statements. According to rough statistics by "Manager" based on the CSI ESG evaluation system, the content proportions of environment, society, and corporate governance are approximately 19.23%, 44.23%, and 35.58%, respectively. Generally, a comprehensive ESG report should allocate 10%, 60%, and 30% of the content to the three dimensions [6]. Therefore, CATL' content regarding environment and governance is excessive, while the content related to social aspects is insufficient.

Secondly, the rating results of CATL' ESG report are unsatisfactory. For example, in the 2023 Q1 rating data, rating agencies such as LuFort, CCX, and Zhiding gave ratings of 60.0 (B), A, and 79.93 (AA) respectively, which are generally average. Upon specific examination and comparison of the ratings from different rating agencies for the company at different times, CATL is not considered an outstanding performer. The reasons for this include the fact that the company is in a period of rising development, indicating significant room for improvement in its innovation work. Additionally, the company's experience in disclosing comprehensive ESG reports is limited, and new innovative achievements have not yet been fully translated into productivity, thus requiring revisions in content.

Lastly, CATL has not effectively balanced economic benefits and environmental responsibilities. Despite implementing a series of measures for environmental governance and energy conservation, overall carbon emissions have increased due to CATL' comprehensive expansion plans. CATL' environmental plans and expansion plans are difficult to balance. In the future, CATL must make choices between the environment and expansion to achieve sustainable development.

#### **4.5. Horizontal Comparison**

As a leading enterprise in the new energy intelligent automobile battery industry, CATL serves as a demonstration role. Therefore, LONGi Green Energy, a leading enterprise in the monocrystalline photovoltaic industry, is selected as a reference company for horizontal comparison analysis with CATL, aiming to overlook the development of the new energy industry through the ESG disclosure of both companies.

LONGi Green Energy focuses on providing efficient monocrystalline solar power generation solutions to global customers and is a leading manufacturer of monocrystalline silicon photovoltaic products worldwide. The company is mainly engaged in the research, development, production, and sales of monocrystalline silicon rods, wafers, cells, and modules, as well as the development of photovoltaic power stations and the provision of system solutions. It has formed a complete industrial chain from wafers, cells, and modules to downstream photovoltaic power station applications.

Through a comparative analysis of the 2022 ESG reports of CATL and LONGi Green Energy, this paper illustrates the similarities and differences in research and development (R&D) investment and environmental management.

In terms of R&D investment, according to the performance data from the 2022 ESG reports of both companies, CATL invested 15.5104 billion yuan in product R&D in 2022, an increase of 101.66% compared to 2021, accounting for 4.7% of the main business income. LONGi Green Energy invested 7.141 billion yuan in product R&D in 2022, an increase of 62.6% compared to 2021, accounting for 5.54% of the main business income. Through comparison, it can be seen that there is a significant increase in R&D investment in the new energy automobile battery industry, and the feedback obtained in the market is more significant.

Table 3: Comparison of R&D Investment Situation

	<b>R&amp;D Investment (100 million yuan)</b>	<b>Year-on-Year Increase (%)</b>	<b>Main Business Income Ratio (%)</b>
<b>CATL</b>	155.104	101.66%	4.7%
<b>LONGi Green Energy</b>	71.41	62.6%	5.54%

In terms of environmental management, the governance concepts and effectiveness of the two companies are remarkably similar. CATL has carried out environmental governance management to promote recycling and resource regeneration, utilizing digitization to enhance environmental management efficiency, and has established regular environmental audits. It manages raw materials, water resources, and packaging materials; in pollution control, it categorizes wastewater pollutants, air pollutants, hazardous waste, and general industrial solid waste, and manages soil, groundwater, and biodiversity. Similarly, LONGi Green Energy has achieved significant results in resource management and has conducted comprehensive system and institutional development. The company has strengthened water-saving management throughout the water extraction and usage process, holds water-saving events and campaigns annually to raise awareness among all staff, and integrates water-saving concepts into all aspects. It continuously standardizes management in resource recycling, green logistics, and emission control, striving to realize the concept of sustainable development. Through comparative analysis, it is concluded that the new energy industry is advancing in environmental governance and energy conservation, innovating through diverse approaches, jointly pursuing the “green mountains and clear waters” envisioned by Chairman Xi Jinping, and realizing the green concept of harmonious coexistence between humans and nature.

Through a horizontal comparison analysis of the ESG reports of CATL and LONGi Green Energy, this paper believes that in the 21st century, where environmental quality is declining and natural resources are increasingly scarce, the innovative development of the new energy industry plays an irreplaceable role. Leading companies in various new energy sectors will leverage their respective strengths to lead their industries onto an “avenue of greenery” in an unpredictable future.

#### 4.6. Potential Impact

ESG disclosure and the development of the new energy industry, as well as the advancement of carbon neutrality goals, are mutually reinforcing. One of the key contents of ESG disclosure is



environmental performance, with a significant proportion in CATL' ESG disclosure report being related to the environment. Disclosure of carbon neutrality will become one of the important contents of environmental disclosure in the coming years. Through innovation, companies can improve resource utilization efficiency, reduce environmental pollution, enhance social impact, and improve governance levels. Consequently, they can participate in carbon neutrality-related businesses, such as carbon trading and carbon markets. The development of carbon markets can provide a mechanism for companies to achieve carbon neutrality by trading carbon emission quotas. Moreover, green supply chain management businesses may also emerge, where companies, while achieving their own carbon neutrality, pay more attention to the carbon emissions of the supply chain, thus driving the development of green supply chain management-related businesses.

## 5. Conclusion

Based on the research of relevant scholars and the study of the above cases, the correlation between corporate ESG disclosure and innovation capability can be illustrated. Building on the conclusions drawn in this paper and the current situation of the industry, recommendations for innovation in enterprises will be provided from four perspectives: CATL itself, other companies in the same industry, current market entities, and third-party entities, to better promote the future development of enterprises.

As a leading enterprise in the industry, CATL' ESG disclosure attracts high attention. Therefore, the company should ensure that all matters and data mentioned in the report are comprehensive and accurate. In the sector of environmental information disclosure, CATL should enhance the degree of disclosure on sustainable development. Correspondingly, the company can publish sustainable development topics or periodic achievements feedback on its official website or social media accounts, continuously increase the publicity of ESG sustainable development columns. Additionally, the company needs to vigorously promote the application of digital technology to reduce the collection cost of accounting information data, thereby creating better financial conditions for investment in innovation.

The new energy industry, as an emerging format, needs to further unleash its strong driving force. Other representative companies in the industry and emerging small businesses, which are comparable to CATL in strength, need to seize the opportunity to always be guided by the concept of green operation, increase investment in green technology [9], improve the utilization rate of clean energy, and ensure the implementation of environmental protection responsibilities. The entire industry chain needs to work together and cooperate with each other, especially focusing on the practical effects in the field of carbon emissions, increasing the attention of enterprises to ESG, and leading the new energy industry to the forefront of green transformation.

In the market economy environment, the importance of ESG to enterprises is continuously deepening throughout society. Regardless of whether the industry is directly related to resources and the environment, companies should enhance their awareness of ESG, elevate ESG management systems to the corporate strategy level, actively introduce ESG-related talents, and accelerate the process of transitioning from no ESG to ESG. Strengthening ESG disclosure is also one of the means for companies to innovate financing methods. The more comprehensive the ESG disclosure, the deeper the understanding and trust of investors in the company, which is conducive to companies breaking through financing constraints and avoiding moral risks.

As third-party entities, the active guidance and supervision of government departments and ESG rating agencies should not be overlooked [10]. Governments also need to address corporate environmental pollution and social responsibility issues, increase environmental publicity efforts, attract social attention, gradually transform environmental performance into economic performance, and encourage companies to move forward continuously through measures such as tax reductions,

subsidies, etc., for companies with good environmental information disclosure or significant breakthroughs in high-tech innovation. ESG rating agencies should also fully play the role of third-party audits, formulate fair and scientific ESG rating standards, give full recognition to companies with good performance, create a favorable public opinion atmosphere, and serve as a supplementary part of government supervision.

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