

Research on Environmental Accounting Information Disclosure Issues in the New Energy Vehicle Industry from Dual Carbon Perspective—Taking GAC Group as an Example

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Abstract: With the rapid development of the economics, resource consumption is increasing, and pollutions are becoming more serious. Environmental protection has become a greatest concern topic for us. In this regard, Chinese government has proposed a "Dual Carbon" goal, which aims at achieving carbon peak and carbon neutrality, reducing carbon emissions through using non-fossil energy to promote coordination between economic and ecological. The goal has promoted the innovation of the manufacturing industries, the transformation towards green with low-carbon has become the general trend. The new energy vehicles, as a key alternative to traditional fuel vehicles, the environmental accounting information in its production and operation process has become a key basis for providing social references, so an efficient and comprehensive disclosure is extremely necessary. The article will select GAC group for research with case study method by collecting information and reviewing literature, explains the status and problem of the company in environmental accounting information disclosure, then propose methods to improve environmental accounting information disclosure in the new energy vehicle industry from corporate and social levels.

Keywords: New Energy Vehicles; Environmental Accounting Information Disclosure; Sustainable Development

1. Introduction

Environmental accounting is a measurement method that reflects the impact of corporate operating activities on the natural environment. Environmental accounting information disclosure helps stakeholders understanding their environmental performance and responsibilities by accurately and systematically recording and reporting environmentally related financial and non-financial information. It not only includes financial information related to environmental costs and benefits, but also disclosure non-financial information such as environmental performance and management.^[1] It requires companies to record and report quantitative and non-quantitative environmental-related information.

With the social development, global climate changes have become serious, environmental pollution problems arise increasingly at the moment. Environmental protection attracted common attention all over the world. On UN General Assembly in September 2020, Chinese government proposed "double carbon" goal, promising achieve carbon peak before 2030 and carbon neutrality before 2060, clearly requiring Chinese companies adjust development strategies and reduce carbon emissions to improve sustainable development capabilities.^[2] Automobiles has brought conveniences to us, but the emissions have caused considerable pollution to the environment. New energy vehicle, as a product of new era, can solve the problem of large carbon emissions in the transportation field though using clean energy.^[3]

Currently, the implementation of environmental accounting information disclosure still lags in most of the countries, and a theoretical and institutional system is still being formed. Within the industry, there are no strict regulatory requirements for the form and content of environmental accounting information disclosure. Uneven disclosure standards result in differences in information disclosure between companies and a lack of comparability.^[4] In this background, it is of great significance to analysis the problems existing in environmental accounting information disclosure.

2. Theoretical Foundation of Environmental Accounting Information Disclosure

2.1. Corporate Social Responsibility Theory

While focusing on economic interests, enterprises should consciously assume their responsibilities to society and safeguard social public interests. This includes economic responsibility, laws and regulations, ethics and morals, and charitable responsibility.^[5]

Environmental responsibility is particularly important for automotive industry. Taking environmental protection and disclose environmental information initiatively can gain widespread social reputation and support, then improving their value and competitiveness.

2.2. Sustainable Development Theory

While meeting mankind needs contemporary, it can't damage the ability of future generations to meet their needs and make balanced and coordinated of the economy, society and environment.^[6] Enterprises should take active measures to ensure that coordinate progress between economic development and environmental protection and achieve harmonious coexistence between mankind and nature.

By disclosing environmental accounting information, companies are encouraged to consider environmental responsibilities while assuming economic benefit. Company can't pursue profit maximization and ignore environmental protection, they should reduce resource consumption and pollution emissions by adopting environmentally friendly technologies and display real data to the society.

2.3. Stakeholder Theory

Stakeholder theory emphasizes that a company's decision-making process should comprehensively consider and reflect the interests of stakeholders. Internally, it needs to pay attention to the interests of shareholders and employees. Externally, it also considers the needs and expectations of creditors, investors, the public and the government.^[7] It delivers environmental performance to stakeholders, helps investors and other stakeholders better assess corporate environmental risks and future development potential to make more informed decisions.

3. The Situation of New Energy Automobile Industry Under the Perspective of "Dual Carbon"

New energy vehicles is an important tool to achieve low-carbon transformation in transportation sector, their development has been supported by policies and favored by markets from all over the world.

From 2018 to 2022, the sales of new energy vehicles in China continued to grow from 1.256 million to 6.887 million. At the same time, the proportion of new energy vehicle sales in total vehicle sales has also risen from 4.47% in 2018 to 25.64% in 2022. (see *Table 1*)

Table 1: New energy vehicle sales and proportion from 2018 to 2022 in China (unit: 10,000 vehicles)

Year	Sales	Growth	Total Sales	Proportion
2018	125.6	—	2808	4.47%
2019	120.6	- 4%	2577	4.68%
2020	136.7	13%	2531	5.40%
2021	157.5	15%	2627	6.00%
2022	688.7	337%	2686	25.64%

(Data source: CAAM)

Many countries have introduced a series of policies and measures to promote the research and development of new energy vehicles, such as car purchase subsidies and tax exemptions in China, "Green New Deal" in European countries, free car charging stations in Germany and technology capital investment in South Korea.^[8]

Currently, new energy vehicle industry is facing important strategic opportunities. People's demand for new energy vehicles continues to grow, many countries has positioned it as a strategic emerging industry. However, new energy vehicle companies also neglect of environmental and social responsibilities, and also faces some challenges. Whether the power come from cleaning energy, the pollution caused by the mining of rare materials in batteries, and whether lithium batteries can be recycled and reused are all issues that need to be solved urgently.^[9]

4. Introduction and Overview of GAC Group

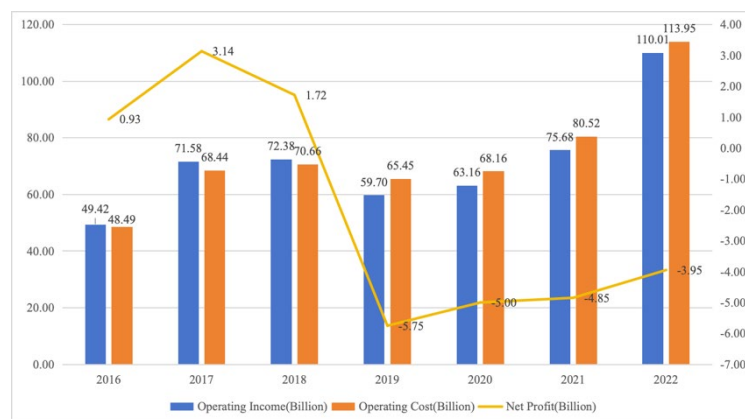
Guangzhou Automobile Group Co., Ltd. (known as GAC Group), established in 2005 and headquartered in Guangzhou, is an important participant in China automobile industry. GAC Group produces and sells various types of passenger cars and commercial vehicles through joint ventures with internationally renowned automobile brands such as Honda, Toyota, and Fiat Chrysler (FCA). It not only occupies an important position in domestic market but also exported many overseas countries and regions.

In recent years, GAC Group has actively invested in automobile transformation and upgrading. In the field of new energy vehicles, GAC Group stand at forefront of the industry through its brand Aion. Aion focuses on technological innovation through research and development of intelligent driving technology, excellent battery life etc. which favored by many new energy vehicle enthusiasts in domestic market.^[10]

GAC Group has always ambitious about sustainable development. In 2019, GAC Group released an emission reduction target called "e-Time Action", striving to achieve full electrification by 2025. In addition, they also participated several projects related to environmental protection, most representative one is the "Sanjiangyuan National Park Environmental Protection Project". In addition to cooperating with the World Wildlife Fund (WWF), they also carry out environmental protection plans with local governments and organizations to effectively protect local natural ecological environment.

In the past two years, new energy vehicle market share of GAC Group has continued to increase and its competitive has become stronger. From annual report, Aion annual sales have increased from 270,000 in 2022 to 480,000 in 2023, nearly doubling. It shown a strong trend among the industry and seems to become popular in consumer choices.

From 2016 to 2018, GAC Group's operating income increased from 49.418 billion yuan to 72.38 billion yuan, showing that a continuous upward trend. The net profits have also been positive in that three years, and it has always been profitable. (see *Figure 1*)



(Data source: GAC Group annual report)

Figure 1: GAC Group operating statistics from 2016 to 2022

In 2019, GAC Group suffered its first decline in operating income, from 72.38 billion yuan to 59.704 billion yuan. Affected by China-US trade friction, global economic growth has slowed down, which made consumers' ability and willingness to purchase cars have declined. It still sluggish in 2020. Covid-19 has severely impacted global economy. Upstream and downstream industries have interrupted supply chains due to shutdowns, and the common social phenomena such as unemployment and salary cuts have led to a lack of consumer confidence. Therefore, companies were still facing downward pressure. From then on, with the global economy begins recovered, and thanks to the Aion's upward sales, the company's operating income grew rapidly from 75.676 billion yuan in 2021 to 110.06 billion yuan in 2022, even reached the peak in recent years.

Unfortunately, the company was suffered loss in the past four years as operating costs increased and were higher than operating income. In June 2019, the Chinese automobile emission standards switched from National V to National VI. All automobile industry needs to carry out a new round of adjustments and upgrades to the product line to meet the new emission requirements. Undoubtedly it brings huge cost pressure to most of automobile companies. Meanwhile, the overall profit was also affected by significant losses in other joint venture segments, such as FCA and Mitsubishi. This is also the reason why GAC Group "increased revenue but not profit" in the past four years.

5. Status of GAC Group Environmental Accounting Information Disclosure

5.1. Disclosure Method

GAC Group discloses environmental accounting information in its annual report and social responsibility report. The company adopts a combination of qualitative and quantitative disclosure in both reports. Qualitative information includes environmental protection concepts, goals, policies and measures, while quantitative information focuses on providing specific financial data or performance, such as environmental financial information, environmental Performance information and so on.

Before 2020, there was little environmental accounting information involved in annual report. The information was scattered in every corner of the report. The qualitative information lacked structure and coherence. Beginning in 2021, GAC Group improved its disclosure standards, established a new separate chapter called "Environment and Social Responsibility" in annual report, moved quantitative information such as pollution emission information from "Important Matters" to this chapter, and included some relevant qualitative information such as pollution prevention facilities, construction and operation status.

Social responsibility reports had a section dedicated to environmental issues since implementation, with environmental information being more prominent. Qualitative information is more extensive than annual reports, covering many aspects such as low-carbon actions, green production, and environmental protection communication. Quantitative information will highlight certain data to appear practical achievements. Starting in 2020, companies use keywords such as "green" and "low carbon" to replace sustainable development and become a new title of the chapter of environmental accounting information, making their environmental protection concepts and goals visible to the public. Quantitative environmental information has also been transferred from the sustainable development chapter to the performance table in the appendix, which puts pollution emissions and energy consumption together and lists the data from previous years which is clearly visible and easy to compare.

5.2. Disclosure Specific Content

5.2.1. Environmental financial information

Environmental financial information mainly divided into environmental investment, environmental income and environmental expenses.

GAC Group disclosed specific environmentally related investment projects and corresponding investment costs in only two of the past five reports. In 2018, GAC Group launched its second year of wetland protection actions. In its social responsibility report, it listed the Sanjiangyuan ecological protection construction and related actions, and also disclosed an investment cost of 9.2798 million yuan. In addition, the company also carried out environmental protection afforestation activities cooperated with a number of car companies in the same year, investing 20 million yuan and 7,500 yuan respectively in two projects. In 2022, it listed an investment of 1.115 million yuan in environmental protection training in its social responsibility report. Meanwhile, it disclosed a total amount of environmental protection investment 450 million yuan for the first time at the same year and listed it in a prominent position.

After overview, it can conclude two shortcomings. First, it only briefly mentions environmental protection practices in a qualitative way, and rarely discloses specific environmental protection projects and the amount of environmental protection investment, environmental protection behaviors seem to be concealed, which is not conducive to subsequent evaluation of environmental protection benefits. Second, the disclosure of specific investment project is not obvious enough. It is usually inserted among numerous qualitative information without special and conspicuous markings, which increases difficulty for finding.

About environmental protection income, GAC Group mainly relies on government subsidies, including tax incentives, new energy vehicle subsidies and many other government subsidy projects. According to the "Administrative Measures for the Recognition of High-tech Enterprises", high-tech enterprises are levied corporate income tax at a rate of 15%. As a developer of new energy vehicles, GAC Group has been recognized as a high-tech enterprise and has disclosed this tax benefit in the tax items in the notes. In addition, in the "Management Discussion and Analysis" chapter of the annual report, new energy vehicle revenue and subsidies are included except for 2020 and 2021.

Regarding all government subsidies projects, it included them into "Notes" of the annual report. GAC Group disclosed different types of government subsidies from 2018 to 2022. Enterprises divide government subsidy projects into two types: asset-related and income-related. (see *Table 2*)

Table 2: GAC Group government subsidy projects and current amount (unit: million yuan)

Project/Year	2018	2019	2020	2021	2022
Related to assets:					
Financial support for research and development	144.29	160.39	190.11	130.91	484.71
Investment funds from central budget	54.62	45.84	80.86	38.18	391.52
Financial support for vehicle project	176.55	445.27	198.26	176.12	903.94
Up/downstream enterprises financial support	3.90	7.49	16.01	24.51	402.81
Total	379.36	658.99	485.28	369.72	388.63
Related to revenue:					
Financial support for research and development	5.49	12.62	28.24	89.20	42.77
Financial support for vehicle project	718.51	2113.28	570.31	433.01	559.47
Up/downstream enterprises financial support	50.59	68.90	22.17	95.96	33.70
Others	15.74	47.73	173.32	65.15	35.39
Total	790.31	2242.53	796.04	683.31	671.33

(Data source: GAC Group annual report)

Due to the impact of policies such as reduction of subsidies for new energy vehicles, the government subsidies received continued to decrease in the next three years. But it is undeniable that the government support for the new energy vehicle industry is still strong, especially in research and development. In the past five years, funding for research and development has continued to increase, government hopes to encourage companies to improve the quality of new energy vehicles through independent innovation. It not only improves technological innovation of the group and promote environmental protection upgrades, but also conform to the overall strategic direction of promoting sustainable development and environmental protection transformation in the automotive industry.

5.2.2. Environmental performance information

Environmental performance information mainly divided into three parts which are pollutant emission information, energy consumption information and the disclosure information of company environmental governance.

In terms of pollutant emissions information, GAC Group has basically disclosed detailed data for each pollutant. In annual report, it classified according to the pollutant type, adds pollutant emission concentrations, defines emission standards and explains implementation standards and total indicators that are missing in the social responsibility report. Compare with the national standard, it makes easier for information users to assess company emission. In social responsibility report, the content is more detailed than annual report, with additional data such as greenhouse gases, wastewater emissions and benzene series.

After observations, social responsibility report discloses total emissions of the company, while annual report discloses separately for each of its subsidiaries. In 2022, annual report lists Aion for the first time which shows the contribution of the new energy vehicles to pollution emissions. Table 3 is the pollutant emission data after integration of two reports. (see Table 3)

Table 3: Main pollutant types and emissions of GAC Group

Types	Pollutants	Actual emissions in 2018(t)	Actual emissions in 2019(t)	Actual emissions in 2020(t)	Actual emissions in 2021(t)	Actual emissions in 2022(t)
Air Pollution	SO ₂	7.41	6.01	449.4	26.9	25.8
	CO ₂	972563	752196	1528513	1019571	1329409
	Particulate matter	79.7	68.7	105.5	107.5	110.2
	Nitrogen oxides	51.37	93.21	202.8	95.9	129.6
	Benzene	2.69	2.5	7.1	6.2	2.3
	VOCs	1901.19	1552.99	1952.4	1465	1551.3
Water Pollution	Wastewater emission	---	---	2640618	2923696	4012849
	Chemical oxygen demand (COD)	82.43	94.12	321.5	258	289.8
	Nickel	0.18	0.06	13.1	0.07	0.16
	Helium and nitrogen	4.18	11.3	41.8	26.1	34.5
Solid Pollution	Hazardous waste	16292.6	15886.7	19185.7	20147.6	25658
	Non-hazardous waste	418000.1	224603.9	182169.7	292819.6	389069

(Data source: GAC Group annual report & social responsibility report)

In social responsibility report, the company gave a detailed explanation of special data. For example, the overall increase in 2020 was due to the expansion of the disclosure scope from production investment enterprises to all types of investment enterprises; the wastewater emission in 2022 increased significantly from 2,923,696 tons to 4,012,849 tons due to increase in production lines, changes in wastewater disposal methods and the data increased from some new factories. Compared with other companies, GAC Group

lacks the data of domestic garbage and household sewage. In addition, social responsibility report should classify pollutants in order to convenient for non-professionals to read.

Energy consumption information only presented in the social responsibility report (see *Table 4*). The company also discloses the density of energy consumption that is the amount of consumed per unit.

Table 4: Main energy types and consumption of GAC Group

Energy Types	Units	Actual consumption				
		2018	2019	2020	2021	2022
Electricity	10,000 kWh	134630	100876	140401	151844	186623
Gasoline	tons	14134	11864	44840	4023	3727
Diesel	tons	---	---	55926	886	1092
Natural gas	Cubic meters	49235282	43554290	52126189	56572836	78966901
Clean energy	10,000 kWh	---	---	5203	6293	9830
Other energy	10,000 kWh	---	---	2570	1996	169940
Water consumption	tons	6069058	6912879	8337061	8039537	9600102
Product packaging	tons	---	---	5659	42790	29854

(Data source: GAC Group social responsibility report)

Due to the expansion of disclosure scope, energy consumption in 2020 showed an overall upward trend compared to previous years. For example, the disclosure of upstream and downstream industry energy indicators such as finished product packaging volume and diesel has been added. At that year, it also increased clean energy disclosure. Since Aion produced, GAC committed to save energy, reduce emission and energy consumption which ensuring the achievement of the company's goals. Thanks to vigorous marketing, GAC Group has made full use of clean energy and continued to transform to electrification. Therefore, the consumption of gasoline and diesel has been reduced in the past two years. In order to continue green and environmentally friendly philosophy, the company increased the use of clean energy and electricity to truly achieve low-carbon production.

Environmental governance information mainly listed in the sustainable development topic in social responsibility report. It also appeared in annual report but only briefly described some environmental protection and energy-saving measures that lacks data support. The company disclose environmental governance through emission reduction, recycling and energy conservation.

The company pays attention to the environmental governance information disclosure in all aspects, most of which are quantitative information, supplemented by qualitative information. The following table (see *Table 5*) lists the specific quantitative information disclosed.

Table 5: Quantitative information disclosure of GAC Group environmental governance

Year	Quantitative information	Corresponding quantitative information
2018	Wastewater reduction: Low temperature sludge treatment	The moisture content of sludge decreased by 69% year-on-year
	Energy saving: Chilled water recovery technology	Energy saving of 324,720 kWh per year
2019	Waste gas reduction: Welding vacuum generator and air conditioning idling energy saving improvement	Reduced emission of 356.6 tons of standard coal
	Energy saving: Chilled water recovery technology	Water saving of 54,880 tons per year
	Energy saving: The third production line uses solar power generation	Electricity saving of 10 million kWh per year
2020	Waste gas reduction: Add zeolite wheel adsorption + RTO incineration equipment	VOCs reduced 12.8t
	Wastewater reduction: MBR + RO pure water reuses deep treatment	Recycled water volume reached 50m ³ /h
	Solid waste utilization: Recycle engine bracket	Reduce wood usage by 30kg
	Energy saving: Water saving regulations and automatic water replenishment system for passenger cars	Save 3837t of water in total throughout the year
2021	Waste gas reduction: Add zeolite wheel adsorption + RTO incineration equipment	VOCs reduced by 12.8t, CO ₂ reduced by 189.3t
	Solid waste utilization: Non-destructive testing instead of cutting parts inspection	Industrial solid waste reduced by 22.2t
	Energy saving: Coating process and cooling water additives	Save 2136t of water in total throughout the year
2022	Energy saving: First-line production welding LED lights replacement	Electricity saved by 52%
	Waste gas reduction: Photovoltaic power generation project	CO ₂ reduced by 3.27t
	Solid waste utilization: Waste solvent recovery system (Aion)	Waste solvent reduced by 1.5kg per unit
	Energy saving: condensate recovery, automatic water replenishment and multi-stage overflow cleaning technology	Save 3300t of water in total
	Energy saving: Partial energy-saving measures in the factory	Save 350,000kWh of electricity in total

(Data source: GAC Group social responsibility report)

The company have fully demonstrated their efforts through technology research, equipment upgrades and rulemaking. In terms of emission reduction, company generally disclose wastewater and waste gas, but only did they disclose both in 2020, and only one in other years. For qualitative information, in addition to setting emission reduction targets, enterprises popularize emission reduction technologies and actions by listing relevant cases of their subsidiaries in the report, quantitative information often presented on it; For solid waste utilization, quantitative descriptions have been made since 2020, and disclosures usually involve parts technology innovations in production and design processes. In 2018, it only discussed wastewater recycle, more aspects such as packaging in the production process and reuse of new energy batteries were involved in 2019, meanwhile, the spirit of recycling was spread to the society through community; On energy conservation, they disclose both quantitative and qualitative information every year. Energy-saving results are often related to resources. In addition to formulated relevant rules and regulations for internal work, GAC effectively reduce water and electricity consumption and improve utilization efficiency by upgrading equipment levels and innovating production processes such as solar power generation and condensate recovery.

5.2.3. Environmental management information

In terms of environmental protection concepts and goals, GAC Group actively responds to the dual carbon goals, highly attention to the "14th Five-Year Plan", and integrates sustainable development concept into entire process of product design, research, manufacturing and operation, achieving green culture, green production and provide green products and services. From 2021 on, energy conservation and emission reduction targets were officially included in social responsibility report, covering two aspects which were energy resource consumption and solid waste gas emissions.

Starting from 2020 social responsibility report, company added relevant information on environmental protection supervision to the topic of clean production, and actively accepted social supervision. According to the laws and regulations, company has set multiple emission control targets on its own and regularly monitors emission data. In addition, the company will check the use of water and electricity resources, report the results to departments for approval on a regular basis, then implement measures to bridging the gap based on the results. Each investment company have established multiple environmental management systems with GAC, "Guidelines for Corporate Environmental Compliance Management" provided for them to implement which ensure that its production complies with laws and regulations and effectively prevent environmental risks.

On environmental education, subordinate investment companies held environmental management practice training for managers through external professional institutions in 2018. In 2022, the company strengthened energy-saving and environmental protection training, interpret laws and regulations, and popularize national policies such as carbon neutrality. From 2019 to 2021, the company did not disclose training situation.

GAC Group always strictly followed the "National Environmental Emergency Response Plan" and other relevant documents, formulated emergency plans for environmental emergencies and filed them with relevant departments. Meanwhile, they also organized emergency drills to improve its prevention capabilities. In addition, the company strictly implements "three simultaneous" system in project construction to ensure that construction projects and environmental protection facilities are designed, constructed and put into use simultaneously.

6. Problems in GAC Group Environmental Accounting Information Disclosure

6.1. Disclosure methods are too scattered

At present, a unified standard for environmental accounting information disclosure has not formatted. Multiple disclosure methods can certainly expand the scope of disclosure, but it also causes information dispersion. Although GAC Group has set up a special section for environmental accounting in the annual report, it only has the pollution data of its subsidiaries and some management information, while environmental income presented elsewhere. Social responsibility report also has the same problem. Although all environmental performance information is listed in the performance table in the appendix, its page position is far from the environmental section, making it difficult to view in combination with other qualitative information in the topic. Furthermore, a large number of words in the annual report and social responsibility report makes it difficult for information recipients to quickly and accurately find the information they want. Therefore, in order to pursue accuracy, organization and comprehensiveness of environmental data, it is necessary to establish a relatively independent space.

Some information disclosure is also unclear. In the social responsibility report, although environmental performance information has been disclosed in the performance table, there is a lack of clear classification, and it put emissions and energy consumption listed together, which will confuse information seekers. In addition, environmental governance information is scattered in various corners of the topic, some important quantitative data even hidden inside case analysis, which will make information users spend a lot of time to collect.

6.2. Disclosure is not comprehensive enough

GAC Group intentionally avoids negative information during disclosure. In terms of financial information, it lacks environmental costs. Environmental costs refer to the negative impact of enterprises on the environment. According to the Environmental Protection Tax Law implemented in 2018, GAC Group should have paid environmental protection taxes and other environmental-related costs for this year, but the company didn't disclose it.^[11] According to the reports, the company only announced the honors it has received in recent years but did not disclose any illegal or irregular events. According to the relevant news, residents were worried about water and air pollution due to the expansion of the GAC Honda factory, but the company ignored the complaints. All signs indicate that the company has concealed some aspects that are unfavorable to the environment and failed to fully disclose the truth. At present, the legal system has not yet made clear provisions of environmental accounting information disclosure, government supervision is not strict and no mandatory disclosure measures have been taken against the automotive industry.^[12] Therefore, companies have a dominant position in the direction of disclosure and often disclose positive information only.

Some of the information disclosed is flawed. In the annual report, the company only listed the source of the government subsidies but didn't disclose the specific subsidy projects. Even on the official website, no corresponding information can be found. This makes it difficult to extract effective information, which inevitably makes those who need information doubtful. The same problem exists in environmental protection investment. We can get information from GAC Group official website and know that the company had made environmental protection-related contributions every year, especially forest protection and afforestation, from Liuxi River in 2019, to voluntary tree planting in 2021, then Yunlong Tianchi in 2022. However, the company does not disclose it which makes puzzling.

6.3. Disclosure process is not reliable enough

Although GAC Group has made progress in disclosure year by year, it still lacks some reliability. First, the company didn't explain whether the environmental information has passed ISO14001 and ISO9001 certification, which is very important for assessing if company environmental management level is up to standard.^[5] Secondly, as mentioned above, GAC Group is facing a series of financial difficulties, and it is unknown whether company has cut or concealed environmental expenses in order to stabilize operations.

In addition, the company currently lacks third-party verification of environmental information. GAC Group has never disclosed relevant information on internal environmental audits, what's more, the data are all from its own disclosures with mostly qualitative information, so the accuracy and authenticity of the data is difficult to judge. In order to improve transparency and building trust with external stakeholders, the participation of third-party independent audits is also needed.

7. Suggestions on Improving Environmental Accounting Information Disclosure in The New Energy Vehicle Industry

7.1. Companies need to improve the way and content of disclosure and raise environmental awareness

To improve disclosure methods, innovation and standardization are required. First, enterprises need to adopt professional and diversified disclosure methods such as environmental report or social media to reflect the importance of the company to disclose environmental information. Second, enterprises need to clarify environmental information in the report. Since information is diverse and wide, enterprises should appropriately use visualization tools to display complex data and qualitative information when collating, which helps external information demanders understand environmental performance easily. In addition, in order to compare information annually, enterprises should strengthen the uniformity and fixation of typesetting.

For improving disclosure content, first enterprises need to meet with outside standard. When disclosing quantitative information, corresponding indicators should be established to ensure that it meets international standards and social expectations. Meanwhile, information should be authenticity, actions that violate corporate philosophy should not be taken for personal gain. When describing qualitative information, completeness should be attention, considering any positive and negative factors that affect the environment. Second, internal audits should be strengthened. An environmental audit department should be set to check the financial information and supervise the collection and recording process to prevent internal fraud.^[13] At the same time, problems arising from the audit should be reported to the management on time. In addition, enterprises should regularly invite third-party institutions to audit environmental information disclosure which helps company discover and correct potential problems.

To improve environmental awareness, first convey correct values to their employees and regard it as a core part of the corporate strategy. By regular training, environmental protection concept can be strengthened. In addition, company should also shoulder social responsibilities, actively convey correct environmental protection concepts to the public to improve overall civilization through publicity and education. On the other hand, in order to improve professionalism of disclosure, a cultivate professional talents in environmental accounting must be required. For internal accountants, they should improve their relevant knowledge through regular training. What's more, enterprises can also cooperate with colleges and universities to develop special courses and internship programs to attract future talents.

7.2. Government should develop laws and regulations, strengthen audit supervision and promote social supervision

Even there are laws related to environment, details have not yet been perfected. Therefore, government should formulate environmental laws and regulations, clarify obligations and standards of environmental accounting information disclosure, a strict disclosure requirements and supervision mechanisms must be set and specify methods and contents of disclosure in detail. On specific implementation, government needs to clearly divide supervision responsibilities, efficiently solve problems, and public information to the society on time. If violations, government should increase penalties to ensure the laws and regulations are strictly implementation.

To strengthen social supervision, government should popularize environmental protection concepts to the public to improve their awareness and attention to sustainable development, then promote their attention to the corporate environmental performance. In addition, to effectively accept social supervision, it is necessary to improve communication and report methods. Government can provide information searching platforms, widely spread corporate environmental performance though news or media, using social platforms for public to reflect issues.^[14] Reports from the public should be handled in a timely manner and strictly investigated that live up to the public's prestige.

Promoting auditing agencies to conduct independent audits of corporate environmental accounting information is the most effective way to ensure the authenticity and reliability of information disclosure. Hiring environmental accounting information audits will consume a lot of financial resources of enterprises, so government should introduce appropriate policies to encourage and support enterprises to make third-party certifications, such as financial subsidies, tax reductions.^[15] On the other hand, as the quality of third-party auditing agencies varies, in order to improve persuasiveness of their information, a recognition system that meets the standards should be established. In this regard, government can consider establishing a qualification certification system to verify capabilities of the agencies to ensure their audit results. In addition, auditing agencies should also strengthen industry exchanges to improve their auditing level.

8. Conclusion

After analyzing, it can be seen that GAC Group has been expanding the scope and detail of environmental accounting information disclosure year by year, paying more attention to it by improving disclosure level. But it can't be ignored that there are still some problems in the process of disclosure.

Under the background of "dual carbon" policy, sustainable development has become greatly important. Environmental accounting information disclosure in the new energy vehicle industry will be higher requirements and standards. Company needs to improve disclosure quality by optimizing content and form of their environmental accounting information to solve the problems in the current disclosure process, so as to better meet with information needs from stakeholders, then improve social image of the

company, establish better environmental responsibility and truly contribute to environmental protection.

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