Research on the Impact Mechanism of Green Investment on Corporate Environmental Performance

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ABSTRACT

This study investigates the results of how green inventory affects the company environment. We will also consider green innovation, differences between industries and regions, ESG standards and improvement of supply chain. Green investment is an important method to reduce emissions and foster sustainable growth. It supports renewable energy by encouraging companies to spend resources on research and development, and ultimately helps them with solutions, manufacturing methods that reduce emissions and efficient operating systems. In addition, study also examined the differences in environmental impacts of these investments in industries such as finance, manufacturing and energy, and the importance of geographical conditions in producing these results. In addition, we also emphasize that environmental, social and Governance (ESG) indicators can improve the transparency and effectiveness of green inventory through financial markets, thus affecting the road of sustainable development. Green investments helps supply chain to cooperate and sustainable logistics, and helps enterprises to improve eco-efficiency internally and throughout the value chain. Although there were difficulties in needing a lot of money and unstable market at first, it was found in this study that the benefits of money and environment lasting for a long time were greater than these difficulties. It points out the ways for enterprises to make better use of resources, reduce weaknesses and enhance the charm of brand. This study suggests that organizations should formulate flexible and forward-looking strategies for green investments. This is to protect the environment and enable enterprises to develop for a long time by using rule support, technological progress and integrated supply chain management.

Keywords: Green Investment; Corporate Environmental Performance; Sustainability; Green Innovation; Esg Evaluation; Supply Chain Collaboration; Green Logistics; Low-Carbon Economy; Emission Reduction; Clean Energy Technologies; Sustainable Development; Policy Incentives; Environmental Management; Carbon Neutrality

1. INTRODUCTION

All over the world, “green development” has become an important goal to change the economy. As climate change and resource shortage are becoming more and more serious problems, the government is using international accords and policy mechanisms and financial support to make efforts to change to a sustainable and low-carbon model. Starting from the goal of creating the peak of CO2 emission and realizing carbon neutrality, people have higher and higher expectations for enterprises to actively reduce emissions, reduce greenhouse gases or reduce environmental damage. Within this framework, green investment has changed from a policy suggestion to an important part of the enterprise’s sustainable development strategy. This not only helps to reduce emissions, but also helps to strengthen the mood of caring for the environment.

In the policy rules all over the world, it is clear that “green growth” and “sustainable development” should be promoted. For example, UN’s 2030 Agenda has 17 sustainable development goals (SDGs), and thinks it is important to act as soon as possible for the environment and reduce many carbon emissions. Similarly, in the “Green Deal” of European Union, it is said that clean technology and environmentally friendly manufacturing methods are very important. This is to transform into an economy with less emissions, supported by rules and money. From such world efforts and economic changes, we can see that companies are constantly being asked to make supply chain that consider the environment, use resources more effectively, and help achieve the goals of the world climate. Green investment is powerful not only because of the ready-made environment of reducing emissions, but also because of the smooth and sustainable development of supply network.

So far, the idea is often only to improve the environmental footprint of a company, and often ignores the impact that such behavior will bring to the wider supply chain in two directions. In the modern and interdependent supply chain network,

the result of a company environment is directly formed by supplier and circulation mechanism. For example, too much upstream vendor emissions and too much energy consumption in downstream transportation may offset the company's sustainability efforts. Therefore, companies must investigate the widespread impact of green initiatives and change their thinking from "only pursuing the benefits of the company's environment" to "managing the whole supply chain and making it cooperate". Therefore, the stronger the company's position in global value chains (GVCs), the greater the promotion of environmental protection ideas and standards throughout supply chain, and finally the carbon performance of upstream and downstream partners will become better (Huang, Li, &Wan, 2026) [1].

Research pays attention to the working principle and process behind it, and studies how to help green investments implement eco-friendly practices in enterprises. We are still looking for how to promote the progress of these investments in the whole supply chain, thus improving the overall environmental results. Through this survey, the practical policy suggestions and business direction are displayed for organizations that want to contribute to sustainable initiatives and create a more environmentally friendly supply network. These results will help enterprises achieve the goal of sustainability and deepen the cooperative relationship with supply chain partners.

2. RESEARCH DESIGN

2.1 How Green Investments Drive Corporate Environmental Performance

The change of low-carbon activities not only comes from external requirements such as regulatory pressure and corporate responsibility, but also comes from opportunities to create value for a long time and update strategies. (Ziru, Zenglian, & Zhang, 2026) [2] In the "dual carbon" initiative, green inventory can help enterprises achieve the goal of efficient energy use and emission reduction immediately. At the same time, the technological progress of renewable energy and the development of environmentally-friendly goods will make the manufacturing process smoother, which will also be carried out in the long run.

Firstly, green investment refers to the way in which companies allocate more funds towards research and development. This helps to drive technological progress in a environmentally friendly direction. In the field of clean energy, companies use this investment to advance technologies such as solar photovoltaic systems, next-generation energy storage solutions, and more efficient wind turbine technology. For example, in China, where renewable energy is growing rapidly, a lot of green funding plays an important role in promoting new inventions by companies. As shown in Figure 1, according to official statistics from the China National Intellectual Property Administration, between 2016 and 2023, the number of patent applications related to green and low-carbon technologies worldwide increased by 1.276 million. This represents an average annual growth rate of 4.7%. In particular, the annual growth rate of R&D expenditures in the field of energy storage reached 13.8%.

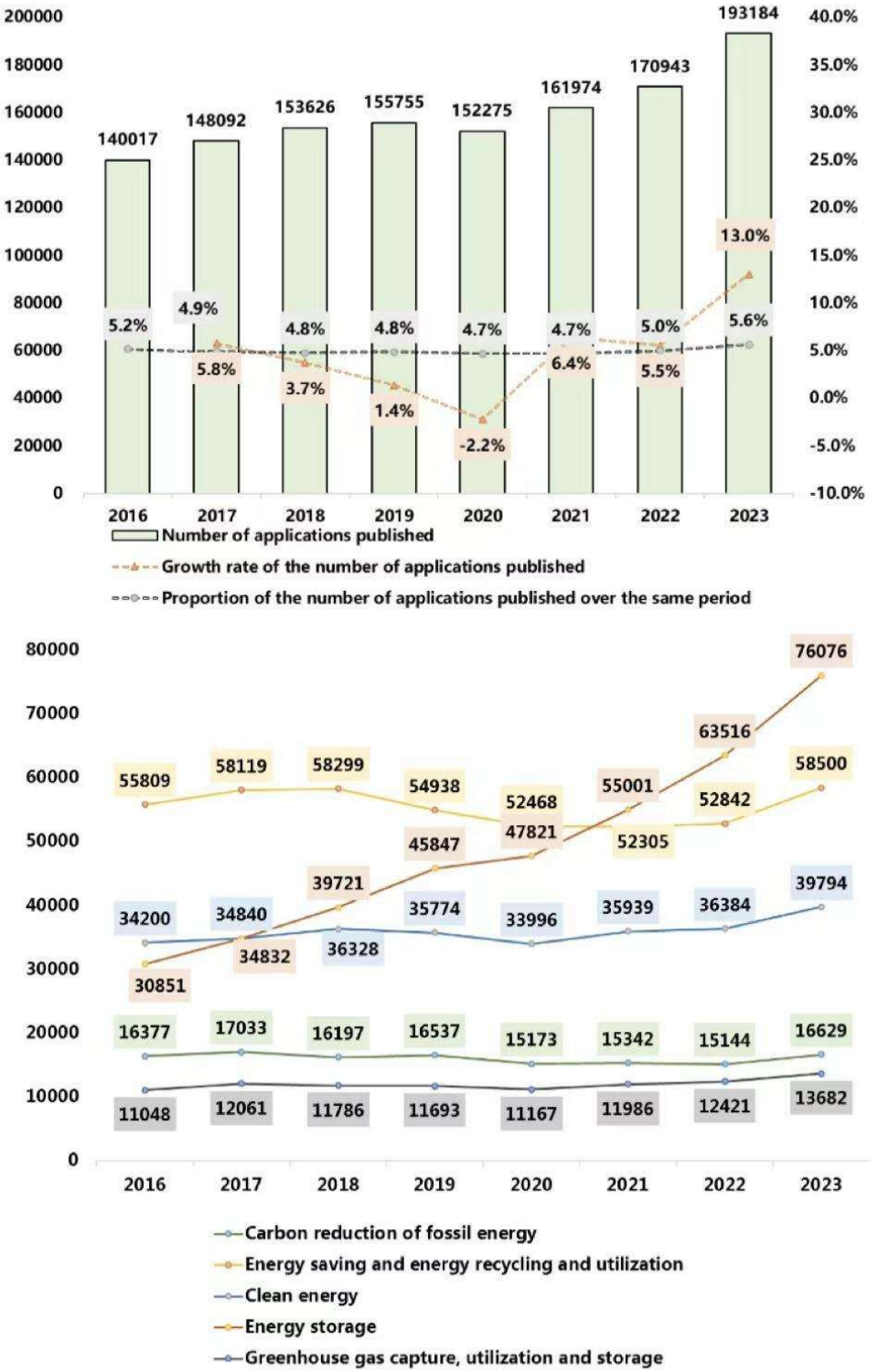


Figure 1. China National Intellectual Property Administration. Report on Statistical Analysis of Green and Low- Carbon patents (2024) [9].

International success stories also highlight the crucial role of green investment in driving innovation. For instance, Tesla, the global leader in the electric vehicle sector, has always relied on green investment to revolutionize electric vehicle technology. From upgrading battery technology, to launching long-range models, and establishing a global super-charging network, Tesla's technological leadership is fundamentally based on a solid foundation of green investment.

Furthermore, many enterprises have turned to green financing tools (such as green bonds and green funds) to support innovative projects. The increase in green funds has driven a significant growth in corporate R&D expenditures. According to the China Environmental Protection Industry Development Report 2025 released by the China Environmental Protection Industry Association, the annual growth rate of R&D expenditures of green enterprises is generally higher than that of traditional industry enterprises, reaching 2.90%, while the average R&D expenditure growth rate of all industrial enterprises in the country during the same period was only 1.64%. Companies that attach importance to the environment have paid a lot of money for research and development, such as renewable energy systems, pollution control technologies and materials with reduced carbon footprints.

Generally speaking, green investment is an important thing to promote innovation. It is not only to pay for making the existing technology better, but also to become an opportunity for the company to find a friendly way to consider the future environment. From the achievements of the world and the increasing number of green pets around the world, we can clearly see the bright and good impact of this investment. In this way, business can get the opportunity to become stronger through technology while achieving environmental results.

2.2 Are Environmental Performance Outcomes Influenced by Industry or Regional Differences?

2.2.1 Industry Perspective

The effect of environmental investment on the environment is different in different industries. That's because industries work in different ways, use different resource and accept different strict rules. Next, this study will investigate three particularly important industries in detail:

Finance:

The financial industry uses tools such as green bonds and sustainability funds to recommend environmentally beneficial investments. These tools are designed to pay for projects that reduce carbon emissions or build sustainable infrastructure. For instance, under the framework of the EU's Green Deal, banks and investment institutions have significantly increased the issuance volume of green bonds.

According to the joint report released by multilateral development banks, in 2022, $60.9 billion was for low-income and middle-income economies. $38.2 billion, or 63% of this total, was for climate change mitigation finance and $22.7 billion or 37% was for climate change adaptation finance [3].

The green investment performance of the financial industry is mainly reflected in indirectly facilitating various industries to achieve carbon-neutrality goals.

Manufacturing:

As something closely related to the use of energy and the emission of carbon, the distribution of green capital in the industrial field is to improve the performance of ordinary energy, reuse waste and cultivate technological progress. However, such measures often need to continue to pay for a long time before visible results are obtained.

Energy:

In conventional energy firms that rely on fossil fuels, environmentally friendly investments tend to focus on innovative areas, such as clean power, including wind, solar and nuclear energy. Instead, renewable energy enterprises gives priority to improving the reliability and market appeal of their green solutions. For example, in order to reduce dependence on traditional fuels, companies like Shell have invested resources in the development of wind power.

2.2.2 Regional Perspective

The operation mode of the region-including the strictness of the regional framework and the convenience of the market-also determines the help of green investment to environmental problems. In developed countries such as the U.S and Europe, policies and rules are stricter and citizens often monitor them, so the benefits of these investments will increase. A good example is the Emissions Trading System (ets) of the European Union. This will encourage power generation and

industrial companies to actively participate in carbon trading, paving the way for effectively reducing carbon emissions. These measures not only comply with environmental rules, but also make great strides towards the goal of lasting sustainability.

In contrast, emerging countries such as China and India face greater obstacles because of unpredictable regulations and technical restrictions. These countries have made remarkable progress in the field of sustainable finance-you can see-the growth of --China's photovoltaic sector and India's progress in wind power-and some initiatives have not yet achieved enough results. Brazil is also an example. Efforts to protect forests have been well received all over the world, but due to the difficulty of implementing policies and cracking down on illegal activities, the effect of sustainable investment in the plan to protect specific rainforests has become less effective. Therefore, the results of green's investment in developing countries are often limited by vague supervision, lack of technology and inadequate implementation, and its long-lasting impact may not be as good as that seen in more developed regions.

2.3 Mechanism Linkage between ESG Evaluation and Green Investment in the Capital Market

ESG (Environment, Social, Governance) indicators have emerged in recent years as a vital tool for measuring enterprises' sustainable-development capacity and social responsibility. They cover three core dimensions: Environment (E), including carbon emissions, energy-use efficiency and resource management; Social (S), concerning employee rights, supply-chain management and social impacts; and Governance (G), focusing on corporate-governance structures and management efficiency.

Capital market uses ESG evaluation, which greatly improves the effect and understandability of sustainable investing. This connection works in several important ways: First, ESG rating system is an important basis for green money distribution. Frameworks such as MSCI ESG and Sustainalytics show you scores by investigating the sustainability of companies in detail, so that ESG can invest in better companies. A famous example is a renewable energy company named Ørsted. Because of its great contribution to clean energy, he got AAA score from MSCI, and then he got a lot of money from investment funds that cherish the environment.

Secondly, enterprises can improve their awareness of green fund activities by disclosing ESG disclosure and environmental performance indicators. For example, Microsoft demonstrated its "carbon negative" commitment in 2030 in the ESG application form, and emphasized the specific investment in renewable energy solutions and carbon offset programs. As a result, the financial market has attracted more attention.

Furthermore, ESG indicators are widely used in the sustainable development indices launched by the capital market, helping investors identify high-quality green target enterprises and optimize investment allocation, including equity market outperformance, lower option-adjusted credit spreads and more stable revenues and cash flows. (Kishan & Reil, 2025) [4] Take European companies as an example, if they have strict sustainability reporting obligations, they must publish data of fine environment. This will strengthen the credit mechanism supporting green financing in the financial market.

In emerging markets, the publicly available ESG data is still very few. Despite this, many leading companies have done well in environmental and social aspects, and have been supported by investors and eco-focused funds. AngloGold Ashanti, headquartered in South Africa, illustrates this process well. By introducing a strict ESG framework, the company raised sustainable funds and strengthened the long-term composition of mine work.

ESG is a widely accepted framework. In line with the mood of various investor and related personnel, it helped spread this idea among ordinary people. (Pollman, 2024) [5].

Overall, ESG evaluation framework provides a clear and measurable standard for financial market. Therefore, the market liquidity and environmental results of green inventory are very good. In this way, ESG evaluation framework plays a very important role in promoting sustainable development agenda all over the world.

2.4 How Green Investments Optimize Environmental Performance Across Supply Chains

Green investment will not only improve the environmental footprint of the company, but also improve the standard of the overall environmental activities of the company supply chain. These two effects mainly come from two important mechanisms:

2.4.1 Supply Chain Collaboration:

After recommending environmentally friendly methods to customers, company will expand sustainable development measures at all stages of its own manufacturing. For example, Apple started the Supplier Clean Energy Program. This is a program that encourages customer companies to use renewable power to reduce their carbon footprint. Making product accounts for more than half of Apple's total carbon emissions. The main way to achieve the goal of Apple climate set in 2020 is to use renewable energy to reduce carbon emissions related to customers. These goals are, by 2030, to become the overall work of Apple, the contact of customers who manufacture products, and the carbon neutral in the life of products. Although the plan stipulates to reduce emissions by 75% by that year, Apple also promises to reduce emissions by 90% by 2050 (Mark, 2026) [6].

Similarly, in the textile industry, companies like Nike have encouraged their suppliers to develop processing technologies that consume less water and cause less pollution through green investments. This approach has significantly alleviated the environmental problems caused by textile production. By promoting supply chain collaboration, these enterprises not only improved the resource utilization efficiency and sustainable development level within the supply chain, but also successfully reduced the overall ecological footprint.

2.4.2 Green Logistics:

The activities of logistics and transport have had a great impact on the greenhouse gas emissions in the world. If we use electric freight vehicles and energy-saving transit infrastructure to invest money in environmental logistics, these emissions will be greatly reduced. Electric trucks, in particular, has a better effect, and can reduce co emission by 55.95% in the whole life cycle compared with diesel alone (Ahmed & Jeppe, 2025) [7]. For example, Amazon's Climate Pledge initiative has funded low-emission vehicle fleet and smart energy systems, reducing the environmental burden in the work of supply chain.

This means that by utilizing sustainable financing and strengthening cooperation among all departments of supply chain, the company can directly or indirectly help suppliers, transportation partners and other stakeholders to adopt environmentally friendly technologies and low-emission practices. Such a unified strategy concentrates the actions of various stakeholders in a framework. This method can not only greatly reduce the company's impact on the overall environment, but also bring useful models and ideas, making the whole world a more environmentally friendly supply chain way.

3. RECOMMENDATIONS

Green investment will open up great prospects for promoting sustainable development and improving environmental quality. However, when business is implemented, it often requires considerable expenses. Nevertheless, in the long run, the return of these investments is considered to be much greater than the initial cost, thus generating greater economic and ecological benefits.

In terms of money, green investment often spends a lot of the first money on technology. This is to replace pollution-causing equipment, make low-carbon new things and promote them, or transform them into renewable energy sources in the whole supply chain. In addition, this kind of green investment may also require indirect costs from market fluctuations. For example, with the change of supply and demand, the structure of rules changes. Companies must consider these risks when making a green investment plan. In terms of finance, the biggest obstacle to SME financing is the huge initial cost, insufficient internal money and strict guarantee required by commercial banks. (Fonseca & Baugh, 2025) [8] These restrictions are the heaviest burden for companies with few resources, and it is especially difficult to run green investment.

Although sometimes it costs money right away, investing in sustainable initiatives for a long time sometimes has many benefits. First of all, companies have improved their production methods, used powerful tools of resource management, and used energy very efficiently, which will eventually reduce operating costs. In addition, through these investments, firms and its supply network can reduce carbon and other harmful emissions, improve environmental benefits, and reduce the probability of encountering compliance-related legal or regulatory challenges. Together, these can become stronger in terms of money in the long run, and the company's evaluation will become better in the market where environmental responsibility is paid more and more attention.

Green investment not only has the benefits of money, but also has great advantages. In particular, strengthen the image of enterprises and their position in the market. Enterprises that actively incorporate sustainability into their work will get the

support of environmental protection customers and attract more attention from investor. When making a green inventory plan, enterprises should have an agile and far-sighted vision and compare the money to be spent immediately with the future profits. By using the support of government, supporting the progress of technology and cooperating with the partners of supply chain, the threshold at the beginning can be lowered. Through these efforts, green project can not only bring environmental progress, but also commercial success, and bring long-term benefits to enterprises and the wider society.

4. CONCLUSION

In a word, green investment has emerged as an important mechanism to solve world environmental problems and promote the transformation to sustainable development. This study emphasizes the role of green inventory in improving the environmental situation in the company and its supply network, and proves that it has the effect of reducing emissions, promoting cooperation and promoting low-carbon initiatives.

Green investment may have difficulties in money and technology at first, but the long-term benefits to the economic structure and the natural world are much greater than these initial obstacles. By carefully thinking and comparing costs and benefits, enterprises can not only improve their own practices, but also contribute to the broader industrial trends facing sustainable development.

Finally, green investment will play an important role in connecting economic growth and environmental responsibility, and create a cleaner and more sustainable future foundation for everyone.

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