# PRISMA METHODOLOGICAL ANALYSIS BY THE LONG-TERM IMPACT OF ESG, GREEN LENDING, AND CONSUMER SUBSIDIES ON SUSTAINABLE SUPPLY CHAINS AND FINANCIAL RISKS

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## 1 INTRODUCTION

In academic and policy debates on environmental sustainability [1] and economic resilience, the development of sustainable supply chains and the ESG and green credits that facilitate them play a crucial role [2]. With the rise of global consumer subsidies that promote environmentally damaging practices, supply chain transformation has become extremely timely [3]. The UN Sustainable Development Goals seek to embed sustainability into corporate strategies.

The transformation of supply chains is based on the integration of sustainability principles into business strategies, the performance of ESG rated company shares – hereafter ESG shares – is a vital measure of a company's ESG commitment.

Traditionally applied consumption subsidies work against sustainability by promoting the depletion of environmental resources. A circular economy [4] should be introduced to promote resource efficiency and environmental responsibility. By integrating ESG principles into consumer support programmes, policy-makers can trigger significant changes in consumer behaviour, pushing them towards the adoption of sustainable products and services.

Most stakeholders, from businesses to consumers, are aware of the consequences of their choices. Sustainable solutions supported by ESG metrics and green finance are improving supply chains. Along with ESG finance, green credit – a financial instrument designed to support green projects – is also a key driver for financing sustainable initiatives throughout the supply chain.

Regular evaluation of efficiency and long-term impacts [5] will lead to changes in strategy and will also consider the impact on future generations. Evaluations are key to assessing the potential of ESG Equity and Green Credits to drive systemic change, and in light of the environmental crisis and economic paradigm shift.

## 2 MATERIAL AND METHODS

A PRISMA-compliant review reveals that ESG criteria enhance supply chain sustainability by improving transparency, reducing costs, and mitigating regulatory risks. However, methodological homogeneity (e.g., overreliance on regression analysis) and regional

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biases limit generalizability. Future research should prioritize: Longitudinal studies on ESG's macroeconomic impacts, inclusive frameworks capturing SME and Global South perspectives.

This approach equips policymakers and businesses with evidence-based strategies to align supply chains with global sustainability goals while addressing financial risks ESG-focused strategies attract capital investment and improve a company‘s access to green credit on favourable terms to build resource-efficient production processes. When companies align their operational protocols with ESG standards, there is a marked improvement in resource use patterns, leading to reduced waste and better use of resources. Research also shows a statistically significant correlation between the implementation of ESG frameworks and carbon emission reductions across industries.

According to [6] by integrating ESG criteria into investment decision-making processes, companies can improve their risk profile and increase their attractiveness to responsible investors. The use of ESG metrics facilitates a more holistic assessment of potential investments, allowing the identification of hidden risks that may not be apparent through traditional financial analysis. Organizations with robust ESG practices are better able to adapt to regulatory changes than those with environmental regulations, reducing compliance risks.

The effectiveness of incorporating ESG into financing strategies is being examined in case studies, with a particular focus on the long-term impact of ESG on financial performance. [8] Companies that adopt ESG structures report lower earnings volatility and improved investment performance, which can be particularly beneficial in an uncertain economic environment [9]. Companies that are proactive in their environmental and social responsibility are more trusted by stakeholders.

## 3 RESULTS

If ESG measures and green credits are designed with incentives in mind, they have a synergistic effect, triggering institutional changes in supply chains.

Government policy [7] and private investment provide an enabling environment for innovation, allowing for the rapid development and deployment of sustainable technologies across different stages of the supply chain.

The long-term effects of green finance on economic outcomes are significant. Initial investments are higher than traditional ones, but can lead to significant cost savings over time due to improved efficiency and reduced energy consumption. Aligning corporate strategies with ESG principles also appeals to investors, improving access to capital markets. Aligning financial performance and sustainable practices will contribute to corporate performance and also accelerate the transformation of the industry to new economic models.

The interaction between consumer subsidies, green finance, government support and business sustainability is driving companies to adopt innovative models, transforming supply chain management.

## 4 CONCLUSIONS

Sustainability requires an increasingly complex understanding of socio-economic processes. Research has shown that sustainability can be economically rewarding, in addition to the very important environmental aspects, if its socio-economic motivations are rationally designed in a systemic way, its impacts are transparently measured, and best operating models are supported, fed back and widely disseminated. Regulators, targeted subsidies, investor contributions, and opportunities for social and cultural development supported by education play a key role in this holistic process.

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