

# NAVIGATING ESG COMPLIANCE IN SUPPLY CHAINS: RISKS AND OPPORTUNITIES FOR SMALL OPEN ECONOMIES

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## ABSTRACT

This study examines the impact of the Human Rights and Environmental Due Diligence (HREDD) requirements on companies operating in small open economies, with a specific focus on Environmental Social Governance (ESG) compliance in supply chains. The research also discusses the broader implications of the HREDD impact and its potential to standardise ESG requirements across Europe. By evaluating the risks and opportunities for small open economies, this article provides actionable insights for businesses navigating ESG compliance, emphasising the need for collaborative approaches, technological tools, and policy support to enhance competitiveness in sustainable supply chains. Through a combination of qualitative and quantitative methodologies, semi-structured interviews with key representative companies, and selected case studies, the research explores how Serbian firms adapt to the regulatory requirements imposed by the HREDD regulations. The findings highlight the EU's role as the country's most significant trade and investment partner, underscoring the indirect but profound influence of the regulations on exporters, particularly in the automotive, textile, and retail sectors. The study identifies sector-specific challenges in compliance, such as supply chain transparency, risk management, and the costs of adopting ESG standards. A case study illustrates best practices in aligning with the law, while a comparative analysis reveals disparities in compliance burdens across industries.

## KEY WORDS

ESG compliance and risks, supply chain, corporate sustainability, small open economies, HREDD

## CLASSIFICATION

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## **INTRODUCTION**

Global supply chains are increasingly shaped by stringent regulatory frameworks aimed at promoting environmental sustainability, social responsibility, and ethical governance (ESG). Human Rights and Environmental Due Diligence (HREDD) frameworks form the foundation of modern supply chain regulations [1], whereby Germany's Supply Chain Due Diligence Act – Lieferkettensorgfaltspflichtengesetz (LkSG) [2], and the European Union's Corporate Sustainability Due Diligence Directive (CSDDD) are serving as pivotal examples. Both laws operationalise HREDD principles by mandating corporate accountability for human rights (e.g., forced labour, discrimination) and environmental (e.g., pollution, deforestation) risks across global value chains.

The concept of HREDD has gained significant prominence in international policy and regulatory discourse, particularly within the European Union. With the adoption of the CSDDD by the European Commission [3], HREDD is no longer a voluntary or moral framework but a legally binding obligation for large companies operating within or doing business with the European Union. HREDD requires companies to systematically identify, prevent, mitigate, and account for adverse human rights and environmental impacts in their value chains. This shift from soft-law principles to hard-law compliance mechanisms marks a paradigm change in corporate governance and global trade dynamics [4].

As a form of HREDD, the LkSG, enacted in 2023, laid the groundwork by requiring German firms to monitor direct and known indirect suppliers, with penalties for non-compliance. The CSDDD expands this model EU-wide, introducing stricter obligations, including civil liability for harms and coverage of downstream activities (e.g., product use/disposal). German LkSG represents a pivotal development in corporate accountability, requiring companies to monitor human rights and environmental risks across their entire supply networks [5]. While the law directly applies to large German firms, its extraterritorial reach imposes indirect compliance obligations on foreign suppliers, particularly in emerging economies integrated into German-dominated value chains.

Serbia, as a small open economy (SOE) with deep trade and investment ties to Germany, serves as a compelling case study for examining the challenges and opportunities of ESG compliance in supply chains. Germany is Serbia's largest trade partner, accounting for over €4 billion in exports in 2022, with key sectors such as automotive manufacturing, textiles, and food production, which are heavily reliant on German demand [6]. The LkSG thus presents both a regulatory hurdle and a catalyst for Serbian firms to enhance sustainability practices, improve risk management, and secure long-term competitiveness in EU markets.

Despite growing academic interest in ESG regulations, few studies have explored their impact on small economies dependent on foreign supply chains, particularly in the HREDD optics. This study addresses this gap by investigating how Serbian companies adapt themselves to the LKSG compliance in the ESG context by analysing sector-specific risks, costs, and strategic responses. Thus, the research question emerges as: How do the HREDD/LkSG framework influence compliance strategies, operational costs, and competitive positioning of companies operating in SOEs, and what are the sector-specific implications of these regulatory pressures?

## **RESEARCH OBJECTIVES AND METHODOLOGY**

To comprehensively assess the implications of the LkSG for Serbian businesses, this study adopts a mixed-methods research design that integrates multiple analytical approaches. First, desk research forms the foundational layer of the investigation, systematically examining trade data, legal frameworks, and corporate reports to establish the broader context of Serbia's integration into German-regulated supply chains. This macro-level analysis helps quantify the extent of Serbia's economic exposure to these new regulatory requirements while identifying key sectors and trade patterns that warrant closer scrutiny.

Building upon this quantitative foundation, the study then employs semi-structured interviews with seven strategically selected companies operating in Serbia. These interviews provide nuanced, qualitative insights into how firms are navigating compliance in practice, shedding light on their strategic adaptations, operational challenges, and resource allocation decisions. By capturing firsthand perspectives from diverse industries, this approach reveals sector-specific nuances in implementing ESG due diligence measures.

An operationalized framework systematically evaluates how Serbian businesses are positioned to respond to the LkSG, identifying internal capabilities and vulnerabilities as well as external enablers and risks stemming from the new regulatory landscape. Together, these methodological components provide a holistic understanding of both the challenges and opportunities that the LkSG presents for Serbian enterprises embedded in German supply chains.

## **CONTRIBUTION AND STRUCTURE**

This study contributes to the academic discourse by addressing a critical gap in the literature on HREDD regulations, particularly their impact on small open economies like Serbia. While existing research predominantly focuses on developed markets [7, 8], this article shifts the lens to smaller, export-dependent economies, revealing how they navigate the complexities of compliance with laws such as the LkSG. By empirically examining the sector-specific challenges and strategic adaptations of Serbian firms, the study provides novel insights into the extraterritorial influence of HREDD frameworks. It highlights how these regulations, though domestically enacted, reshape global supply chains by imposing indirect compliance burdens on foreign suppliers, thereby altering competitive dynamics and operational costs in economically vulnerable regions.

Furthermore, the study bridges theory and practice by translating its findings into actionable policy and managerial recommendations. These insights are particularly relevant for regulators and business leaders in comparable economies seeking to align with evolving ESG standards while maintaining competitiveness. Structurally, the article is organized to guide through a logical progression: following Section 2, which establishes the legal and theoretical foundations of this research, Section 3 details the methodological framework, Section 4 presents empirical findings on sector-specific compliance, including national broader implications, and finally Section 5 concludes with strategic takeaways. This approach not only clarifies the study's academic value but also underscores its practical relevance for stakeholders navigating the complexities of sustainable supply chain governance.

## **LITERATURE REVIEW AND THEORETICAL BACKGROUND**

The LkSG reflects a broader regulatory shift toward mandatory HREDD in global supply chains. Similar laws have emerged in Europe and beyond, with significant consequences for small open economies reliant on export-oriented industries. The French Duty of Vigilance Law pioneered this approach, requiring large French firms to publish vigilance plans addressing human rights and environmental risks across subsidiaries and supply chains [9]. Non-compliance permits civil lawsuits, as seen in the 2023 case against TotalEnergies for alleged complicity in human rights abuses in Uganda. The Norwegian Transparency Act expanded this model by mandating due diligence and public disclosure for all large companies operating in Norway, including foreign firms [10].

The European Union's CSDDD, adopted in 2024, represents the most comprehensive framework, extending liability to indirect suppliers and introducing civil penalties. Early evidence from pilot sectors suggests compliance costs disproportionately burden small and medium-sized enterprises (SMEs) in SOEs, such as Romanian textile producers and Thai seafood processors, which face costly audits and certification demands. Conversely, the OECD

review highlights that Costa Rica's state-owned enterprises have adopted stronger governance practices, including better board transparency, performance reporting, and alignment with G20/OECD principles [11].

Beyond Europe, the U.S. Uyghur Forced Labor Prevention Act imposes import bans on goods linked to Xinjiang, forcing SOEs like Vietnamese electronics manufacturers to rigorously map supply chains or lose access to the U.S. market [12]. Similarly, Australia's Modern Slavery Act from 2018 requires annual reporting, creating administrative hurdles for Pacific Island garment suppliers [13].

These laws collectively reshape global trade dynamics, favoring SOEs with pre-existing ESG infrastructure while marginalizing those lacking resources. For instance, Bangladesh's garment sector saw a 12% drop in EU orders following the CSDDD announcement due to non-compliance risks. In contrast, Dominican cocoa exporters gained market share by aligning early with German LkSG standards. The key lesson for SOEs is that regulatory alignment, though costly, can secure long-term competitiveness in sustainability-driven markets.

While the LkSG, as a typical HREDD, focuses on risk mitigation, the CSDDD emphasizes outcome-based accountability, aligning with the UN Guiding Principles on Business and Human Rights. Both laws incentivize SOEs to adopt HREDD practices to retain access to Western markets, though the CSDDD's broader scope increases compliance costs. Together, they signal a global shift from voluntary ESG pledges to legally enforceable HREDD standards, reshaping supply chain governance.

## **THE EVOLUTION OF ESG AND SUPPLY CHAIN DUE DILIGENCE**

The growing emphasis on ESG compliance in global supply chains reflects broader shifts in corporate accountability and sustainable development. The LkSG, enacted in 2023, represents a legislative milestone, requiring firms to monitor human rights and environmental risks across their supply networks [5]. This aligns with international frameworks such as the UN Guiding Principles on Business and Human Rights (UNGPs) and OECD Guidelines for Multinational Enterprises, which advocate for corporate responsibility in global value chains [14, 15].

Academic literature highlights the regulatory cascade effect, where stringent ESG laws in developed economies impose compliance burdens on suppliers in emerging markets [16]. Studies on the EU's Non-Financial Reporting Directive and Corporate Sustainability Reporting Directive demonstrate how ESG transparency requirements reshape supply chain governance [17, 18]. However, research has predominantly focused on large multinational corporations (MNCs) [19, 20], neglecting the challenges faced by SMEs in dependent economies [21].

## **ESG COMPLIANCE IN SMALL OPEN ECONOMIES**

Small open economies like Serbia face unique challenges in adapting to ESG regulations due to their trade dependency and limited regulatory capacity. Germany has a role as Serbia's largest trading partner [6], making the LkSG particularly consequential. Theoretical perspectives from institutional theory suggest that firms in such contexts often adopt symbolic compliance rather than substantive ESG integration, prioritizing customer demands over ethical transformation [22, 23].

Empirical studies on supply chain sustainability in Southeast Europe reveal that compliance costs disproportionately affect SMEs, which lack the resources of MNCs [24]. Research on automotive supply chains (e.g., [25]) underscores the sector's vulnerability to ESG due diligence, given its complex, multi-tiered supplier networks. Conversely, the textile industry faces scrutiny over labor rights but benefits from standardized certifications (e.g., Fair Trade, BSCI) that preempt regulatory risks [26].

This study is grounded in two complementary theoretical frameworks that illuminate the dynamics of ESG compliance in supply chains. First, Transaction Cost Economics provides a foundational lens for understanding how regulatory requirements reshape corporate decision-making [27]. The theory anticipates that ESG compliance introduces new transaction costs, including the expenses associated with supplier monitoring, due diligence procedures, and compliance reporting. These increased costs create strategic dilemmas for firms, potentially prompting organizational responses such as vertical integration or the formation of stable, long-term partnerships to mitigate recurring transactional inefficiencies. The framework proves particularly insightful in explaining the divergent adaptation pathways observed between different types of enterprises, where firms with established foreign ownership structures typically demonstrate greater compliance agility compared to their independent counterparts [28].

Complementing this perspective, Stakeholder Theory offers a nuanced understanding of the competing pressures that shape corporate responses to ESG mandates [29]. This theoretical approach emphasizes how firms must navigate and reconcile the often-conflicting expectations of diverse stakeholders, including regulatory bodies, international buyers, and local communities. The theory helps elucidate the marked disparity in compliance prioritization between export-driven enterprises and those primarily serving domestic markets [30]. Export-oriented firms, facing more immediate pressure from international buyers and regulatory authorities, demonstrate greater urgency in adopting compliance measures, while domestically focused enterprises often exhibit more gradual adaptation timelines. Together, these theoretical frameworks provide a robust conceptual foundation for analyzing both the economic calculus and stakeholder dynamics that influence ESG compliance strategies in the examined context.

Last but not least, the integration of green innovation into HREDD frameworks offers a strategic pathway for firms to align with regulations like the LkSG while enhancing competitiveness, particularly in SOE [31]. Innovations in renewable energy, circular production models, and low-emission technologies not only mitigate environmental risks (e.g., pollution, deforestation) but also reduce long-term compliance costs by embedding sustainability into supply chain design [32]. For instance, adopting innovative monitoring tools for resource efficiency or patenting clean technologies can streamline due diligence processes [33], as these solutions inherently address HREDD's environmental mandates. This synergy between innovation and compliance underscores the role of national innovation systems in bridging regulatory gaps – where collaborative R&D between governments, academia, and industry (as highlighted in [32]) can accelerate the development of sector-specific ESG solutions, particularly for energy-intensive industries under HREDD scrutiny.

## HYPOTHESES DEVELOPMENT

In the optics of theoretical frameworks of institutional compliance and supply chain governance, this study examines two core hypotheses:

**H<sub>1</sub>:** *Exporters to countries that impose HREDD are compelled to align with these regulations.*

This hypothesis builds on Transaction Cost Economics [27] and Resource Dependence Theory [34]. In Serbia, firms dependent on German supply chains face heightened transaction costs (e.g., supplier audits, reporting), incentivizing compliance to avoid exclusion. The more critical Germany is as an export destination (per H<sub>1</sub>), the stronger the coercive pressure to adopt LkSG standards, particularly for industries with high asset specificity (e.g., automotive).

**H<sub>2</sub>:** *Compliance with the HREDD will differentially affect different exporters based on their industrial sector.*

Rooted in Sectoral Governance Theory [35] and Stakeholder Theory [29], this hypothesis predicts variance in compliance burdens across industries. Capital-intensive sectors (e.g.,

automotive) with established ESG infrastructure will adapt more smoothly than labor-intensive sectors (e.g., textiles), where compliance costs (e.g., factory upgrades, living wage compliance) are disproportionately high. Stakeholder pressures (e.g., EU buyers vs. domestic consumers) further explain sectoral disparities.

Together, these hypotheses in a theoretical synthesis reflect:

- macro-level institutional pressures (**H<sub>1</sub>**, trade dependency → regulatory spillover),
- firm-level strategic responses (**H<sub>2</sub>**, compliance as transaction cost minimization),
- sectoral mediation effects (**H<sub>1</sub>** and **H<sub>2</sub>**, industry structure as compliance filter).

By testing these hypotheses, the study bridges global governance trends with local firm adaptation, offering insights into how small open economies navigate ESG compliance in asymmetrical trade relationships. The article advances theoretical understanding of the pressures faced by firms under HREDD regulations. It demonstrates how the LkSG and similar laws amplify transaction costs for suppliers in small open economies, forcing them to invest in due diligence, audits, and risk mitigation strategies. By contextualizing these dynamics within sectoral governance frameworks, the research reveals how industries like automotive and textiles experience divergent compliance burdens, offering a nuanced perspective on the interplay between regulatory spillovers, economic dependency, and corporate strategy. This theoretical synthesis enriches the broader conversation on how mandatory HREDD standards reshape global trade hierarchies and institutionalize sustainability in supply chains.

## **METHODOLOGY**

In order to answer the overarching research question correctly and provide sound evidence to confirm the set hypotheses, this study employs a mixed-methods research design, integrating qualitative and quantitative approaches to comprehensively analyze the impact of the HREDD (specifically LkSG) on exporters (i.e., Serbian companies). Given the complexity of ESG compliance in supply chains, spanning legal, economic, and operational dimensions, a multi-faceted methodology was necessary to capture both macro-level trends and firm-level adaptation strategies. The research combines desk research, semi-structured interviews, and case study analysis to ensure triangulation of data, enhancing the validity and reliability of findings.

### **SEMISTRUCTURED INTERVIEWS**

To gain deeper insights into how businesses are adapting to the new regulatory landscape, semi-structured interviews were conducted with executives and compliance officers from seven organizations operating in Serbia that are subject to the requirements of the LkSG. The selected participants represented a diverse cross-section of industries, including retail, textile manufacturing, food production, financial services, and automotive sectors, as well as one multinational corporation with significant operations in Serbia.

Each interview session lasted between 45 and 60 minutes and was conducted either virtually through digital platforms or in-person at company facilities, with all sessions being audio-recorded following obtaining explicit consent from participants. The interview framework was designed to explore several key dimensions of regulatory adaptation, beginning with participants' understanding and interpretation of the law's requirements. Discussions then progressed to examine the specific compliance mechanisms being implemented within their organizations, ranging from internal risk assessment procedures to supplier evaluation protocols.

A significant portion of the interviews focused on identifying both the financial and operational challenges encountered during implementation, with particular attention paid to how these challenges varied across different industrial sectors. Participants also shared insights into their strategic responses to the new requirements, including technological investments in compliance systems and workforce training initiatives. Following data collection, all interview

recordings were professionally transcribed and subjected to rigorous thematic analysis to identify recurring patterns, common obstacles, and emerging best practices in regulatory compliance.

This qualitative approach provided rich, nuanced data about the on-the-ground realities of implementing complex supply chain regulations, complementing the broader statistical analysis conducted through other research methods. The interview methodology was particularly valuable for uncovering the human and organizational dimensions of regulatory adaptation that are often obscured in purely quantitative studies of compliance processes.

## **CASE STUDY**

The case study methodology employed in this article involves an in-depth analysis of a selected company operating in the automotive sector to examine the practical implications of the LkSG on businesses operating in Serbia. This approach combines qualitative data from semi-structured interviews with company representatives, internal documentation, and publicly available reports to explore how the company aligns with the legal requirements, the challenges faced, and the strategies implemented for compliance. By focusing on a selected company, a leader in the automotive industry, a sector significantly impacted by the Act, the study provides concrete insights into the adaptation processes, costs, and best practices, offering a micro-level perspective that complements the broader theoretical and empirical analysis conducted in the thesis. This methodology allows for a detailed, context-rich understanding of the Act's real-world effects on Serbian companies integrated into German supply chains.

The choice of the automotive sector is made because it is particularly illustrative of how extraterritorial HREDD regulations impact small suppliers in export-oriented countries. This industry is characterized by highly complex, multi-tiered supply chains that are tightly integrated with large buyers and Tier 1 suppliers based in countries enforcing HREDD compliance. Moreover, the automotive sector is under heightened scrutiny due to its environmental footprint, labor intensity, and exposure to raw material sourcing risks, making it a prime testing ground for observing how far and how deep extraterritorial compliance requirements cascade down the supply chain.

## **RESULTS**

### **SEMISTRUCTURED INTERVIEWS**

The differential impacts of the LkSG across five industries in a small open economy, drawing insights from semi-structured interviews with firms in the automotive, retail, textile, food, and banking sectors, are outlined in Table 1. The analysis reveals how sector-specific characteristics shape compliance costs, risks, and strategic responses, while highlighting the role of parent companies, supplier networks, and pre-existing ESG frameworks.

### **CASE STUDY**

The case study highlights the challenges and opportunities associated with ESG compliance in supply chains, particularly for firms operating in small open economies. The analyzed company, a global leader in the automotive sector, exemplifies how robust internal systems and pre-existing ESG frameworks can facilitate alignment with stringent regulations like the LkSG, while also revealing disparities in compliance capacity between large corporations and SMEs.

The company's proactive approach included publishing three core documents: a human rights and environmental strategy, a grievance mechanism, and a BAFA report, demonstrating comprehensive compliance. This underscores the importance of integrating ESG principles into

**Table 1.** Key findings and sector-specific implications.

<b>Sector</b>	<b>Compliance Challenges</b>	<b>Opportunities &amp; Adaptive Strategies</b>	<b>Role of Parent Companies</b>
Automotive	<ul style="list-style-type: none"> <li>- Complex, globalized supply chains with tiered suppliers (Tier 1-3).</li> <li>- High scrutiny of labor rights (e.g., child labor in raw material extraction).</li> <li>- Environmental risks (e.g., battery mineral sourcing).</li> </ul>	<ul style="list-style-type: none"> <li>- Adoption of industry-wide initiatives (e.g., RSCI standard) for standardized audits.</li> <li>- Investment in local R&amp;D centers to monitor suppliers.</li> </ul>	Centralized ESG policies from German HQs; stringent supplier codes enforced via contracts.
Retail	<ul style="list-style-type: none"> <li>- Agro-supply chains with seasonal labor risks.</li> <li>- High documentation burdens for diverse suppliers (e.g., food safety &amp; labor standards).</li> </ul>	<ul style="list-style-type: none"> <li>- Leveraging existing certifications (e.g., Fairtrade) to streamline compliance.</li> <li>- Supplier training via digital platforms.</li> </ul>	Hierarchical rollout of compliance frameworks; localized supplier audits.
Textile	<ul style="list-style-type: none"> <li>- Labor-intensive production; risks of child/forced labor.</li> <li>- Chemical pollution and water usage.</li> </ul>	<ul style="list-style-type: none"> <li>- Annual risk assessments and on-site supplier visits.</li> <li>- Mandatory sustainability clauses in contracts.</li> </ul>	Direct oversight from HQs; alignment with international standards (e.g., BSCI).
Food & Beverage	<ul style="list-style-type: none"> <li>- Deforestation-linked commodities (e.g., palm oil).</li> <li>- Ethical sourcing of raw materials.</li> </ul>	<ul style="list-style-type: none"> <li>- Supplier self-assessment tools (e.g., Prewave software).</li> <li>- Transition to certified ingredients (e.g., Rainforest Alliance).</li> </ul>	Dedicated “Human Rights Officers” at subsidiaries; centralized risk databases.
Banking	<ul style="list-style-type: none"> <li>- Indirect ESG risks via client portfolios (e.g., fossil fuel investments).</li> <li>- Lack of sector-specific guidelines.</li> </ul>	<ul style="list-style-type: none"> <li>- Green financing incentives for clients.</li> <li>- ESG-weighted tender criteria for procurement.</li> </ul>	Limited HQ involvement; local innovation in sustainability metrics (e.g., internal carbon pricing).

corporate governance early to mitigate regulatory risks. In addition, the firm’s existing policies on labor rights, environmental sustainability, and supplier codes of conduct significantly eased compliance. Notably, HR and EHS departments absorbed additional responsibilities without significant cost increases, highlighting the value of cross-functional ESG integration. With 184 suppliers, the company faced heightened bureaucratic demands but leveraged its mature supplier management systems to enforce compliance. The case reveals that larger firms with established controls adapt more easily than SMEs, which often lack such infrastructure. Finally, the automotive industry’s globalized supply chains and safety-critical products amplify compliance complexity. Challenges include monitoring diverse suppliers, addressing language barriers, and ensuring grievance mechanisms are accessible – all while maintaining consumer safety standards. Table 2 summarizes these findings.

The case illustrates that ESG compliance, while resource-intensive, can enhance market positioning, especially for exporters to EU markets. However, the burden disproportionately falls on smaller suppliers, risking exclusion from value chains if they fail to meet standards. For small open economies, this dynamic presents both a risk (increased costs for local suppliers) and an opportunity (attracting FDI by aligning with global ESG benchmarks). The findings suggest that collaborative efforts, such as standardized ESG frameworks and

**Table 2.** Summary of key findings and implications.

Aspect	Findings	Implications
Regulatory Alignment	Published three core documents: human rights/environmental strategy, grievance mechanism, and BAFA report. Demonstrated proactive compliance.	Highlights the importance of integrating ESG into corporate governance early to mitigate risks.
Internal Preparedness	Existing HR, EHS, and supplier policies eased compliance. Departments absorbed new tasks without significant cost increases.	Cross-functional ESG integration reduces implementation burdens and costs.
Supplier Management	184 suppliers; bureaucratic demands increased but were managed via mature systems. SMEs faced higher hurdles.	Large firms adapt more easily, but SMEs risk exclusion without support.
Sector-Specific Challenges	Automotive industry's globalized supply chains and safety-critical products amplify compliance complexity (e.g., grievance mechanisms, language barriers).	Industry-specific strategies are needed to address unique risks (e.g., safety, traceability).

capacity-building for SMEs, are critical to equitable compliance. The study underscores the dual nature of ESG regulations as both a competitive advantage and a structural challenge, emphasizing the need for scalable solutions to support smaller actors in supply chains.

## DISCUSSION AND POLICY IMPLICATIONS

Results presented in Table 1 are discussed through four categories: **divergence in compliance costs**, **parent-subsidiary dynamics**, **sector-specific risks**, and **local vs. global pressures**.

- **divergence in compliance costs**

Increased supply chain complexity and stricter regulations are driving up costs in the automotive and textile industries; automotive companies, for instance, are now required to trace minerals like cobalt, while textile manufacturers are subject to frequent on-site audits. The retail and food sectors, while benefiting from established certifications such as Fairtrade, face challenges in integrating smallholder farmers into their supply chains. Finally, the banking industry experiences indirect costs through client due diligence processes, but can enhance its reputation by offering green financial products. Banking incurs indirect costs through client due diligence, but gains reputational benefits via green financial products.

- **parent-subsidiary dynamics**

German parent companies are central to ensuring standardized compliance across their operations. Subsidiaries located in smaller, open economies often receive policy templates (such as grievance mechanisms and supplier codes), technology transfers (like Prewave for risk monitoring), and capacity-building initiatives (including training for local HR teams) from their German headquarters. However, this reliance on headquarters can sometimes limit the ability of local operations, particularly SMEs within the supply chain, to adapt to specific regional needs and circumstances.

- **sector-specific risks**

Labor rights are a primary concern in the textile and agriculture sectors. Environmental liabilities are critical considerations for the automotive industry (particularly regarding e-waste) and the food industry (especially concerning deforestation). Finally, reputational risks are particularly acute for retail companies (due to their direct interaction with consumers) and the banking sector (given the increasing focus on ESG-linked investments).

- **local vs. global pressures**

Companies that export to Germany, such as automotive suppliers, tend to align closely with German standards to maintain access to that market. Meanwhile, sectors primarily focused

on domestic markets, like banking, prioritize local ESG frameworks but still encounter cross-border effects from regulations such as the EU taxonomy.

This synthesis underscores that ESG compliance is not one-size-fits-all. Policymakers and firms must adopt nuanced, sector-driven approaches to balance competitiveness with sustainability in small open economies. Table 3 presents a summary of sectoral compliance strategies.

**Table 3.** Summary of sectoral compliance strategies.

Strategy	Automotive	Retail	Textile	Food	Banking
Risk Focus	Mineral sourcing	Seasonal labor	Child labor	Deforestation	Client ESG scores
Key Tool	RSCI audits	Digital training	On-site visits	Prewave software	Green loans
Parent Company Role	High (centralized)	Moderate (hierarchical)	High (direct oversight)	High (officers)	Low (local innovation)

The German Supply Chain Act exacerbates inequalities between sectors in SOE:

- **High-resource industries** (automotive, textiles) – benefit from parent company support but face steep compliance burdens.
- **SME-dominated sectors** (agriculture, local retail) – risk exclusion without targeted subsidies or simplified reporting tools.

The results confirm the **H<sub>1</sub>** hypothesis that Serbian exporters, particularly in the automotive and textile sectors, are indeed compelled to align with the LkSG. These industries face high compliance burdens due to complex, globalized supply chains and sector-specific ESG risks, such as mineral sourcing and labor standards. To maintain market access, they adopt German parent companies' centralized ESG frameworks and auditing mechanisms like RSCI. This demonstrates a clear alignment pressure driven by export dependencies and regulatory expectations from German counterparts.

The study illustrates ESG regulations as both a catalyst for operational excellence and a barrier for smaller actors. Policymakers and firms must balance rigorous compliance with inclusive support mechanisms to foster sustainable and resilient supply chains in small open economies. This synthesis distills the case's lessons into actionable insights, emphasizing the need for scalable, sector-specific approaches to ESG compliance.

The findings confirm Hypothesis **H<sub>2</sub>**, as compliance with the LkSG imposes varying degrees of burden across sectors. Industries such as automotive and textiles, characterized by complex global supply chains and intensive regulatory scrutiny, face significantly higher compliance costs and operational demands. In contrast, sectors like banking experience more indirect obligations, often mediated through client portfolios, and retain greater autonomy through localized ESG innovations. This sectoral divergence in compliance intensity substantiates that Serbian exporters are indeed differentially affected depending on their industrial affiliation.

Governments should prioritize sector-specific approaches to ESG compliance by developing tailored guidelines, for example, introducing streamlined audit procedures for the textile industry or implementing mineral-tracing tools for the automotive sector. To support smaller suppliers, public-private partnerships should be established to finance certification processes and provide targeted training, enhancing their capacity to meet evolving ESG demands. Additionally, aligning local ESG standards with German and broader EU regulations is essential to minimize regulatory duplication and facilitate smoother cross-border compliance.

The findings underscore the need for a systematic cost-benefit analysis tailored to specific industries or individual firms to evaluate the financial and operational implications of HREDD compliance. For instance, in the automotive sector, where supply chains are complex and

regulatory scrutiny is high, companies should quantify the costs of enhanced due diligence (e.g., supplier audits, traceability systems) against the long-term benefits of market access, risk mitigation, and reputational gains.

## CONCLUSION

The scientific contribution of this study lies in its empirical validation of how HREDD regulations, exemplified by the LkSG, reconfigure the economic landscape for small open economies. This study examines how the German Supply Chain Due Diligence Act (LkSG), as a key expression of Human Rights and Environmental Due Diligence (HREDD), affects the compliance strategies, operational dynamics, and competitive positioning of Serbian firms across different industrial sectors. Drawing on desk research, semi-structured interviews, and a detailed case study, the research provides clear and multidimensional evidence that affirms the central research question and confirms both working hypotheses. First, it has been demonstrated that Serbian exporters, particularly in high-dependency sectors like automotive and textiles, are indeed compelled to align with the LkSG, substantiating  $H_1$ . This alignment is not merely formal but operational, as evidenced by the integration of German-driven ESG tools, audit standards, and supplier management systems. Second, the study confirms  $H_2$  by identifying significant sectoral divergence in compliance intensity: while capital-intensive and globally integrated industries are relatively better equipped to meet regulatory expectations, SME-heavy sectors, such as retail and agri-food, face heightened risks of marginalization due to limited resources and lack of internal ESG infrastructure.

The research highlights that HREDD requirements embedded in the LkSG, such as grievance mechanisms, environmental risk assessments, and human rights strategies, are not uniformly distributed in terms of burden or benefit. These requirements pose strategic challenges but also provide opportunities for differentiation, particularly for firms that proactively integrate ESG into corporate governance. The case study of a leading automotive firm illustrates how internal preparedness and supplier coordination can enable effective compliance with minimal disruption, while also demonstrating the disproportionate challenges faced by less-resourced suppliers.

Importantly, this research yields practical insights for managers, policymakers, and compliance officers operating in small open economies. The evidence suggests that ESG compliance, when approached strategically, can become a source of competitive advantage rather than just a regulatory obligation. For practitioners, the key takeaway is the value of early alignment with global standards, internal ESG integration across departments, and the use of digital tools for supply chain transparency. For policymakers, the results point to the urgent need to develop sector-specific ESG guidelines, support SME capacity-building through targeted financing and training programs, and harmonize national ESG frameworks with EU regulations to facilitate compliance.

The findings underscore the need for tailored policy interventions and collaborative approaches to mitigate disparities in compliance capacity, offering a roadmap for policymakers and businesses navigating the evolving ESG governance paradigm. Ultimately, the study bridges macro-level regulatory trends with micro-level firm behaviors, contributing to a more holistic understanding of HREDD's role in shaping sustainable and equitable global supply chains.

While this research provides valuable insights into the implications of ESG compliance for supply chains in small open economies, several limitations must be acknowledged. First, the study's sample size was constrained to seven firms due to practical resource limitations. Additionally, the reliance on managerial perspectives in data collection introduces potential self-reporting bias. Executives may emphasize strategic successes while underreporting operational hurdles or internal resistance to regulatory adaptation. Finally, the rapidly evolving nature of European Union sustainability regulations presents a moving target for analysis. The

recent introduction of the CSDDD and its impending national transpositions suggest that compliance landscapes will continue shifting. This dynamism necessitates longitudinal studies to track how firms adjust their strategies in response to regulatory updates and market pressures over time. These limitations, while not undermining the study's contributions, highlight avenues for further research to build upon these findings.

While the current focus has been on Serbia as a small open economy within the German supply chain orbit, comparative studies across the Western Balkans and Central Eastern Europe could enrich understanding of how regional regulatory readiness varies. Longitudinal research tracking company adaptation to the forthcoming EU Corporate Sustainability Due Diligence Directive (CSDDD) would be particularly valuable. Further exploration into the digitalization of ESG reporting, the role of financial institutions in ESG enforcement, and the resilience of local supply chains under escalating regulatory pressures would also complement and expand the findings presented here. A structured cost-benefit framework would help firms prioritize compliance measures, allocate resources efficiently, and justify ESG expenditures to stakeholders. Policymakers could further support this by developing sector-specific guidelines or financial incentives to offset compliance costs for SMEs, ensuring that HREDD regulations enhance sustainability without disproportionately burdening smaller players in global supply chains. Ultimately, ESG due diligence is not a temporary policy trend, but a structural shift in global trade, one that small economies must navigate deliberately and inclusively to remain viable and sustainable players in global value chains.

## REFERENCES

- [1] Dupont, V.; Pietrzak, D. and Verbrugge, B.: *A step in the right direction, or more of the same? A systematic review of the impact of human rights due diligence legislation*. Human Rights Review **25**(2), 131-154, 2024, <http://dx.doi.org/10.1007/s12142-024-00724-9>,
- [2] Federal Republic of Germany: *Lieferkettensorgfaltspflichtengesetz (Supply Chain Due Diligence Act)*. Bundesgesetzblatt I, 2959, 2021, [https://www.bgbl.de/xaver/bgbl/start.xav?startbk=Bundesanzeiger\\_BGBl&bk=Bundesanzeiger\\_BGBl&start=/\\*%5B@attr\\_id=%27bgbl121s2959.pdf%27%5D](https://www.bgbl.de/xaver/bgbl/start.xav?startbk=Bundesanzeiger_BGBl&bk=Bundesanzeiger_BGBl&start=/*%5B@attr_id=%27bgbl121s2959.pdf%27%5D),
- [3] European Parliament: *Corporate Sustainability Due Diligence Directive (CSDDD)*, 2024. <https://www.europarl.europa.eu>,
- [4] Deva, S. and Birchall, D., eds.: *Research handbook on human rights and business*. Edward Elgar Publishing, Cheltenham, 2020, <http://dx.doi.org/10.4337/9781786436405>,
- [5] Bundesministerium für Arbeit und Soziales.: *Supply Chain Due Diligence Act*, 2023, <https://www.bmas.de/EN/Services/Legislation/supply-chain-due-diligence-act.html>,
- [6] Republic Institute of Statistics.: *External Trade Report*, 2024, <https://www.stat.gov.rs/en-us>,
- [7] Lichuma, C.O.; Dadush, S.; Schönfelder, D.; Bright, C. and Brabant, S.: *Contracts and Human Rights & Environmental Due Diligence (HREDD) Laws*. In: *Side-Session at the OECD Forum on Due Diligence in the Garment and Footwear Sector*. 2023,
- [8] Bright, C.; da Graça Pires, C.; Streibelt, M. and Schönfelder, D.: *A Comparative Analysis between the Corporate Sustainability Due Diligence Directive and the French and German Legislation*. Verfassungsblog: On Matters Constitutional, 2024, <http://dx.doi.org/10.59704/89c26bdb127df08b>,
- [9] French Republic: *Loi n° 2017-399 relative au devoir de vigilance des sociétés mères et des entreprises donneuses d'ordre*. Journal officiel de la République Française, 2017, <https://www.legifrance.gouv.fr/loda/id/JORFTEXT000034290626>,

- [10] Kingdom of Norway: *Act relating to enterprises' transparency and work on fundamental human rights and decent working conditions (Transparency Act)*.  
<https://lovdata.no/dokument/NLE/lov>,
- [11] OECD.: *Corporate Governance in Costa Rica*.  
OECD Publishing, Paris, 2020,  
<http://dx.doi.org/10.1787/b313ec37-en>,
- [12] U.S. Customs and Border Protection.: *Uyghur Forced Labor Prevention Act*.  
<https://www.cbp.gov/trade/forced-labor/UFLPA>,
- [13] Nolan, J.: *Australia's Modern Slavery Act: Towards Meaningful Compliance*.  
Australian Journal of Human Rights **25**(3), 450-469, 2019,  
<http://dx.doi.org/10.2139/ssrn.3434196>,
- [14] Ruggie, J.: *Guiding Principles on Business and Human Rights*.  
Netherlands Quarterly of Human Rights **29**(2), 224-253, 2011,  
<http://dx.doi.org/10.1177/016934411102900206>,
- [15] Sheehy, B.; Valderrama, N.B. and Villegas, M.: *OECD Guidelines for Multinational Enterprises*.  
In: *Encyclopedia of Sustainable Management*. Springer, Cham, 2023,  
[http://dx.doi.org/10.1007/978-3-031-25984-5\\_1182](http://dx.doi.org/10.1007/978-3-031-25984-5_1182),
- [16] Hofmann, H.; Spence, L.J.; Reuter, M. and Barkemeyer, R.: *ESG Compliance in Global Supply Chains*.  
Journal of Business Ethics **180**(2), 389-409, 2022,  
<http://dx.doi.org/10.51594/ijmer.v6i4.985>,
- [17] Eccles, R.G. and Serafeim, G.: *The Performance Frontier*.  
Harvard Business Review **91**(5), 50-60, 2013,
- [18] Venturelli, V.; Pedrazzoli, A.; Pennetta, D. and De Novellis, G.: *Assessing the Influence of ESG Washing on Bank Reputational Exposure: A Cross-Country Analysis*.  
Business Ethics, the Environment & Responsibility, 2024,  
<http://dx.doi.org/10.1111/beer.12727>,
- [19] Angelini, A., et al.: *Rebalancing Disruptive Business of Multinational Corporations and Global Value Chains within Democratic and Inclusive Citizenship Processes*.  
Working Paper No. 4, Università Ca' Foscari Venezia, Venezia, 2023,  
<http://dx.doi.org/10.2139/ssrn.4569268>,
- [20] Forester, A.; House, M.; Landau, I. and Chen, V.: *Net Zero, Nature Positive and Socially Responsible? Exploring Corporate Law Reform Opportunities in Australia*.  
Australian Journal of Corporate Law, 2023,
- [21] Soundararajan, V.; Wilhelm, M.; Crane, A.; Agarwal, P. and Shetty, H.: *Towards a Systemic Approach for Improving Working Conditions in Global Supply Chains: An Integrative Review and Research Agenda*.  
Academy of Management Annals **19**(1), 230-264, 2025,  
<http://dx.doi.org/10.5465/annals.2023.0071>,
- [22] DiMaggio, P.J. and Powell, W.W.: *The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields*.  
American Sociological Review **48**(2), 147-160, 1983,  
[http://dx.doi.org/10.1016/S0742-3322\(00\)17011-1](http://dx.doi.org/10.1016/S0742-3322(00)17011-1),
- [23] Meyer, J.W. and Rowan, B.: *Institutionalized Organizations: Formal Structure as Myth and Ceremony*.  
American Journal of Sociology **83**(2), 340-363, 1977,  
<http://dx.doi.org/10.1086/226550>,
- [24] Dragomir, V.D.; Bătae, O.M.; Ionescu, B.Ș. and Ionescu-Feleagă, L.: *The Influence of ESG Factors on Financial Performance in the Banking Sector During the COVID-19 Pandemic*.  
Economic Computation & Economic Cybernetics Studies & Research **56**(4), 2022,  
<http://dx.doi.org/10.24818/18423264/56.4.22.05>,

- [25] Rokicki, T., et al.: *Resilience of Supply Chains in the Automotive Industry During the COVID-19 Pandemic on the Example of Polish Enterprises*.  
Economic Sciences Journal, 2024,  
<http://dx.doi.org/10.35808/ersj/3359>,
- [26] Anner, M.: *Power Relations in Global Supply Chains and the Unequal Distribution of Costs During Crises: Abandoning Garment Suppliers and Workers During the COVID-19 Pandemic*.  
International Labour Review **161**(1), 59-82, 2022,  
<http://dx.doi.org/10.1111/ilr.12337>,
- [27] Williamson, O.E.: *The Economic Institutions of Capitalism*.  
Free Press, New York, 1985,  
<http://dx.doi.org/10.12691/ajams-2-4-2>,
- [28] Meyer, K.E.; Estrin, S.; Bhaumik, S.K. and Peng, M.W.: *Institutions, Resources, and Entry Strategies in Emerging Economies*.  
Strategic Management Journal **30**(1), 61-80, 2009,  
<http://dx.doi.org/10.1002/smj.720>,
- [29] Freeman, R.E.: *Strategic Management: A Stakeholder Approach*.  
Cambridge University Press, Cambridge, 2010,  
<http://dx.doi.org/10.2139/ssrn.263511>,
- [30] Baldwin, R.; Freeman, R. and Theodorakopoulos, A.: *Deconstructing Deglobalization: The Future of Trade is in Intermediate Services*.  
Asian Economic Policy Review **19**(1), 18-37, 2024,  
<http://dx.doi.org/10.1111/aepr.12440>,
- [31] Kolaro, K.; Pitić, G.; Vlačić, E. and Milosavljević, U.: *Competitiveness and Sustainability in Small and Open Economies in the Age of Industry 5.0*.  
Ekonomika preduzeća **71**(1-2), 113-127, 2023,  
<http://dx.doi.org/10.5937/EKOPRE2302113K>,
- [32] Vlačić, E.; Dabić, M. and Aralica, Z.: *National Innovation System: Where Do Government and Business Diverge?*  
*Društvena istraživanja* **27**(4), 649-669, 2018,  
<http://dx.doi.org/10.5559/di.27.4.04>,
- [33] Aralica, Z.; Anić, I.; Škrinjarić, B.; Harmina, A. and Vlačić, E.: *Critical Factors Driving Innovations and Patenting in Academia in S3 Area “Energy and Sustainable Environment”*.  
Technology in Society **82**, No. 102908, 2025,  
<http://dx.doi.org/10.1016/j.techsoc.2025.102908>,
- [34] Pfeffer, J. and Salancik, G.: *External Control of Organizations – Resource Dependence Perspective*.  
In: *Organizational Behavior 2*. Routledge, London, 2015,  
<http://dx.doi.org/10.1093/obo/9780199846740-0072>,
- [35] Gereffi, G.; Humphrey, J. and Sturgeon, T.: *The Governance of Global Value Chains*.  
Review of International Political Economy **12**(1), 78-104, 2005,  
<http://dx.doi.org/10.1111/j.1759-5436.2001.mp32003003.x>.