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The role of CSR in achieving energy sustainability

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Abstract

The transition toward energy sustainability requires accountability and transparency within operations communication processes, particularly for high-emission industries such as the energy industry. The implementation of Corporate Social Responsibility (CSR) provides guidance for the energy companies to align their operations with societal and environmental goals. This study explores the role of CSR in achieving energy sustainability by developing a theoretical model that categorizes CSR mechanisms into three key dimensions: international frameworks and reporting standards, independent certifications, and stakeholder engagement mechanisms. Based on a qualitative literature review, the paper examines how these mechanisms influence corporate accountability, transparency, and sustainability performance. The findings show that while CSR tools can support energy transition goals, challenges such as voluntary adoption, inconsistent stakeholder involvement, and risks of greenwashing remain significant. The paper enhances CSR research by offering a structured model that integrates different tools and frameworks and highlights the operational role of CSR together with the ethical one in the energy sector.

Keywords: Corporate Social Responsibility, energy sector, energy sustainability.

1. Introduction

The growing urgency of the global climate crisis has increased the importance of understanding the role of the energy sector and its environmental footprint (Shahbaz et al., 2020). As one of the major contributors to greenhouse gas emissions and environmental degradation, the energy sector plays a critical role in determining whether countries meet their sustainability targets. In this context, Corporate Social Responsibility (CSR) is the vital tool for encouraging ethical, transparent, and environmentally conscious practices for energy and energy-related sectors (Lu et al., 2019). CSR frameworks address environmental sustainability as well as include actions to improve social equity and governance, resulting in long-term accountability for the continuation of corporate operations (Zatonatska et al., 2024).

CSR in the energy sector is often associated with a set of voluntary actions for reducing the negative environmental impact of the company. In addition, CSR ensures maintaining fair labor conditions, engaging with stakeholders in a socially responsible way (Agudelo et al., 2020). Nevertheless, CSR activities vary in form and function. Some organizations implement CSR for building brand awareness,

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communication strategies, and taking genuine actions to reach sustainability goals, while others might leverage CSR as a reputation management tool, leading to growing concerns about greenwashing, policy evasion, and non-comprehensive reporting (Kasradze et al., 2023). Therefore, it is crucial to understand the role of CSR in sustainable energy development in terms of investigating CSR applications, monitoring implemented actions, and a transparent communication process (Lu, Ren et al., 2019).

Much research has been done focusing on the financial outcomes of CSR implementation and its role in brand management (Kludacz-Alessandri and Cygańska, 2021, Adamkaite et al., 2023); however, fewer studies investigate CSR's contribution to the energy transition (Ryszawska, 2018). Moreover, even fewer papers consider various regulatory, certification, and stakeholder communication mechanisms through which CSR can enhance organizations' operational sustainability and contribute to the energy transition (Huk and Kurowski, 2021). The lack of conceptual integration limits the possibility of fully understanding how effective CSR is for high-impact and environmentally sensitive governance sectors. Hence, there is a research gap in theoretical analysis on specific mechanisms through which CSR contributes to energy sector sustainability in practice, as international frameworks, third-party certifications, and stakeholder involvement have been explored separately but not holistically. Therefore, this study aims to address this gap by developing a theoretical model including all these aspects to explore the role of CSR in achieving energy sustainability. Furthermore, to achieve this aim, the paper sets the following questions:

- What are the key institutional mechanisms that define CSR practices in the energy sector?
- How do these CSR tools and frameworks contribute to the long-term sustainability of energy systems?
- What are the risks and limitations of CSR regarding energy transition, particularly in terms of transparency, accountability, and public trust?

By reviewing and synthesizing relevant literature and policy developments, this study offers a theoretical framework that presents CSR as one of the key drivers for energy sustainability, while considering current limitations and challenges.

2. Methodology

The study adopted a qualitative, literature-based research approach to investigate the role of CSR in energy sustainability. The research is based on a conceptual synthesis of academic publications discussing institutional reports, international standards, and industry guidelines, aiming to identify key mechanisms to assess CSR initiatives promoting sustainable energy development. After a thorough literature analysis, the novel theoretical model was developed focusing on:

- International frameworks and reporting standards,
- Independent certifications, and
- Stakeholder engagement mechanisms.

The theoretical model is based on the literature analysis, for which sources were selected based on their relevance to CSR practices in the energy sector, with particular attention to peer-reviewed journal articles indexed in Web of Science and Scopus. Priority was given to recent publications that examine CSR implementation, institutional accountability, and transparency in sustainability efforts. For developing a theoretical model relevant to content analysis, the identification of recurring patterns across literature, including CSR tools, governance practices, and energy transition goals, has been analyzed. This model does not rely on empirical data but instead integrates and systematizes existing research to propose a comprehensive framework for understanding how CSR actions contribute to energy sustainability. This approach allows a structured exploration of the mechanisms through which CSR can significantly support the energy transition process, specifically for the energy sector, while highlighting challenges such as greenwashing and stakeholder mistrust.

3. CSR mechanisms for achieving energy sustainability

3.1. International frameworks and reporting standards

The global shift toward energy transition and the urge to combat current environmental issues caused by environmentally sensitive industries resulted in the development of various international frameworks and reporting standards (Bakhtina and Goudriaan, 2011). These mechanisms are essential in shaping the way energy companies implement CSR activities and manage communication processes. Thus, international frameworks and disclosure tools are crucial for maintaining transparency, standardizing sustainability metrics, and ensuring the credibility of environmental and social claims across countries and different industries (Ates, 2023). One of the examples is the EU Taxonomy for Sustainable Activities, which classifies economic activities according to their alignment with environmental sustainability and climate change mitigation goals (Celli, 2023). Moreover, the EU Taxonomy for Sustainable Activities is a core part of the European Green Deal, aiming to reduce greenwashing and directing investment toward green activities. It serves as one of the main tools toward green finance and corporate disclosure (Tettamanzi et al., 2024).

Moreover, the IFRS Sustainability Disclosure Standards were initiated to develop sustainable activities' disclosures and standardize them globally. Issued by the International Sustainability Standards Board (ISSB), these standards support organizations to integrate sustainability risks into financial reporting, clearly represent the environmental impact to stakeholders and shareholders (Zaid and Issa, 2023). Similarly, the ISO 14064 standard provides a clear methodology in terms of measuring, managing, and disclosing information about CO2 emissions; therefore, this standard is particularly crucial in high-emission sectors such as energy. Moreover, ISO14064 falls under the ISO 14000 group of standards and remains one

of the central standards for greenhouse gas emissions monitoring and reporting (Camilleri, 2022).

Furthermore, there are other commonly leveraged non-financial reporting standards, providing specific guidelines for disclosing information regarding organizations' environmental performance, alignment with labor laws, protection of human rights, etc.(Halkos and Nomikos, 2021) Therefore, GRI standards encourage organizations to adopt a comprehensive approach toward sustainability. Moreover, the OECD guidelines for multinational enterprises create a framework to implement responsible business conduct globally (Lauesen, 2013). Hence, these guidelines highly influence national policies that include the evaluation of CSR impact and the effectiveness of different policies toward sustainability.

Another reporting initiative is connected to the Climate Disclosure Standards Board (CDSB), which integrates climate-related information into general corporate reporting systems (Thistlethwaite, 2015). The CSDB framework underlines the importance of economic performance and its alignment with financial standards; hence, it aims to include sustainability together with financial performance in corporate disclosures (Kawahara et al. 2024). Additionally, voluntary frameworks such as the UN Global Compact and the AA1000 Stakeholder Engagement Standard (AA1000SES) enhance CSR transparency and, particularly, ethical reporting (Farooq et al., 2021). The UN Global Compact serves as a foundation for responsible business activities by supporting organizations and representing principles connected to human rights, labor, environmental impact, as well as anti-corruption tools (Ribeiro et al., 2024). While the AA1000SES ensures involvement of stakeholders during sustainability reporting, it encourages companies to take into account, constantly communicate, and address stakeholder needs and requirements. Therefore, the standard enhances the integrity and accountability of environmentally sensitive organizations' CSR reports (Gutterman, 2020).

The international frameworks and standards mentioned above, together, represent the core values of CSR and promote guidelines for its implementation processes in the energy sector. These standards reduce possibilities for information inaccuracy, ensure data comparability, create ethical business conduct, and, as a result, ensure long-term sustainability transitions by standardized and enhanced reporting practices.

3.2. Independent Certifications

Due to the growing interest and impact of CSR within the energy sector, together with international frameworks and disclosure standards, it is crucial to consider independent third-party certifications (Huk and Kurowski, 2021). Such certifications are crucial for verifying CSR claims and supporting organizations in connecting their voluntary CSR activities to measurable outcomes. For instance, the Science Based Targets initiative (SBTi) and B Corp Certification are most commonly leveraged certifications among different industries (Maia and Garcia, 2023). SBTi creates specific plans for CO_2 emissions reductions for corporations, while B Corp evaluates

companies' social and environmental impact, including governance and stakeholder engagement (Wilburn and Wilburn, 2015).

Moreover, beyond the mentioned certifications, the ISO 50001 standard has become particularly crucial for the energy and environmental sectors. The ISO 50001 standard offers a framework for the implementation, maintenance, and improvement of energy management systems to achieve energy efficiency (Valencia et al., 2020). The standard is important for energy sector companies as it ensures long-term clean energy production and usage directly aligning with sustainability goals. Similarly, Carbon Disclosure Project (CDP) supports organizations to disclose their environmental impact, contribute to climate change, water security, and respond to investor and regulatory demands. Moreover, CDP offers a scoring system for organizations and provides a further improvement agenda (Hassan et al., 2013).

Furthermore, EcoVadis offers sustainability ratings evaluating companies' achievements considering different CSR dimensions such as labor force rights, ethics, environmental, and governance actions (Skrzypek et al., 2024). Additionally, Climate Bonds Certification has become particularly relevant as it ensures that green bonds and climate-aligned financing instruments are contributing to combating climate change issues (Fatica and Panzica, 2021).

The various certification tools discussed before enable companies to practice CSR, increase credibility, demonstrate compliance, and, as a result, showcase and further improve their sustainability performance. Moreover, these certifications enhance stakeholder trust, reduce possibilities for greenwashing, and establish financial system accountability.

3.3. Stakeholder Engagement Mechanisms

Stakeholder engagement is one of the core values of CSR, specifically in the energy sector, which directly affects different groups of stakeholders such as local communities, labor forces, policymakers etc. Therefore, stakeholder involvement in decision-making ensures long-term operational success for energy companies as well as supports broader environmental and social goals (Agudelo et al., 2020). One of the commonly leveraged standards to ensure stakeholder involvement is the AA1000 Stakeholder Engagement Standard (AA1000SES) that offers a specific framework for the communication process with stakeholders (Farooq et al., 2021). However, in practice, energy firms tend to expand this standard by implementing different practical stakeholder involvement mechanisms. These may include community advisory panels, open consultation processes, and project-level grievance mechanisms that create opportunities for stakeholders to share their concerns and contribute to the overall decision-making process (Owen and Kemp, 2024).

Moreover, the Just Transition framework implemented by the International Labour Organization (ILO) is one of the crucial dimensions of stakeholder engagement, as it aims to manage the transition process to socially and environmentally responsible economies (Malik and KS 2022). The framework encourages involvement of the labour force, communities, and governments toward

energy transition processes, which becomes particularly relevant for regions with high fossil fuel dependency. Hence, the just transition approach enhances stakeholder participation practices and mitigates social resistance, protects the interests of affected interest groups, and ensures equitable policy outcomes (Stjepcevic and Siksnelyte, 2017). Furthermore, shareholder activism towards companies' environmental, social, and governance practices has become a crucial aspect for energy companies (O'Rourke 2003). For instance, the Climate Action 100+ initiative allows investors to demand improved climate governance, reduction of CO2 emissions, and improved stakeholder disclosure from carbon-intensive organizations; thus, it ensures energy companies take necessary actions toward energy transition and reducing their environmental impact (McDonnell et al., 2022). Additionally, in terms of enhancing stakeholder influence on fair decision-making, the Extractive Industries Transparency Initiative (EITI) is one of the examples of a global standard that promotes responsible resource management through a multi-stakeholder approach (Sovacool et al., 2016).

Overall, all mentioned stakeholder engagement mechanisms shape CSR dimension as a constantly dynamic, progressive process that considers local communities, their experience, evaluates risks, and promotes energy transition. Therefore, stakeholder engagement is one of the crucial factors for CSR effectiveness in the energy sector, as stakeholder involvement has become a core part of corporate governance and decision-making.

To conclude, the reviewed mechanisms–international frameworks and reporting standards, independent certifications, and stakeholder engagement tools–underline the multi-dimensional nature of CSR in the energy sector. All three categories are crucial for CSR to promote transparency, long-term sustainability, and accountability, as well as address environmental risks and meet social demand. Figure 1 illustrates three categories of CSR mechanisms that are interconnected and together promote energy sustainability.

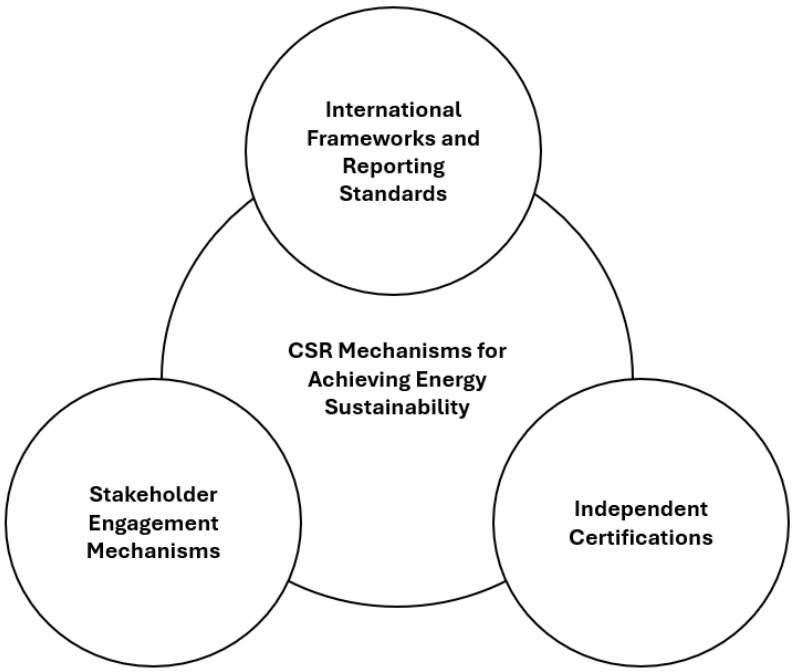

Fig. 1. CSR Mechanisms for Achieving Energy Sustainability
Source: created by the authors.

4. Discussion and conclusions

The paper explored how CSR contributes to energy sustainability by identifying and analyzing the institutional mechanisms that support its implementation. The developed theoretical model groups CSR mechanisms into three major categories: international frameworks and reporting standards, independent certifications, and stakeholder engagement tools. Together, these mechanisms offer a comprehensive pathway for promoting ethical, transparent, and environmentally responsible practices in the energy sector. The study answers the first research question by highlighting the importance of global frameworks such as the EU Taxonomy, ISO standards, and ISSB disclosures as the cornerstone of CSR implementation processes. These tools provide guidance on how sustainability data should be measured, disclosed, and communicated. This conclusion directly aligns with findings of Halkos and Nomikos (2021) emphasizing the global diffusion of CSR standards like GRI and ISO 14001 as key tools for stakeholder communication and sustainability reporting. At the same time, third-party certifications like SBTi, B Corp, and EcoVadis shift voluntary CSR commitments into verified financial and environmental performance indicators. Additionally, stakeholder engagement frameworks such as Just Transition policies and AA1000SES play a fundamental role in making CSR more inclusive and responsive to local needs, thus shaping how energy companies interact with affected interest groups, employees, and investors. Similarly, Maia and Garcia (2023) and Farooq et al. (2021) found the importance of inclusive stakeholder engagement frameworks and science-based tools like SBTi in

improving transparency, guiding sustainability integration, and supporting energy transition outcomes.

As for the second question, the findings suggest that CSR mechanisms beyond demonstrating corporate commitment provide operational guidance, enhance accountability, and foster transparency. International standards and certifications set a base for comparability and oversight that reduces the risks of greenwashing and misreporting. These conclusions align with recent findings of Zaid and Issa (2023) and Thistlethwaite (2015) that emphasize the need for harmonized, stakeholder-inclusive ESG standards and accountable reporting practices that address both financial and climate-related uncertainties in corporate sustainability. Similarly, stakeholder engagement tools such as grievance mechanisms and advisory panels help different groups align corporate decision-making with public interest. Therefore, these mechanisms increase the legitimacy of CSR for communities and regulators, thus contributing to the long-term sustainability of energy systems.

Lastly, investigating the third question regarding the risks and limitations of CSR, this study shows that CSR still faces challenges, particularly when applied in high-emission, politically complex sectors such as the energy industry. The voluntary settings of many CSR tools allow companies to selectively adopt or disclose information, which may result in incomplete reporting and the use of CSR purely for reputation management. Moreover, stakeholder engagement remains inconsistent across firms and regions, often lacking participation that is focused on practical results or long-term commitment. Without proper enforcement, CSR may fail to achieve genuine accountability and instead serve to obscure environmentally or socially harmful practices. These insights support Shahbaz et al. (2020) and Bakhtina and Goudriaan (2011) showing that, while energy companies increasingly report CSR commitments, gaps in stakeholder involvement, data transparency, and board accountability still persist, which means that voluntary CSR practices are often ineffective without enforceable standards or organized governance structures.

This study also contributes to CSR literature by synthesizing mechanisms that were discussed in a sporadic manner in the literature and creates a new theoretical framework. It highlights a research gap in analyzing CSR's role not only as a corporate ethics model but as a set of operational tools for systemic energy transformation. Hence, it creates a basis for future theoretical and empirical research that can complement the current study by exploring how these tools perform under different governance settings and whether multi-stakeholder approaches improve CSR effectiveness and the implementation process in the energy sector.

To conclude, CSR has significant potential to support energy sustainability, especially when institutional mechanisms are used holistically and applied consistently. While CSR is not a universal solution, if supported by strong frameworks, certification tools, and stakeholder involvement, it can become a central contributor to a sustainable and socially just energy future.

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