Sustainability Challenges for Renewable Energy Partnerships in Resource-Rich Nations: A Dual-Perspective Approach

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Overview

Since Brundtland Report in 1987, the transition to sustainable energy has been widely discussed in academic literature as a key component of sustainable development. This shift requires substantial economic restructuring, the procurement of renewable technologies, and transitioning away from fossil fuels, all of which demand significant investments. This presents a formidable challenge, particularly for developing, resource-rich countries that are structurally dependent on low-cost, abundant fossil fuels, making them vulnerable to resource revenue depletion and price volatility. Additionally, challenges such as low per capita income, limited domestic capital, and restricted access to international financial markets further complicate their transition to sustainable energy. Public-private partnerships (PPPs) in renewable energy are widely recognized in both academic and practitioner literature as key policy tools for addressing resource dependencies in public and private organizations. PPPs play a crucial role in mobilizing public, private, and foreign funds at local and international levels, particularly in developing, resource-rich countries with underdeveloped financial markets and limited access to international investment. Despite their recognized potential, existing studies reveal a paucity of data and a scarcity of research on the development of renewable energy PPPs within the institutional contexts of resource-rich countries in Central Asia and the Middle East. Although PPP projects are underway in these regions, they are often hindered by the absence of robust institutional frameworks and regulatory mechanisms, as well as internal challenges such as inadequate governance structures, limited stakeholder coordination, and capacity constraints. Furthermore, existing studies offer limited insight into how PPPs respond to changes, risks and opportunities in its institutional environment and how these influences on inter-organizational relations, ultimately impacting sustainability of partnerships. By combining Open Systems Theory and Resource Dependence Theory, this study provides a comprehensive framework for understanding the interplay between external pressures, institutional environment, and inter-organizational resource management in renewable energy PPPs. It offers actionable insights into how resource-rich transitional countries can foster adaptive, resilient, and sustainable PPPs to secure investment in sustainable energy transition.

Methods

The methodology of this study is guided by research questions: How do differences in institutional environments affect the sustainability of renewable energy PPPs and how it influences on inter-organizational dynamics and resource management in renewable energy PPPs in the context of Kazakhstan and Saudi Arabia? Using a mixed-method research the study will explore the interplay of resource dependencies, institutional structures, and open system dynamics in renewable energy PPPs within resource-rich contexts. The study combines theoretical frameworks of open system and resource-dependence theory to examine interdependence between organizations and their surrounding systems, highlighting how renewable PPP adapt and respond to institutional environment (regulatory changes, market dynamics, and societal expectations), leverage feedback mechanisms and manage resources and internal power dynamics. This study adopts a sequential exploratory research design, starting with quantitative data collection and analysis, followed by qualitative inquiry to provide nuanced insights into stakeholders' experiences and interrelations. This methodological approach enables a comprehensive examination of external and inter-organizational dynamics underpinning the development of renewable energy public-private partnerships (PPPs) in developing resource-rich economies. The case selection focuses on renewable energy PPPs in Kazakhstan and Saudi Arabia, both developing resource-rich economies with differing institutional contexts and sustainable energy transition pathways. This ensures the application of John Stuart Mill's joint method, which emphasizes identifying similarities and differences across cases. The study examines PPPs involving both indigenous and foreign capital to capture heterogeneity in organizational dynamics with focus on companies with at least three years of market presence and 50 employees. The quantitative stage of the study conducts online survey of middle managers of PPPs. The survey questions were designed to investigate the role of institutional quality and inter-organizational relations and how it influences on sustainability of renewable energy PPPs. In the qualitative stage we conduct semi-structured elite interviews with purposively sampled PPP managers to gather detailed insights into leadership experience of institutional environment and its influence on company sustainable

performance as well as inter-organizational dynamics. In addition, the study triangulates the data by integrating quantitative and qualitative secondary data analysis to enhance the validity and reliability of findings

Results

Our findings highlight that persistent political commitment issues, resulting in policy fragmentation and inconsistency, undermine institutional trust among PPP stakeholders and weaken long-term engagement in renewable energy projects. Furthermore, existing policy support mechanisms, such as feed-in tariffs and renewable energy portfolios, fail to create sufficient incentives or favourable conditions for PPPs due to the lack of complementary policies, including capacity-building initiatives, information transparency, and streamlined regulatory processes. Additionally, the limited workforce and technological capacity, especially in the context of Kazakhstan, exacerbate challenges in accessing essential resources. The study shows that PPPs are promoted by the state as a key tool for the sustainable energy transition, with objectives prioritizing social outcomes over profit maximization. This state-driven focus creates tensions with private sector partners, leading to reduced private sector engagement. Moreover, underdeveloped regulatory and institutional mechanisms reduce market competitiveness by favouring inefficient PPP projects over more competitive ones. These issues are further reflected in inter-organizational relations within PPPs, which are often undermined by ineffective governance monitoring, particularly in areas such as stakeholder engagement, risk management, and conflict resolution. The lack of robust and holistic feedback mechanisms exacerbates these challenges, as critical insights from various stakeholders are not effectively captured or integrated into decision-making processes. Consequently, this leads to uninformed decision-making, hindering the ability of public and private entities to adapt to emerging challenges and opportunities. Our findings also reveal limited cross-sectoral learning and knowledge sharing between private and public entities, as evidenced by the scarcity of joint workshops, collaborative training programs, or shared platforms for exchanging best practices, further hindering collaboration and negatively impacting project outcomes.

Conclusions

This study underscores the crucial role of country context and institutional environment in shaping internal relations within public-private partnerships (PPPs) in renewable energy. The integration of Open Systems Theory and Resource Dependence Theory offers a valuable framework for understanding the complex interplay between policy, institutional dynamics, inter-organizational relations, and resource management, all of which significantly influence the sustainability of PPPs. Our findings demonstrate that, in the context of developing, resource-rich countries, state-driven policy prioritization in PPPs often leads to inter-organizational misalignment, compromising the financial viability of projects. This misalignment underscores the need for a more balanced approach that integrates both social and business objectives to ensure the long-term sustainability of PPPs in the renewable energy sector. Moreover, the absence of holistic feedback mechanisms and organizational learning exacerbates these challenges, emphasizing the critical need for frameworks that promote continuous adaptation and foster collaboration among stakeholders. Future research should further explore the dynamics of business and social interactions in these contexts, particularly how consumer accountability and acceptance influence business sustainability practices. Understanding these relationships is essential for identifying ways in which businesses can support social sustainability and incentivize end-user efficiency, particularly in resource-rich countries where both production and consumption are heavily reliant on low-cost conventional energy sources.

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