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The RCEP in an emerging multipolar order: examining energy transition implications

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This paper examines how the Regional Comprehensive Economic Partnership (RCEP) influences global energy transition within an emerging multipolar world order. Using the New Globalization Scenario Matrix (NGSM) framework and correlative SWOT analysis, the study identifies a “medium-high performance” scenario as most probable, characterized by gradual regional integration constrained by geopolitical tensions and governance gaps. The analysis reveals asymmetric energy transition contributions: strong support for renewable energy deployment through trade and investment channels, but limited coordination for decarbonization policies due to absent binding environmental commitments. The study proposes complementary institutional frameworks to enhance the RCEP’s energy transition contributions while addressing identified governance deficits in environmental coordination.

KEYWORDS

Regional Comprehensive Economic Partnership (RCEP), energy transition, New Globalization Scenario Matrix (NGSM), correlative SWOT analysis, multipolarity

1 Introduction

The global landscape is undergoing significant socioeconomic transformations due to current global transformational crises and the reorganization of global systems. In this evolving environment, a new multipolar world order seems to be emerging, leading to shifts in the distribution of economic, social, political, technological, and ideological power on a global scale (Vladoš et al., 2022). A key advancement and indicator of this shift is the Regional Comprehensive Economic Partnership (RCEP), a Free Trade Agreement (FTA) involving many Southeast Asian-Pacific nations, signed in late 2020.

The RCEP represents a bold partnership among Australia, China, Japan, New Zealand, and South Korea, alongside Southeast Asian nations, although India exited negotiations in November 2019 (Hamanaka, 2014). The agreement, signed virtually on November 15, 2020, includes 15 economies that together comprise 30% of the global population, account for 29% of the world’s Gross Domestic Product (GDP), and represent a third of international trade (Crivelli and Inama, 2021; New Zealand Foreign Affairs and Trade, 2024). The RCEP region spans a diverse array of countries, from large economies like Japan and China to smaller ones such as Brunei and Myanmar, encompassing high-income nations like Australia and lower-income ones like Cambodia and Vietnam (CNBC, 2019). Collectively, the RCEP is projected to surpass other significant trade agreements, including the US-Mexico-Canada Agreement, the European Union (EU), the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (TPP), and the MERCOSUR (Southern Common Market), in terms of GDP (McDonald, 2020).

At the forefront of today’s global challenges is the energy transition, necessitated by the intensifying climate change (Newell, 2019). This shift involves moving from traditional,

polluting energy sources to cleaner, sustainable alternatives (Van de Graaf et al., 2016). Given the intricate integration of the global energy system within the broader context of the emerging new globalization, a nuanced and detailed analysis is required (Bradford, 2018; Vladoš, 2019a).

This paper examines the interconnected geopolitical and geoeconomic changes and their impact on the global energy transition, focusing on the implications of the RCEP agreement (Kimura, 2021; Vladoš et al., 2022). Through a thorough review of relevant literature, this study seeks to identify the strengths that could propel the global energy system forward and the weaknesses that could threaten the current energy transition.

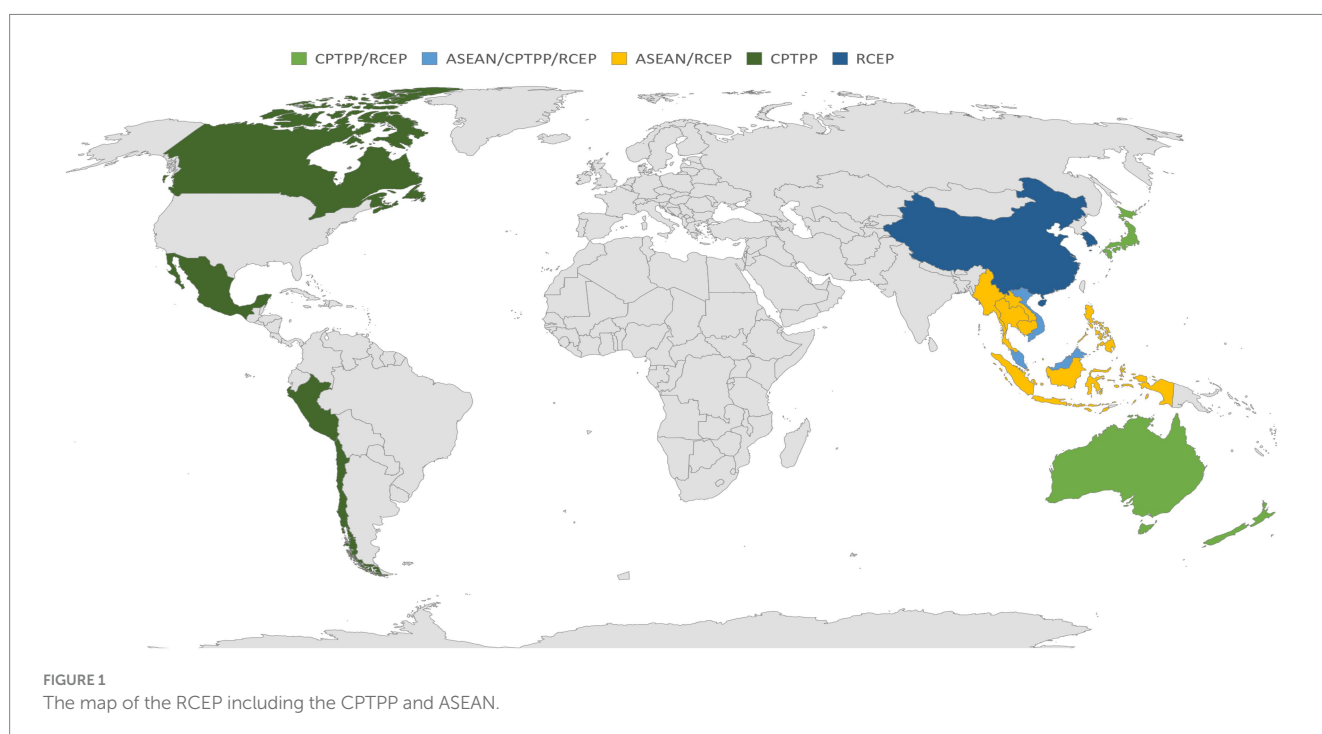
The methodology employed in this paper is based on conceptual research design principles. Drawing from Jaakkola (2020) guidelines, this concept paper aims to synthesize existing theories, providing a novel theoretical perspective by integrating different approaches in a new analytical configuration, thereby contributing to the body of knowledge in this field of international relations (Ikenberry et al., 2011). The paper focuses on the significant geopolitical and geoeconomic shifts brought about by the RCEP agreement, utilizing two analytical frameworks introduced in Section 3: the New Globalization Scenario Matrix (NGSM) and a correlative SWOT (relative and evolutionary strengths–weaknesses–opportunities–threats) analysis (Vladoš, 2019b). In this context, it addresses two primary research questions that emerge from this analytical gap: RQ1: How does the RCEP agreement's position within the NGSM framework influence regional energy transition trajectories, and which performance scenario best characterizes the RCEP's energy transition potential? RQ2: What are the comparative strengths, weaknesses, opportunities, and threats of the RCEP agreement in facilitating regional energy transition through its economic integration mechanisms?

The subsequent sections will discuss the dynamic background of the RCEP agreement and its implications for the new global reality (Section 2), the research methodology (Section 3), an analysis of the RCEP case using the introduced frameworks (Section 4), a discussion on the prospects of the global energy system (Section 5), and conclude with final remarks (Section 6).

2 Background

The signing of the RCEP agreement in November 2020 represents a pivotal moment in the restructuring of the present-day architecture of global trade. This agreement is a significant move toward deeper economic integration in East Asia, and it stands as the world's largest FTA, bringing together 15 nations that collectively account for 30% of global GDP. The timeline leading up to this agreement includes its introduction at the 19th Association of Southeast Asian Nations (ASEAN) Summit in November 2011, the endorsement of negotiation launches in November 2012, the beginning of the first negotiation round in May 2013, the first RCEP summit in November 2017, India's withdrawal from negotiations in November 2019, the virtual signing of the agreement in November 2020 due to the COVID-19 pandemic, and several other significant milestones including the ratifications by Singapore and China, and the agreement's implementation for the first 10 countries by January 2022, among others (Figure 1).

The RCEP agreement is more extensive than the ASEAN Plus One FTAs and is highly detailed, comprising 20 chapters. These chapters include provisions for trade in goods (such as rules of origin, customs procedures, trade facilitation, sanitary and phytosanitary measures, standards, technical regulations, and trade remedies) and services (covering financial and professional services, telecommunications, and the temporary movement of people). It also covers areas such as dispute resolution, legal frameworks, government procurement,



competition, e-commerce, intellectual property, and investment (ASEAN Research and Advocacy, 2020; Kang et al., 2020).

In the aftermath of the COVID-19 pandemic and the disruptions caused by the Russia-Ukraine conflict, which led to significant turbulence in global trade marked by rising protectionism and trade disputes among major economic powers, the global significance of the RCEP region has notably increased (Petri and Plummer, 2020; Vlosos and Chatzinikolaou, 2025a). The agreement emphasizes inclusivity, particularly in addressing issues arising from globalization and trade liberalization, with a strong focus on supporting small and medium enterprises (SMEs; The ASEAN Post, 2019). SMEs, including micro-enterprises, make up over 90% of businesses in the RCEP economies, making their development crucial for the internal growth and development of these nations [Short Overview of the Regional Comprehensive Economic Partnership (RCEP), 2021]. The agreement aims to reduce bureaucratic barriers for these smaller companies and to promote fair regional economic policies that benefit all participating nations, both ASEAN members and their trade partners (Seymour and Wilson, 2019). By 2030, Southeast Asia is expected to gain substantial economic benefits from the RCEP, with annual gains projected at \$19 billion. Additionally, the agreement will enhance access to China's Belt and Road Initiative funds, improve regional infrastructure, and attract foreign investments through favorable rules of origin (Gunia, 2020; Nan, 2021).

While the establishment of the RCEP is a significant achievement, it has faced criticism and multiple political-economic challenges. Critics argue that the agreement is less ambitious compared to the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP; Ward, 2020). Managing the complex dynamics among its 15 member countries is a delicate matter, particularly given historical conflicts and unresolved territorial disputes (Crivelli and Inama, 2021). Moreover, the RCEP does not cover certain areas such as government subsidies, labor union activities, and environmental protections, which has drawn additional criticism (Lachlan et al., 2020). The withdrawal of India from the negotiations was seen as a setback, reducing the potential market size from 3.6 billion to 2.2 billion people and lowering the share of global GDP from 33 to 29% (Sytsma, 2020). Despite these challenges, the RCEP still enhances market access, offering a broader range of goods to consumers by strengthening transnational production networks (Pitakdumrongkit, 2020).

The classic work of Bhagwati (1995) is relevant here, as he previously argued that there is an "infatuation" with FTAs that might undermine the promotion of globalization by bypassing the formal avenues like the General Agreement on Tariffs and Trade (GATT) and the World Trade Organization (WTO). Over the past two decades, Asian economies have increasingly engaged in signing trade agreements, transitioning from ASEAN agreements to the RCEP. Although earlier views suggested that the proliferation of FTAs would lead to a "noodle bowl effect" in Asia, complicating trade relations, it seems that today, nations are prepared to navigate a world characterized by increasing complexity and a blend of strategic competition: simultaneous competition and cooperation (Brandenburger and Nalebuff, 1996; Kedia et al., 2016; Mongkhonvanit, 2014). The "noodle bowl effect" underscores the challenges imposed by overlapping FTAs, which Asian nations appear to accept as a reality, moving away from a unipolar and rigid global governance structure. Recent analyses suggest that a new form of

multipolarism is emerging as the central issue in international relations, becoming a key characteristic of the "new globalization," which continues to heighten global uncertainty (Vlosos et al., 2022). In this newly framed context, agreements like the RCEP are likely to play a critical role in shaping the post-COVID-19 global equilibrium that is rapidly taking form.

In conclusion, within the RCEP framework, energy transition cooperation emerges through several specific mechanisms that leverage the agreement's trade and investment provisions. The agreement's rules of origin provisions facilitate the development of regional renewable energy supply chains by reducing tariffs on clean energy technologies and components (Asian Development Bank, 2022). Investment chapters enable cross-border energy infrastructure projects, particularly in grid interconnection and renewable energy development, by providing legal protections for energy sector investments (Shi et al., 2019; Xiangchengzhen and Yilmaz, 2020). Furthermore, the services trade provisions support technical cooperation in energy efficiency and renewable energy consulting, while e-commerce chapters facilitate digital platforms for energy trading and management systems (Indeo, 2019). These mechanisms, while not explicitly energy-focused, create the institutional infrastructure necessary for enhanced regional energy cooperation and transition acceleration among member states.

3 Methods

3.1 The NGSM and the correlative SWOT analysis

The NGSM framework, originally conceptualized by Vlosos (2019a) and further refined by Chatzinikolaou and Vlosos (2023), is employed in this study to explore potential international trajectories for the global system. Initially focused on an "evolutionary structural triptych"—geopolitical stability, economic growth, and innovation—the NGSM has been expanded to include energy-related factors, transforming it into a four-dimensional framework. The scenarios within this matrix range from pessimistic visions of increased nation-centric fragmentation, akin to "islandization" (Strohmer et al., 2020) and the isolationism of the interwar period (Cornell et al., 2020), to optimistic scenarios of a new global liberalism. This latter scenario is characterized by coherent multipolarity, sustainable economic growth, and rapid technological advancement, as outlined in "Globalization 3.0" (Strohmer et al., 2020) and Schwab (2016). Intermediate scenarios include restructured multipolarity, influenced by regional cooperation theories (Marinova, 2020; Wang, 2020), and enhanced regional forms promoting moderate growth and innovation.

The NGSM framework¹ presents a matrix of potential future scenarios for the emerging new globalization, built on the concept of new regionalization. This concept involves increased and reconfigured inter-regional collaboration to exploit uneven globalization advantages (Wang, 2020). The NGSM categorizes four distinct scenarios by performance levels (low, medium-low, medium-high, and high) across

¹ This framework appears especially valuable for analytical purposes, considering the nature of the question addressed in this paper.

four pillars: political structure, economic structure (Econ.), technological structure, and energy structure. The political structure represents the potency and effect of the current global order in geostrategic terms; the economic structure refers to the prevailing crisis-development model; the technological structure addresses dominant innovation modes; and the energy structure pertains to energy-related regimes.

The four NGSM scenarios are as follows: Low performance is marked by nation-centric fragmentation, populist governance, limited innovation, and a delayed energy transition. Medium-low performance features partial nation-centric fragmentation, struggling nation-centrism, restricted innovation, and slow energy changes. Medium-high performance involves overcoming partial nation-centrism, rising innovation, and gradual sustainability, with new poles incrementally promoting energy solutions. High performance emphasizes geopolitical realism, embracing the 4th industrial revolution, and offering robust responses to the climate crisis. Each scenario encapsulates different possibilities for the future of globalization, informed by political, economic, technological, and energy factors. Overall, the NGSM provides a comprehensive framework for understanding and predicting the evolution of the global socioeconomic system, drawing on historical phases of post-World War II capitalism.

For the correlative SWOT analysis, it is essential to recognize the foundational concept of “geoeconomics,” which first emerged as an integrated theoretical framework in the work of Luttwak (1990). The term has been widely recognized for its ability to describe the intersection of security, military conflict, and economic relations within a geographical context (Lorot, 1999; Nixon, 1992). While traditionally viewed as a strategic element in geopolitical analysis, the evolutionary application of geoeconomics has often been overlooked.

However, the theoretical contributions of Soilen (2010, 2012, 2017) and Vladoš et al. (2019) introduced a significant shift toward an

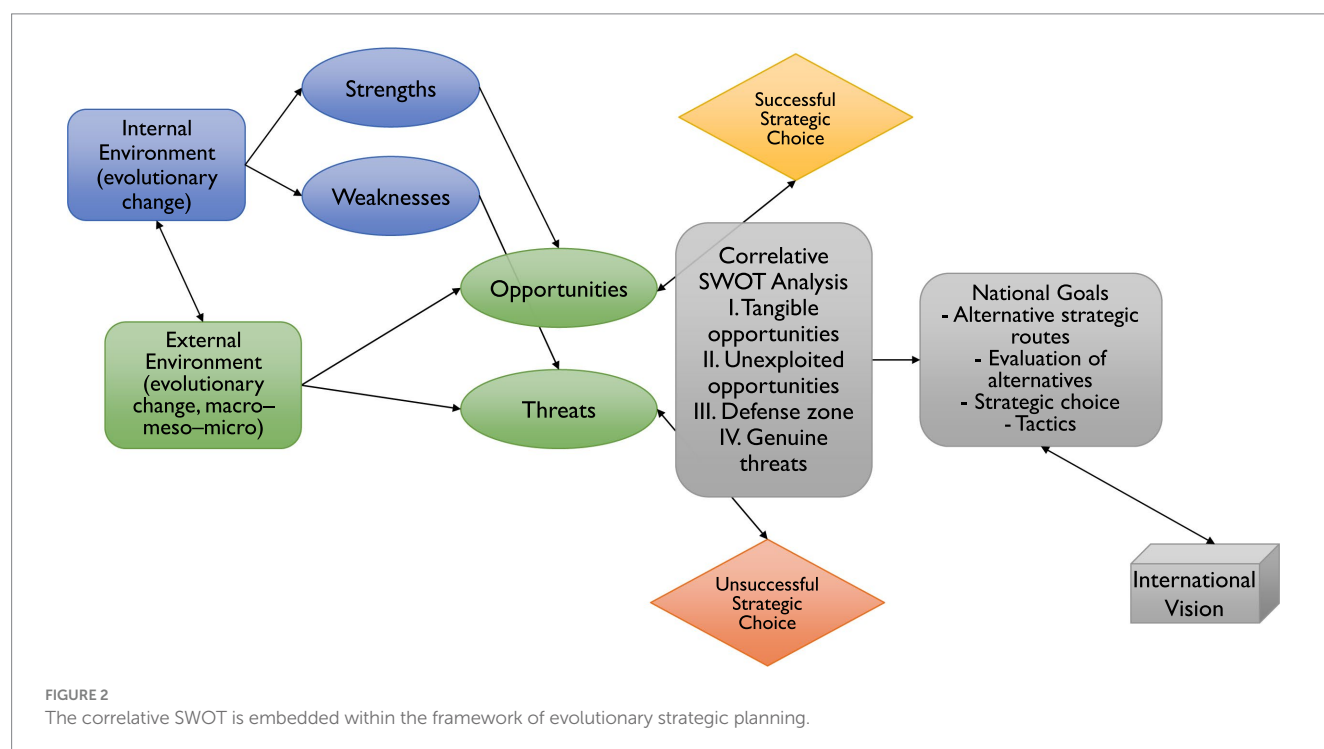
evolutionary understanding of geoeconomics. They argued that geoeconomic relations should be studied through a dialectical and evolutionary lens, highlighting how conflicts and convergences among strategic actors drive the evolution of geoeconomic patterns.

Building on this evolutionary perspective, Vladoš (2019b, 2023) and Chatzinikolaou et al. (2023) introduced the concept of correlative-geoeconomic analysis. This approach integrates the evolutionary adaptation of SWOT analysis with geoeconomics, focusing on a comprehensive assessment of the dynamic comparative strengths, weaknesses, opportunities, and threats faced by key economic players across different geographical contexts.

The conventional SWOT model, as critiqued by Vladoš (2019b), typically examines an organization’s internal and external environments in isolation. This approach, while applicable to organizations of all types and sizes—from small businesses to state and transnational entities—often results in a fragmented understanding. It tends to overlook the comparative and relative aspects of these elements, leading to gaps in strategic planning (Hill and Westbrook, 1997; Nixon and Helms, 2010; Panagiotou, 2003).

The correlative SWOT approach seeks to address these limitations by evaluating an organization’s strengths, weaknesses, opportunities, and threats in relation to internal and external stimuli over time. It posits that opportunities and threats should be identified through comparison with other organizations, rather than relying on a generalized view of the external environment. This perspective is illustrated in Figure 2.

Moreover, the correlative SWOT model introduces a multi-step process that includes evolutionary strategic planning and the analysis of an organization’s external environment. In this article, we propose expanding this methodology by conceptualizing the global system as an “organism” at the highest level of complexity, akin to recent analyses (Chatzinikolaou et al., 2023; Vladoš, 2023). This perspective necessitates defining the mechanisms that direct this global system,



particularly the current global governance framework, which today consists of a diverse array of international state and non-state decision-making bodies (Roger, 2020). As the global system seeks a new phase of globalization, this framework is undergoing re-evaluation, searching for a new architectural foundation. These analyses reveal relative strengths and weaknesses linked to an organization's unique characteristics, dynamics, and evolutionary development. The transition from a conventional to a correlative SWOT analysis deepens the understanding of an organization's position and provides insights into potential strategies for successful evolutionary geostrategic planning (Chatzinikolaou et al., 2023; Vladoš, 2023). Consequently, the correlative SWOT analysis offers a robust framework for examining the deep-seated structures of geoeconomic actors, enabling them to devise and implement effective strategies.

3.2 Methodological background

This research was conducted through an integrative review of pertinent literature, where most cited works were selected based on a critical review lens that emphasizes synthesis and interpretation of existing knowledge (Snyder, 2019). An integrative review methodology allows for the examination of diverse sources to generate new insights and theoretical frameworks, making it particularly suitable for exploring complex phenomena such as the intersection between trade agreements and energy transitions (Whittemore and Knafl, 2005). This approach aligns with the conceptual research design principles outlined by Jaakkola (2020), which emphasize the synthesis of existing theories to provide novel theoretical perspectives through the integration of different approaches in new analytical configurations.

The methodological foundation draws upon established frameworks for literature synthesis in social sciences, particularly those addressing international relations and energy policy (Jesson et al., 2011; Templier and Paré, 2015). The selection criteria prioritized peer-reviewed academic sources, policy documents, and reports from credible international organizations that directly address the RCEP agreement, energy transition dynamics, and their geopolitical implications. This semi-systematic approach ensures comprehensive coverage of relevant theoretical perspectives while maintaining analytical rigor in examining the complex interactions between regional trade agreements and global energy transformation processes.

The application of these analytical frameworks to the RCEP case follows a systematic approach. The NGSM analysis evaluates the RCEP's position across the four performance scenarios (low, medium-low, medium-high, and high) by examining how the agreement's structure and mechanisms align with each scenario's characteristics across political, economic, technological, and energy dimensions. The correlative SWOT analysis then assesses the RCEP's comparative strengths, weaknesses, opportunities, and threats specifically in relation to energy transition objectives, considering both internal agreement dynamics and external global energy governance trends. This dual-framework approach enables a comprehensive evaluation of the RCEP's potential trajectories and their implications for regional and global energy transformation processes.

Given the dynamics of the emerging new globalization and energy transitions, it is crucial to examine how international agreements and economic partnerships influence these processes (Vladoš and

Chatzinikolaou, 2025a). The RCEP agreement serves as a distinct case study for exploring the multifaceted impacts of global economic integration on energy policies and sustainability efforts. This agreement represents a significant shift in trade relations and economic cooperation, reflecting broader geopolitical and geoeconomic trends. Understanding its implications can provide valuable insights into the challenges and opportunities faced by the global energy transition within the context of new globalization. This analysis focuses exclusively on this case, without delving into other current developments in the global economy.

4 Results

An analysis of key studies, including Dent (2013), Petri et al. (2017), and Chakraborty et al. (2019), suggests that the “emerging multipolarity” scenario, characterized by medium-high performance, is the most plausible outcome within the NGSM, driven by the progress catalyzed by the RCEP. This scenario accounts for ongoing political disputes and economic challenges while highlighting the significant potential for deepening regional integration, increasing interdependence, and fostering economic cooperation.

4.1 NGSM scenario analysis with energy implications

Historical conflicts and unresolved territorial disputes, as noted by Basu Das (2015) and Dent (2013), underscore the political challenges that could contribute to a low-performance scenario within the NGSM framework. These geopolitical tensions create constraints for energy transition processes, as ongoing disputes between Japan and China over the Senkaku/Diaoyu Islands and various South China Sea conflicts involving multiple RCEP members limit the development of comprehensive regional energy security frameworks.

Wignaraja (2018) emphasizes the difficulties in negotiations over services trade, investment rules, and intellectual property rights, which could contribute to medium-low performances concerning the evolution of globalization and constrain the high-performance scenario where comprehensive energy governance would be possible. However, Vladoš et al. (2022) emphasize the emerging multipolarity within the RCEP, with ASEAN playing a central role in this economic alliance, thereby favoring the medium-high performance scenario and gradual energy integration over fragmented national approaches.

Furthermore, Cadot and Ing (2015) and Petri and Plummer (2020) argue that the RCEP has the potential to enhance regional integration by harmonizing regulations, aligning with the technological frameworks expected to emerge in a new multipolar world. This regulatory harmonization directly benefits energy transition through standardized technical specifications for renewable energy equipment and streamlined approval processes for cross-border energy projects. They assert that the RCEP could reinforce market-driven economic integration, bolstering regional interdependence while addressing the distortions caused by US-China trade barriers that have affected solar panel and wind turbine component flows.

The high-performance scenario is portrayed optimistically in the works of Petri et al. (2017), Kimura (2021), and Chakraborty et al.

(2019). They discuss the prospects of modern and comprehensive trade agreements, potential benefits for developing member states, and the possibility of a fourth industrial revolution, aligning with the NGSM implications for this scenario. However, this optimistic scenario remains constrained by the RCEP's limited institutional mechanisms for coordinated climate action. While these authors discuss the prospects of comprehensive trade agreements and fourth industrial revolution benefits, the absence of explicit environmental governance within the RCEP limits the achievement of rapid, coordinated energy transition across all member states.

However, the RCEP's full potential can only be realized if it effectively addresses the political, economic, and trade stability challenges presented in each scenario. Achieving this potential is complicated by obstacles such as the lack of a country functioning as a natural leader, territorial disputes, developmental disparities, and current global economic challenges. The RCEP's inclusive economic model, designed to accommodate developing countries (Drysdale and Armstrong, 2021), provides a foundation for energy cooperation that transcends bilateral tensions through market mechanisms rather than requiring deep political alignment.

In summary, the RCEP's potential to foster deep integration and increase interdependence among member states could significantly impact regional energy policies, particularly in the development and distribution of renewable energy sources. However, these opportunities come with challenges, as energy transition strategies must be managed effectively to contribute to the broader objectives of the RCEP rather than detract from them.

4.2 Correlative SWOT analysis: energy transition focus

The correlative SWOT analysis of the RCEP highlights tangible opportunities and unexploited potentials within the energy transition context. As Dent (2013) outlines, the RCEP has embraced the adaptable, inclusive economic model of East Asia, specifically designed to accommodate developing countries. This model presents significant geopolitical leverage against bilateral pressures, as suggested by Petri et al. (2017) and builds on existing bilateral agreements, further emphasizing the partnership's inherent opportunities for energy cooperation. The RCEP's primary strength lies in its ability to create integrated renewable energy supply chains across member states. The agreement's provisions facilitate technology transfer and component sharing that reduce renewable energy costs region-wide. This strength is exemplified by the development of Southeast Asian solar manufacturing clusters that serve multiple RCEP markets efficiently (Chakraborty et al., 2019).

The RCEP's influence on energy transition manifests primarily through three indirect mechanisms rather than direct energy governance. First, the agreement's rules of origin provisions facilitate renewable energy supply chain development by reducing tariffs on clean energy technologies and components (Asian Development Bank, 2022). Second, the RCEP's investment chapters enable cross-border energy infrastructure development by providing legal protections for energy sector investments. This is particularly significant for grid interconnection projects and renewable energy development across national boundaries (Shi et al., 2019; Xiangchengzhen and Yilmaz, 2020). Third, the services trade

provisions support technical cooperation in energy efficiency consulting and renewable energy services, while e-commerce chapters facilitate digital platforms for energy trading and management systems (Indeo, 2019). These mechanisms create institutional infrastructure for enhanced regional energy cooperation without requiring explicit energy policy coordination. In particular, the correlative strengths-weaknesses and opportunities-threats are reflected as follows (Figure 3):

1. Tangible opportunities in energy context:

- a. Leveraging inclusive East Asia economic model for energy cooperation: The RCEP's adaptable framework, specifically designed to accommodate developing countries, enables cost-effective renewable energy supply chains spanning multiple development levels while reducing technology costs region-wide (Guo and Mai, 2023; Liu and Kalirajan, 2024). This multilateral framework facilitates the deployment of renewable energy technologies across diverse economic development stages, with China's renewable energy patents concentrated in solar technology representing significant potential for technology transfer and cost reduction throughout the region (Aberdeen, 2020; Estrades et al., 2023).
- b. Step-by-step comprehensive energy integration approach: Building on existing bilateral energy agreements, the RCEP facilitates gradual expansion of cross-border renewable energy infrastructure and grid interconnection projects through proven incremental mechanisms (Sudo and Li, 2024; Tanoto, 2025). The successful Laos-Thailand-Malaysia-Singapore Power Integration Project demonstrates how multilateral electricity trading frameworks can be developed incrementally, with 30.2 GWh of electricity traded under LTMS-PIP phases, providing a template for broader regional integration (ASEAN Centre for Energy, n.d.; Enerdata, 2023).
- c. Geopolitical advantage against energy security pressures: The multilateral framework provides member states with collective bargaining power in global energy markets while reducing dependence on bilateral energy relationships that may be subject to political manipulation (Liu et al., 2019; The National Bureau of Asian Research, 2021). This collective approach enables smaller ASEAN economies to negotiate more effectively in global energy markets, with 80% of China's energy imports and 40% of China's total trade passing through the South China Sea, highlighting the strategic importance of regional cooperation (Asia Society Policy Institute, 2025; Kim, 2015).
- d. Established energy trade links and investment protections: Existing bilateral energy cooperation agreements provide foundation for scaling up renewable energy technology transfer and cross-border energy infrastructure investments under RCEP's legal protection frameworks (Motohashi, 2024). The RCEP framework has already yielded many cooperation deals in new energy vehicles and photovoltaic industrial supply chains, demonstrating how existing bilateral relationships can be leveraged for multilateral clean energy development (TTWTO VCCI, 2024; Xinhua, 2025).



FIGURE 3
Correlative SWOT analysis of the RCEP.

2. Unexploited opportunities in energy context:

- Historical conflicts limiting energy infrastructure cooperation: Territorial disputes between Japan-China and South China Sea conflicts involving multiple RCEP members prevent development of comprehensive regional energy security frameworks and cross-border energy projects (CFR, 2024; EFSAS, 2024). These territorial disputes have directly impacted energy development, with Vietnamese natural gas projects being stalled due to sovereignty conflicts, while oil and gas fields worth potentially 17.7 billion barrels remain underdeveloped due to overlapping claims (Loh, 2025; U.S. Energy Information Administration, 2024).
- Lack of single energy governance leadership: Absence of a dominant energy leader among RCEP members hinders coordinated energy transition planning, renewable energy target setting, and unified climate policy development across the region (Bocca and Marcellus, 2025). ASEAN still lacks harmonized rules for renewable energy certificates, emissions factors, and carbon accounting, while regional cooperation is complicated by geopolitical divisions and longstanding disputes from Mekong River water-sharing to South China Sea claims (Setyawati and Nadhila, 2024).
- Contentious negotiations in energy-related services and investment: Ongoing disputes over energy services trade, clean technology investment rules, and renewable energy intellectual property rights create barriers to comprehensive energy transition coordination (Aberdeen, 2020; Wegmann and Wendel, 2023). The fragmented nature of ASEAN energy markets, with inconsistent levels of market integration and cross-border trade, creates regulatory complexities that

discourage investment in regional energy projects while fossil fuel subsidies across the region distort clean energy market prices (Hung, 2025; Safrina et al., 2024).

- Competitive rather than complementary energy structures: Member states often compete in similar energy sectors rather than developing complementary renewable energy specializations, limiting efficiency gains from regional energy integration (Eswaran, 2025). Chinese investments in solar manufacturing across Thailand, Malaysia, Vietnam, and Cambodia serve primarily as production hubs for third-country markets rather than developing integrated regional value chains, with U. S. tariff policies causing production relocations and exposing the region's vulnerability to external trade policies (Asia Society Policy Institute, 2025; Setyawati and Nadhila, 2024).

3. Potential defense zone in energy context:

- ASEAN-led consolidation of energy FTAs: The RCEP provides opportunity to consolidate smaller bilateral energy agreements under ASEAN leadership, creating unified regional approach to energy transition and renewable energy deployment (Rifki et al., 2025; Sudo and Li, 2024). The upgraded ASEAN Power Grid (APG) MoU and ASEAN Plan of Action for Energy Cooperation (APAEC) for 2026–2030 represent concrete steps toward consolidating fragmented bilateral arrangements into a comprehensive multilateral framework (Australian Embassy, 2024; TV BRICS, 2025).
- Alignment with WTO rules against clean energy protectionism: The agreement framework could shield member states from global protectionist trends affecting clean energy technology

trade while maintaining compliance with international trade regulations (Jun, 2025; World Trade Organization, 2023). A green trade arrangement operating within RCEP terms could eliminate tariffs and reduce non-tariff barriers on green goods and services ahead of the bloc's existing timeline, providing protection against the broader trend toward economic security measures targeting Chinese supply chains (Asia Society Policy Institute, 2025; Jun, 2025).

- c. ASEAN-led deep energy integration and regulatory convergence: Regional leadership in harmonizing renewable energy standards, technical specifications, and approval processes creates competitive advantage in global clean energy markets (ERIA, 2024). The APG initiative involves an estimated \$250 billion in capital expenditure with strong emphasis on private sector mobilization and policy stability, representing a significant opportunity for regulatory harmonization and market integration (Bocca and Marcellus, 2025; Loh, 2025).
- d. Fostering market-driven energy integration to offset US-China barriers: The RCEP's economic integration mechanisms provide alternative pathways for clean energy technology flows and investment when bilateral US-China energy cooperation faces political constraints (Armstrong and Drysdale, 2022). China-Japan energy conservation and environmental protection cooperation has resulted in 457 cooperative projects since 2006, demonstrating how RCEP can facilitate continued clean energy collaboration despite broader geopolitical tensions (China Daily, 2021; Xueqing, 2024).

4. Genuine threats in energy context:

- a. Diplomatic relations and energy infrastructure sovereignty disputes: Unresolved territorial conflicts pose direct risks to cross-border energy projects, regional grid development, and long-term energy security cooperation among member states (CFR, 2024; Ordabayev, 2025). The South China Sea disputes directly impact energy development, with Chinese naval patrols having previously deterred Filipino energy companies from exploring gas deposits in disputed waters, while the absence of market-based electricity pricing in many countries creates barriers to electricity trade with developed markets (Schult et al., 2025; U.S. Energy Information Administration, 2024).
- b. Massive economic and energy technology disparities: Significant gaps between developed members (Japan, Australia, South Korea) and developing nations (Myanmar, Cambodia, Vietnam) in energy infrastructure and technological capabilities hinder equitable energy transition participation [Short Overview of the Regional Comprehensive Economic Partnership (RCEP), 2021]. Myanmar, among the poorest RCEP signatories in terms of GDP per capita, faces particular challenges in benefiting from the trade deal, while Cambodia, Thailand, Philippines and Malaysia apply significantly different protection levels to RCEP imports versus non-members (Estrades et al., 2023; ODM, 2020).
- c. Potential replication of less effective energy cooperation models: Risk of mimicking limited bilateral energy

arrangements rather than developing innovative multilateral energy transition frameworks that maximize regional renewable energy potential (Bößner et al., 2025). The absence of mechanisms for technology transfer and geographical constraints impede the deployment of renewable energy systems, while political, economic, social, technological, legal, and environmental barriers persist across various areas of renewable energy development (Kuok Fidero and Ho Sotasing, 2024; Sagbakken et al., 2020).

- d. Erosion of global energy governance through regional fragmentation: Mega-regional energy arrangements could undermine WTO's role in global energy technology trade governance and fragment international climate cooperation efforts outside the RCEP framework (Leal-Arcas et al., 2015; Xue et al., 2023). The current international energy trade governance system is already fragmented and multi-layered, with geopolitically-motivated trade policies such as sanctions significantly disrupting value chains and leading to the formation of segmented regional energy supply chains that could further fragment global energy governance (Leal-Arcas et al., 2015; Xue et al., 2023).

In sum, the correlative SWOT analysis of the RCEP provides a comprehensive view of its energy transition strengths, weaknesses, opportunities, and threats. It also emphasizes the need for an evolutionary perspective to understand the RCEP's place in the emerging era of new globalization. The RCEP's overarching vision, shaped by geopolitical shifts, competitive dynamics, and the quest for innovation, suggests a move toward a diverse global stage in energy cooperation. This underscores the urgent need to rethink global cooperation and sustainable development in this evolving context. However, compared to entities like the EU or ASEAN, the RCEP may be less comprehensive in addressing socio-institutional aspects of energy transition. The socio-institutional gaps identified in this analysis primarily relate to the RCEP's focus on economic and trade dimensions while neglecting deeper governance structures necessary for comprehensive energy transition coordination (Kahler, 2017). These gaps manifest in several forms: governance-related deficiencies in establishing binding environmental standards, technological capability disparities among member states that hinder equitable participation in green technology transfer, and policy coordination obstacles stemming from divergent national energy priorities and regulatory frameworks (Cheong and Cho, 2013). The agreement's emphasis on "soft power" mechanisms through economic integration contrasts with the "hard power" institutional arrangements required for addressing climate commitments and energy security challenges that transcend purely commercial considerations (Johnstone, 2024).

If these issues are not managed, the RCEP could result in a complex web of overlapping free trade agreements, potentially making it a less effective multilateral agreement. Nonetheless, the RCEP's story is still unfolding, leaving the final outcome uncertain, particularly in the area of energy transition, where the agreement currently lacks clear guidance. This analysis reveals that while the RCEP creates favorable conditions for energy transition through

economic integration mechanisms, it requires complementary frameworks to address environmental governance gaps and ensure equitable participation across member states with varying development levels.

5 Discussion

5.1 Interpreting research findings: theoretical and practical implications

The analysis demonstrates that both research questions are interconnected, revealing how the RCEP's position within global transformation scenarios directly shapes its energy transition contributions. The NGSM analysis identifies the medium-high performance scenario as most probable for the RCEP's energy transition trajectory, characterized by gradual regional integration and moderate energy transformation progress, constrained by geopolitical tensions and socio-institutional gaps in environmental governance.

This scenario determination directly corresponds to the asymmetric pattern of energy transition contributions revealed through the correlative SWOT analysis. The RCEP demonstrates clear comparative strengths in market-based mechanisms—integrated renewable energy supply chains that reduce costs region-wide, investment protections enabling cross-border energy infrastructure, and regulatory harmonization facilitating technology standardization. However, these strengths coexist with significant comparative weaknesses: the absence of binding environmental standards, technological capability disparities among member states, and limited frameworks for coordinated climate policies (Lachlan et al., 2020). This asymmetric performance pattern explains why the medium-high rather than high-performance scenario emerges as most probable, reflecting the agreement's design priorities of economic integration over environmental coordination.

5.2 Energy transition governance gaps and solutions

The correlative SWOT analysis reveals specific governance deficiencies that constrain the RCEP from achieving high-performance energy transition outcomes (Kahler, 2017). These gaps manifest in governance-related deficiencies in establishing mandatory renewable energy targets, technological capability disparities among member states that prevent equitable green technology access, and policy coordination obstacles stemming from divergent national energy priorities and regulatory frameworks (Cheong and Cho, 2013). To address these limitations, complementary frameworks could enhance the RCEP's energy transition contributions:

- RCEP energy transition council: A dedicated institutional body to coordinate renewable energy policies and harmonize technical standards across member states.
- Regional carbon pricing framework: Voluntary but coordinated carbon pricing mechanisms that prevent carbon leakage while respecting national sovereignty.

- Green technology transfer protocols: Standardized procedures for clean energy technology sharing that prioritize developing member states' access to advanced renewable energy systems.
- Joint energy infrastructure financing: Collaborative financing mechanisms for cross-border renewable energy projects, including grid interconnection and energy storage systems.

5.3 Toward innovative energy governance: integrating realist and liberal approaches

The integration of realist and liberal frameworks in energy governance emerges from our finding that the RCEP operates most effectively in a medium-high performance scenario where national sovereignty concerns must be balanced with collective climate action needs. The correlative SWOT analysis reveals that the agreement's comparative advantages lie in market-based cooperation rather than binding policy coordination.

Drawing from “innovative realistic liberalism” (Vlados and Chatzinikolaou, 2022), energy governance within the RCEP could benefit from hybrid institutions that acknowledge sovereign energy priorities while promoting technological cooperation. A realist approach recognizes energy security as a core national interest, while a liberal framework emphasizes multilateral renewable energy standards and market-driven efficiency gains. This synthesis manifests through flexible governance mechanisms including voluntary-binding hybrid frameworks, differentiated energy responsibilities, and strategic energy partnerships that address specific national circumstances while contributing to collective objectives.

Therefore, the global energy system requires more comprehensive transformation than the RCEP alone can provide. Our NGSM analysis shows that even the most optimistic realistic scenario for RCEP reaches only medium-high performance levels. The apparent dominance of medium-performance scenarios globally suggests that while agreements like the RCEP represent progress, they remain insufficient to overcome existing climate and energy challenges without broader systemic changes (Newell, 2019; Van de Graaf et al., 2016).

The world requires “new realistic and innovative global liberalism” (Vlados and Chatzinikolaou, 2022)—an approach that acknowledges national sovereignty in energy policy while embracing multilateral cooperation for technology development, financing mechanisms, and standard setting. This approach must focus on long-term structural transformation rather than short-term market gains, incorporating regulatory frameworks that curb speculation in energy commodities markets, redefined state intervention that fosters clean energy innovation, and promotion of technological pluralism that allows different renewable energy pathways for different national circumstances.

6 Conclusion

6.1 Research question responses and core findings

Addressing RQ1, the NGSM analysis demonstrates that the RCEP's energy transition trajectory aligns with a medium-high

performance scenario within the emerging multipolar order. This determination reflects the agreement's substantial economic integration mechanisms that enable gradual regional cooperation, while geopolitical tensions between major members and the absence of binding environmental governance frameworks prevent achievement of the high-performance scenario.

Addressing RQ2, the correlative SWOT analysis reveals the RCEP's comparative advantages in energy transition center on market-based mechanisms: integrated supply chains that reduce renewable energy costs region-wide, investment protections enabling cross-border energy infrastructure projects, and regulatory harmonization facilitating clean technology standardization. The identified weaknesses include absence of mandatory renewable energy targets, technological capability disparities between developed and developing members, and limited institutional mechanisms for climate policy coordination beyond voluntary cooperation frameworks.

The study's central finding is that the RCEP's energy transition influence operates asymmetrically: it strongly supports renewable energy adoption through economic channels while offering minimal support for unified decarbonization policies due to its lack of explicit environmental governance frameworks.

6.2 Theoretical and methodological contributions

This research contributes to international relations theory by demonstrating how regional trade agreements can facilitate energy transition through indirect economic mechanisms while remaining constrained by sovereignty concerns that prevent explicit environmental governance. The medium-high performance scenario identified for RCEP provides a concrete example of how multipolar regional arrangements achieve moderate rather than transformational energy outcomes.

The correlative SWOT methodology demonstrates its utility by revealing the asymmetric pattern of energy transition contributions that traditional analytical approaches might miss. For policy practice, the study reveals that RCEP-style agreements can effectively support certain aspects of energy transition while requiring complementary frameworks for comprehensive climate governance.

6.3 Policy implications and institutional innovations

The research identifies specific institutional innovations that address the governance gaps revealed through our analysis while leveraging the economic integration strengths identified in the medium-high performance scenario. These recommendations reflect our core finding that energy transition requires institutional innovation integrating realist recognition of national sovereignty constraints with liberal emphasis on multilateral market mechanisms.

The proposed complementary frameworks include dedicated energy transition coordination bodies, regional carbon pricing mechanisms, differentiated technology transfer protocols, and joint financing facilities for cross-border renewable energy infrastructure.

These solutions address identified governance gaps while working within the RCEP's existing economic integration framework.

6.4 Future research agenda

This study focused on one global event within the broader setting of the new wave of globalization, relying largely on deductive reasoning. Future research would benefit from an inductive approach—examining how wider global dynamics give rise to particular events rather than the other way around. The present work is only a first step, using available tools to probe the energy implications of RCEP, with limited empirical backing. An inductive perspective could offer richer insight into how the contemporary global system evolves when considered as an integrated whole (Chatzinikolaou and Vladoš, 2024; Vladoš and Chatzinikolaou, 2025b).

In this regard, future research should prioritize comparative studies examining medium-high performance scenario outcomes across different RCEP member states, particularly investigating how technological capability disparities affect energy transition implementation in developed versus developing member economies.

Sector-specific analyses focusing on solar and wind energy development, energy storage technologies, and green hydrogen initiatives within the RCEP framework would provide insights into which renewable energy technologies benefit most from the agreement's economic integration mechanisms and which require the complementary governance frameworks proposed.

Research examining interactions between RCEP provisions and other regional energy initiatives would help identify synergies and potential conflicts in regional energy governance, contributing to more effective institutional design based on realistic medium-high performance expectations.

6.5 Final remarks

The RCEP case demonstrates that regional economic integration can contribute meaningfully to global energy transition through market-based mechanisms, achieving medium-high rather than high-performance outcomes even without explicit environmental governance frameworks. This finding provides realistic expectations for similar regional agreements and highlights the specific complementary institutional innovations required to address identified governance deficits.

The RCEP's asymmetric energy transition contributions—strong in renewable energy deployment through trade and investment channels, limited in decarbonization policy coordination—represent a broader pattern likely to characterize regional trade agreements in the emerging multipolar order. Achieving global climate objectives requires explicit recognition of these limitations and systematic development of complementary frameworks that address the governance gaps identified.

The energy transition requires institutional innovation that transcends traditional trade-environment divisions, integrating the economic efficiency mechanisms where RCEP demonstrates

comparative strength with the climate policy coordination capabilities where it remains deficient. The RCEP experience provides evidence that regional cooperation can contribute to global energy transformation, but only within the medium-high performance parameters established and only with complementary institutional frameworks.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Author contributions

DC: Writing – review & editing, Writing – original draft. CV: Writing – review & editing, Writing – original draft.

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