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ORIGINAL RESEARCH PAPER

Climate Commitments in the Context of Diverse Political Economies: A Comparative Study of Saudi Arabia's Green Initiative and Canada's Net Zero Program

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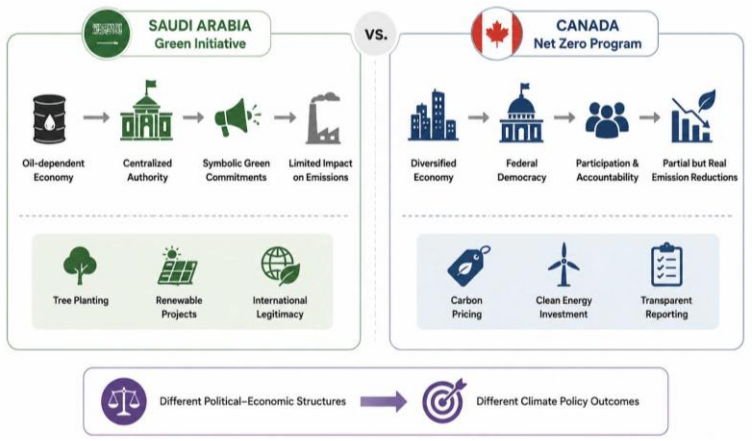
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A B S T R A C T

Climate change has emerged as one of the major challenges in global politics, pushing countries to adopt various approaches to address it, shaped by their own specific political economy frameworks. This study aims to provide a comparative analysis of the climate policies pursued by Saudi Arabia and Canada, explaining how environmental policies and programs are influenced by diverse economic and political structures. The central problem that is addressed in this research is the rationale for why countries with diverse economic and institutional conditions formulate climate commitments in distinct ways. The primary research question is: "How have differences in the political economy structures of Saudi Arabia and Canada affected their climate policies?" To address this, a qualitative comparative methodology has been employed, with data from official documents and scholarly sources. The findings reveal that Saudi Arabia's Green Initiative, despite ambitious goals, primarily serves to legitimize the rentier state amid international pressure, with limited real emissions reductions (projected 12–15% increase by 2030) and fossil investment dominance. Canada's Net Zero Program shows relatively better progress in some indicators (e.g., ~8.5% emissions reduction from 2005, carbon pricing mechanisms), though progress has flatlined recently and remains highly insufficient overall. Both countries face serious challenges in meeting long-term goals, with Saudi Arabia's emissions projected to increase 12–15% by 2030. The rentier framework delays genuine transitions in Saudi Arabia, while Canada's federal system enables partial implementation and transparency despite fragmentation and provincial disparities.



1. Introduction

The global agenda for addressing climate change has led to the development of diverse policies and plans for various countries, including the interplay of political economy, natural resources, and country-specific strategic priorities. This study provides a comparative analysis of Saudi Arabia's Green Initiative and Canada's Net Zero Program, aiming to examine how diverse political economy structures influence their approaches to climate actions. Broadly, the research explores how Saudi Arabia, as a rentier state and relying on hydrocarbon exports, pursues its climate commitments through initiatives such as Vision 2030 and the Saudi Green Initiative. This country aims to achieve carbon neutrality by 2060. Conversely, Canada, with a diversified economy with natural resources, has committed to reducing its greenhouse gas emissions to net zero by 2050 through its comprehensive Net Zero Program.Saudi Arabia, as one of the world's biggest oil producers and exporters, has a rentier economy dependent on hydrocarbons and is moving toward economic diversification. The Saudi Green Initiative, launched in March 2021 by Crown Prince

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Mohammed bin Salman, represents a fundamental component of Vision 2030. The objectives include reducing greenhouse gas emissions, planting 10 billion trees, protecting 30% of land and seas, and attaining carbon neutrality by 2060. This initiative seeks to reduce oil dependency and also increase job creation and sustainable economic growth with investments in renewable energy. However, structural challenges, such as the reliance of the state budget on oil revenues (approximately 70%) and traditional institutions' resistance, complicate the implementation of these policies. The rentier political economy of Saudi Arabia confronts the transition to a green economy with obstacles, including limited industrial diversification and the necessity for social reforms.

In contrast, Canada, as a diversified and developed economy with natural resources such as oil, gas, and forests, has adopted a distinct approach. Canada's Net Zero Program, based on the Canadian Net-Zero Emissions Accountability Act enacted in 2021, aims to achieve a 40-45% greenhouse gas emissions reduction by 2030 (relative to 2005 levels) and achieve Net-zero by 2050. This program includes carbon pricing mechanisms (such as the federal carbon tax), investments in clean technologies, and supporting green industries. Canada's political economy, which combines market-oriented capitalism with governmental intervention, enables the implementation of climate policies through cooperation with the private sector and provinces. Nevertheless, challenges such as the dependency of provinces like Alberta on the shale oil industry and federal-provincial tensions complicate unified execution.

The primary research question of the present study is: How do divergent political economy structures influence policies for combating climate change and achieving environmental objectives? To answer this, the study examines the role of green economy principles and the United Nations Sustainable Development Goals (SDGs) in the strategies of the two countries. In Saudi Arabia, the challenges of a fossil fuel dependency include resistance to reducing oil production, a shortage of local green technologies, and the need for foreign investment. However, opportunities such as its geographical suitability for solar energy and substantial sovereign wealth funds could advance the speed of the energy transition. In Canada, powerful regulatory frameworks, such as the carbon pricing system implemented since 2019, have created incentives for emission reductions in sectors such as industrial, transportation, and building. This approach leads to emission reductions and also strengthens economic growth through technological innovations.

This study also examines the effect of differing governmental capacities and regulatory frameworks on the implementation of climate policies, exploring how different governance structures affect the transition to a low-carbon economy. In Saudi Arabia, the authoritarian structure and concentration of power within the royal family facilitate rapid decision-making but severely limit transparency and public participation. In contrast, Canada's democratic federal system offers more transparent policy implementation, but with challenges in coordination across governmental levels. Ultimately, this research aims to identify optimal strategies that can be adopted by other countries, particularly those with a rentier structure similar to that of Saudi Arabia, to address the complexities of decarbonization within their unique political and economic frameworks.

To address the research question, this research is structured into several sections. Following the introduction, the literature review synthesizes debates on the political economy of environmental policies, rentier state theory, and federal democratic systems and identifies the gaps that justify the comparative approach of this study. The methodology section outlines the qualitative comparative design, data sources, and analytical tools that are applied. This is followed by the conceptual framework, which integrates rentier state theory and comparative political economy to provide the theoretical lens of the analysis. The subsequent sections present case analyses of Saudi Arabia's Green Initiative and Canada's Net Zero Program, each examined in relation to their political and economic structures. The comparative analysis section then brings these findings together to highlight convergences and divergences in climate policymaking in the two cases. Lastly, the conclusion section reflects on the implications of these insights for broader debates on decarbonization, particularly for hydrocarbon-dependent states.

To provide a comprehensive foundation to examine Saudi Arabia and Canada's climate commitments, this section synthesizes key studies on the political economy of the environment, focusing on how economic structures, power dynamics, and institutional factors shape environmental policies and it also examines research on rentier state theory implications for hydrocarbon-dependent economies like Saudi Arabia, alongside research on federal democratic systems and market-oriented approaches in diversified economies such as Canada. Reviewing existing literature on the Saudi Green Initiative and Canada's Net Zero Program, this section identifies gaps in current literature and highlights the need for a comparative perspective to explain different pathways in climate action.

Conigrave [1], in the OECD Economics Department Working Paper titled "Canada's transition to net zero emissions," examines Canada's ambitious goal of achieving economy-wide net-zero GHG emissions by 2050, which requires deep sectoral transformations amid federal-provincial challenges. The key points of this working paper include emissions primarily from energy (oil/gas, transport, buildings); policy frameworks like the 2021 Net-Zero Emissions Accountability Act and carbon pricing for efficiency; obstacles in coordination, and economic diversification from fossil fuels; and methane regulations; economic impacts involving job transitions and adaptation costs (e.g., floods, wildfires), with projections showing feasibility via innovation and international cooperation. This analysis highlights the significance of the present research, which contrasts Saudi Arabia's rentier-driven Green Initiative (often symbolic) with Canada's federal, accountable Net Zero Program. By investigating how political economies shape policy efficacy and equity, it addresses Conigrave's [2] emphasis on governance barriers, bridging gaps in comparative studies for sustainable global transitions.

Besley and Persson [3], in their paper "The Political Economics of Green Transitions," developed a dynamic model to analyze how consumption and production patterns shift toward sustainability, from traditional Pigouvian tax approaches by incorporating endogenous values and limited political commitment. Key points of the study include a two-way complementarity between evolving consumer values and firm technologies, leading to potential market failures like "green traps" where economies move to suboptimal brown steady states or slow transitions. Under electoral politics without commitment, office-motivated parties set taxes/subsidies on brown/green goods, but interactions with market failures can prevent or delay welfare-improving transitions, as politicians prioritize current voters over future generations. This work highlights the significance of the present research, which compares Saudi Arabia's rentier-driven Green Initiative (potentially open to legitimacy-focused greenwashing) with Canada's democratic, federal Net Zero Program, emphasizing participatory mechanisms. By empirically examining how diverse political economies influence transition paths, it addresses Besley and Persson's [3] study in real-world political constraints and value dynamics, filling gaps in comparative analyses of authoritarian versus democratic systems in achieving decarbonization goals.

Alomari and Heffron [4], in their study article "Utilising law in the transition of the Kingdom of Saudi Arabia to a low-carbon economy," employed mixed methods to examine the role of environmental principles (sustainable development, precautionary, preventive, polluter pays) in Saudi Arabia's governance amid Vision 2030. The research states that these principles lack robust legal status, functioning as latent, non-dynamic ideas rather than enforceable tools; practical challenges include suboptimal EIA implementation, weak monitoring by GAMEP, fossil fuel subsidies countering polluter pays, and limited precautionary application due to capacity issues. Vision 2030 holds transformative potential if principles are explicitly legislated and popularized to fill gaps, but current generalizations overlook contextual nuances in Middle Eastern jurisdictions. This study emphasizes the relevance of the present research, contrasting Saudi Arabia's Green Initiative, which is tied to Vision 2030's reforms but hindered by governance lacunae, with Canada's accountable Net Zero Plan, and by analyzing political economy influences on legal frameworks, it addresses calls for nuanced, comparative approaches to equitable decarbonization.

Sim [5], in research titled "Low-carbon energy in the Gulf: Upending the rentier state?" examines whether the adoption of renewables and nuclear energy in the Persian Gulf monarchies can mitigate the hydrocarbon-based 'resource curse' affecting revenue volatility, jobs, and private sector development. The research states that low-carbon projects, despite ambitious targets, primarily reinforce rentier structures by freeing hydrocarbons for export (increasing volatility), generating limited jobs post-construction (mostly in utility-scale state-controlled systems), and offering roles for private firms in distributed solar without challenging state dominance. The research argues that these initiatives boost the regime's legitimacy and survival amid global energy transitions, rather than fostering diversification or 'energy democracy', as evidenced by the UAE and Saudi leadership. This study emphasizes the relevance of the present research, which contrasts Saudi Arabia's Green Initiative (potentially a tool for rentier perpetuation) with Canada's participatory Net Zero Program. By comparing authoritarian rentier and democratic federal approaches, it builds on Sim's insights into how low-carbon policies in resource-dependent states may deepen the existing power dynamics, addressing gaps in cross-system analyses for sustainable transitions.

Al Yousif [6], in a study titled "Renewable Energy Challenges and Opportunities in the Kingdom of Saudi Arabia," employs Leontief's input-output model to assess renewable investments' economic impacts, focusing on solar (PV/CSP) and wind amid Saudi Arabia's high oil consumption (3M barrels/day in 2018, projected to 8M by 2050). The research states that renewables promise diversification, sustainable jobs, reduced pollution, and energy efficiency, but face challenges like high costs, technical issues (dust, heat), and funding shortages. Scenarios of 25B, 50B, and 85B SAR investments over 2020-2025 estimate GDP value added at 2.7%, 4.7%, and 6.0%, generating 44K, 90K, and 150K jobs. The study supports localizing supply chains to boost non-oil sectors like construction and manufacturing. This analysis highlights the significance of the present research, which contrasts Saudi Arabia's Green Initiative (vulnerable to rentier inefficiencies and symbolic implementation) with Canada's participatory Net Zero Program. By exploring divergent political economies' effects on renewable transitions, it also addresses Al Yousif's emphasis on overcoming structural barriers.

Boyce [7], in a working paper titled "Political Economy of the Environment: A Look Back and Ahead", contrasts neoclassical environmental economics, which focuses on net costs and benefits, with political economy approaches

with emphasis on their distribution among competing groups. The study includes analyzing environmental degradation through questions such as who benefits, who loses, and why winners impose costs on losers, often due to inequalities in purchasing and political power. Boyce reviews evidence illustrating that environmental harms affect marginalized communities (e.g., racial minorities and low-income groups) and that wider inequalities exacerbate overall degradation. Normatively, the study advocates criteria such as safety, sustainability, and justice over mere efficiency. This framework highlights the importance of the present research, which compares Saudi Arabia's rentier state-driven Green Initiative with Canada's federal democratic Net Zero Program. By examining how different political economies shape climate policies, it addresses Boyce's call for a deeper analysis of power distributions' environmental impacts, revealing gaps in how rentier and diverse economic

systems navigate decarbonization and legitimacy.The existing literature on the political economy of environmental policies reveals critical insights on how economic dependencies, power distributions, institutional constraints, and value dynamics influence green transitions, as evidenced by analyses of rentier state challenges in hydrocarbon-reliant economies and participatory mechanisms in diversified democratic systems. Studies such as Boyce [7], Besley and Persson [3], Sim (2020) [5], Al Yousif [6], Conigrave (2023) [1], and Alomari and Heffron (2021) [4] highlight issues such as legitimacy-driven greenwashing, market failures, governance lacunae, and symbolic implementations, they also focus on individual contexts or theoretical models, leaving a notable gap in cross-system comparative evaluations. This research bridges these through a qualitative comparative approach, comparing Saudi Arabia's rentier-driven Green Initiative with Canada's federal Net Zero Program to uncover pathways for equitable decarbonization, advancing scholarly discourse on sustainable climate action in divergent political economies.

Building on the identified research gaps from the literature review, the methodology section illustrates the qualitative comparative approach employed to investigate how political economy structures shape climate policies in Saudi Arabia and Canada. Adopting a most different systems design to maximize analytical leverage, this study draws on secondary data from official documents, government reports, and scholarly sources, to delineate causal linkages between institutional variables and policy outcomes

The examination and comparison of the climate commitments of Saudi Arabia and Canada necessitate theoretical frameworks capable of analyzing the interactions among political, economic, institutional, and discursive factors, while providing a precise understanding of the drivers and constraints that shape climate policies, and addressing the influence of variables such as power distribution and stakeholder interests. In this context, the theoretical framework of the present study, drawing upon rentier state theory and a comparative political economy approach, seeks to furnish a comprehensive depiction of the structural, institutional, and ideological factors impacting the climate policy formulation process and the pathways toward a low-carbon economy in these two countries. Rentier state theory is used to understand the challenges and opportunities that oil-dependent nations like Saudi Arabia face in diversifying their economies and transitioning to a green economy [7]. Additionally, the application of a comparative political economy approach illustrates how different institutional structures affect the implementation of climate policies in these two countries. This approach enables a deeper insight into the effects of domestic conditions on climate action capacity and their interplay with international climate regimes. The political economy of the environment, through the expansion of economic analysis, examines how the distribution of wealth and power influences the outcomes of environmental policies and analyzes collective processes in adopting public economic decisions, including environmental policies. In the context of climate change, this entails analyzing entrenched economic structures and assessing their impact on policy choices and resistance to transitioning toward more sustainable models [8]. This framework holds particular significance in analyzing rentier states where oil and gas revenues play a pivotal role in shaping political stability and economic development, constituting a substantial portion of the government's budget [9]. Such countries, due to the economic interests derived from rentier revenues, generally exhibit a lesser inclination toward developing renewable energy sources, which poses a significant challenge to achieving carbon emission reduction goals [10].

Building on these theoretical frameworks, three specific causal mechanisms are proposed to link political-economic structure to climate policy outcomes. These mechanisms make the causal logic of the study explicit and are empirically traced in the comparative analysis section.

Mechanism 1: Fiscal Dependency: When a state's fiscal revenues are structurally dependent on hydrocarbon rents, climate policies that threaten oil production will be resisted or rendered symbolic. The causal chain is:



Figure1. casual chain of Mechanism 1

Source: Research finding

Mechanism 2: Institutional Accountability: The degree of democratic accountability and civil society participation determines whether climate commitments are subject to meaningful monitoring and enforcement. The causal chain is:



Figure2. casual chain of Mechanism2

Source: Research finding

Mechanism 3: Legitimacy Function: In rentier states facing international pressure for decarbonization, climate policies function primarily as legitimacy tools rather than transition instruments. The causal chain is:



Figure3. casual chain of Mechanism3

Source: Research finding

1.1. Rentier State and Saudi Arabia's Green Initiative Program

The theory of the rentier state, as one of the foundational frameworks for understanding the political economy of oil-producing countries, is predicated on the assumption that states deriving a substantial portion of their national income from external rents (such as oil exports) exhibit distinct political, social, and economic characteristics compared to others. The reliance of these economies on external and non-productive revenues, rather than productive economic activities or domestic taxation, transforms the relationship between the state and the citizens and leads to a diminished need for strong social contracts and democratic accountability. This financial and revenue structure enables extensive public expenditures without the necessity of a taxation system, thereby decoupling the state's financial stability from productive capacity or civic participation. The absence of a direct fiscal linkage between the state and society results in reduced demands for political representation, and as Samuel Huntington argues, lower taxation levels are associated with diminished public incentives for demanding accountability [11].

Given that rentier states depend on external rents for a significant portion of their income rather than domestic production or citizen taxation, oil royalties are regarded as compensation for resource extraction costs, enabling governments to accrue substantial profits through monopolistic positions [10,11]. This financial independence causes the state to distance itself from social demands due to its lack of need for direct taxation from the populace, thereby weakening traditional mechanisms of accountability [12]. Under such conditions, the social contract is often predicated on the provision of welfare services and employment opportunities in exchange for political compliance—a phenomenon known as the "rentier effect," which fosters political inertia and reduced civic engagement [13].

Rentier states distribute oil wealth through extensive welfare benefits, subsidies, and public sector employment, in exchange for political loyalty. In this context, the primary role of the state is wealth allocation rather than the development of productive policie [14], which leads to the weakening of the private sector and hinders economic diversification, as opportunities are defined within the governmental framework. Consequently, the state emerges as the principal economic actor, and the development of an independent private sector encounters substantial barriers. Although this model contributes to maintaining political stability, it constrains the growth of civil society and a diversified economic structure, thereby generating vulnerability to fluctuations in global energy markets. The global decarbonization trend poses a serious threat to the future demand and value of hydrocarbons, thereby necessitating urgent diversification [15]. Under these circumstances, initiatives such as Saudi Arabia's "Vision 2030" or green projects are positioned not as environmental policies per se, but as strategic imperatives for survival and the preservation of economic stability [16].

In Saudi Arabia, climate policies are directly intertwined with international energy security and the continuity of fossil fuel exports. These policies, rather than instigating fundamental economic transformations, serve as a means to legitimize the ongoing oil production under the guise of environmental responsibility. Public expectations arising from the rentier social contract, including subsidies and low-cost services, also engender resistance to climate reforms, sensitizing citizens' mindsets against energy price increases or subsidy reductions, and complicating the acceptance of renewable technologies [16].
The application of rentier state theory in analyzing Saudi Arabia's Green Initiative illuminates critical dimensions of the nature and function of this policy. In this regard, the Saudi Green Initiative can be interpreted not merely as an environmental project but as an endeavor to redefine the political and economic legitimacy of Saudi Arabia. This initiative forms part of the broader Vision 2030 framework, which ostensibly aims at economic diversification and

reducing oil dependency. However, from the perspective of rentier state theory, this policy functions more as a strategic instrument for reproducing the existing rentier structure rather than effecting genuine transformation in wealth production patterns. The Saudi government, leveraging substantial oil revenues, finances massive green projects such as planting billions of trees or investing in renewable energy, yet the primary reliance of the state budget and national wealth on oil rents persists.

Furthermore, the Saudi Green Initiative serves as a tool for reconstructing Saudi Arabia's international image amid global pressures for energy transition and carbon emission reductions. In other words, this policy enables the Saudi state to portray itself discursively as a "responsible" actor in addressing climate change while maximizing the exploitation of oil rents. Consequently, the Green Initiative represents a novel rentier strategy that supplements traditional oil resources with green investments and access to global financial and technological markets, rather than signifying a true departure from the rentier economy. At the domestic level, the Green Initiative can also be analyzed as a form of political rent, wherein the state manages social groups' access to new economic and employment benefits through sustainable development projects, thereby reproducing political loyalty. Even under the veneer of green policies, the rentier logic prevails, with the state utilizing the distribution of new rents to ensure political stability instead of fostering genuine participation and accountability.

Evidence for greenwashing are provided by analyzing the investment and implementation patterns. Between 2024 and 2025, upstream oil and gas investment totaled approximately USD 40 billion, whereas annual clean energy investment was only USD 7–10 billion [17], resulting in a 4–6:1 ratio in favor of fossil fuels. By late 2025, renewable capacity connected to the grid reached 12.3 GW, representing just 2–3% of total electricity generation (Saudi Green Initiative, 2025). At the same time, oil production increased in 2025, and emissions are projected to rise by 12–15% by 2030 compared to 2023 levels [18-20]. The contrast between ambitious targets, such as carbon neutrality by 2060, and the ongoing predominance of fossil fuels is consistent with established definitions of greenwashing [21].

Generally, the analysis of Saudi Arabia's Green Initiative through the lens of rentier state theory indicates that this project apparently seeks to reduce oil dependency and diversify the economy; in practice, it primarily constitutes an effort to reproduce traditional rentier mechanisms. The Saudi government, by integrating oil rents with “green rents”, aims to address domestic needs (political and economic legitimacy) and external imperatives (responding to international pressures).

1.2. The Federal Government and Canada's Net Zero Program

Canada, as a developed federal democracy, presents a markedly different exemplar from rentier states, with its climate policy influenced by a multilevel governance structure and its distinctive form of capitalism. Unlike rentier states (where economic decision-making is centralized), Canada's federal system distributes authority between the national government and provincial governments, leading to diverse approaches in climate policy, approaches that reflect provincial economic interests and varying political ideologies. This situation can result in a complex interplay between competitive federalism and cooperative federalism, enabling provinces to implement independent carbon pricing mechanisms or specific requirements for renewable energy [21]. In federal systems like Canada, legal jurisdictions are divided between national and subnational (provincial) governments, and environmental issues, which possess a pervasive and transboundary nature, are generally placed in shared domains. This decentralization, while facilitating the adaptation of policies to local conditions, can simultaneously engender fragmentation and inconsistency in national-level environmental policies, thereby diminishing their effectiveness [22]. Furthermore, the division of jurisdictions in certain cases impedes the implementation of comprehensive national climate policies, as provincial governments—particularly those financially dependent on resource extraction—may refrain from enacting environmentally supportive measures [23].The implementation of climate policies in Canada is heavily reliant on collaboration between the federal government and provinces. While the federal government can sign international agreements such as the Paris Accord, executive authority generally resides with the provinces, which can lead to disputes regarding legal jurisdictions and priorities; to the extent that some provinces resist federal initiatives (such as carbon pricing) to avoid forfeiting their competitive advantages. The outcome of this dynamic is the prioritization of economic growth and resource development by provinces, even when it conflicts with national climate objectives, thereby intensifying interprovincial competition and undermining the cohesion of national policies [24]. With this, the transition to net zero in Canada is deeply influenced by negotiations and alignment between the federal and provincial governments, necessitating diverse tools such as compensatory agreements to mitigate investment risks in green technologies, as well as active participation from Indigenous communities.

Given that capitalist economies can be positioned along a spectrum from liberal market economies (LME) to coordinated market economies (CME), these models influence technological choices, policies, and the pace and direction of energy transitions. In the case study of Canada, the amalgamation of liberal market economy features (with an emphasis on competition and private sector initiatives) with elements of coordination in resource management shapes the country's approach to decarbonization. Achieving objectives such as carbon emission reductions by 2035 requires balancing free market mechanisms with governmental coordination and precise policy calibration; this is because, according to statistics, 35 percent of Canada's commodity exports are linked to polluting sectors, which underscores the importance of economic competitiveness and the risk of “Carbon Leakage”. Additionally, Canada ranks among the largest producers of oil and gas while also being a major consumer of clean electricity, and this duality complicates the energy transition pathway, necessitating a strategic and extensive shift from fossil fuels. This transition not only demands substantial investments in renewable energy infrastructure and innovative carbon capture and removal technologies but also encounters resistance from influential groups opposed to climate policies, often supported by conservative think tanks [25]. Despite these obstacles, the Canadian government is committed to reducing greenhouse gas emissions by 40 to 45 percent from 2005 levels by 2030 and achieving net zero emissions by 2050, the realization of which requires the development of innovative technologies, investments in clean energy, enhancement of research and development in electrification technologies, and coordination between federal and provincial government policies [26].

Nevertheless, Canada's federal structure, while potentially leading to policy incoherence, also enables local innovation, allowing provincial governments to exert influence through veto rights over national policies, thereby delaying the implementation of national climate measures. Federal-provincial disputes over carbon pricing exemplify this dynamic, demonstrating that the federal system, although it slows national action, also facilitates the experimentation of local policies and adaptation to region- or province-specific conditions [27]. However, local successes often remain constrained due to the absence of a cohesive national framework [28]. On the other hand, despite Canada's inclination toward a "free market economy," which prioritizes market-based economic solutions, it encounters resistance from industries in certain instances. While market-based mechanisms such as carbon pricing are more acceptable in democratic systems, the influence of fossil fuel industries and their preference for regulatory controls can undermine the efficacy of these approaches, indicating that policy design in free market economies confronts significant complexities arising from political-economic pressures and entrenched interests.

Canada’s federal system leads to big differences between provinces. Alberta, which depends on oil sands, has pushed back against federal carbon pricing and uses a weaker TIER system with lower prices (about CAD 18 per ton in 2025). Quebec, on the other hand, has a strong cap-and-trade system connected to California, bans new hydrocarbon projects, and gets over 90% of its power from hydroelectricity. British Columbia also supports renewables and carbon pricing. These differences make national coordination harder, but they also allow for local innovation and grassroots action, which has helped Canada make some progress in reducing emissions, even with these challenges.

Generally, unlike rentier states that rely on natural resource revenues to stabilize legitimacy and ensure survival, the Canadian government operates based on a diversified economy, democratic institutions, and civil society participation. Although it remains partially dependent on natural resources (particularly oil and gas in Alberta) to date, sectors such as services, finance, technology, and knowledge-based industries contribute substantially to gross domestic product, resulting in the absence of absolute governmental reliance on energy rents. Consequently, climate policies are not solely tethered to governmental revenue considerations and political survival. At the institutional level, Canada's federal structure and party system have engendered climate policies within a multilevel and competitive arena, wherein the federal government must interact with provincial governments, industrial pressure groups, and social and environmental movements to formulate and execute them. Therefore, the Net Zero Program not only reflects the central government's will but also emerges as the outcome of interactions among institutions, stakeholders, and public opinion. Transparency and accountability within this structure have ensured that Canada's climate policies, in contrast to rentier models, emphasize efficacy, public acceptance, and long-term adaptability. Ultimately, from an identity perspective, Canada's Net Zero Program can be viewed as a reflection of the country's role in the international system as a responsible and norm-oriented actor. Unlike rentier states, which primarily seek to mitigate external pressures and manage internal legitimacy, Canada, through its emphasis on multilateralism and climate collaborations, endeavors to consolidate its image as an ethical and political leader in the fight against climate change. In this manner, the analysis of Canada's Net Zero Program reveals that a diversified economic structure, accountable institutions, and international normative objectives constitute the principal pillars of this policy, distinguishing it from rentier patterns such as Saudi Arabia's Green Initiative.

2. Method

2.1. Methodology

This study employs a qualitative comparative approach within a Most Different Systems Design (MDSD) framework to examine the climate commitments of Saudi Arabia and Canada. This design maximizes analytical leverage by selecting cases that differ maximally on the independent variable, political

economy structure, while allowing systematic comparison of the dependent variable, climate policy outcomes. Saudi Arabia represents a rentier oil economy with authoritarian governance, and Canada exemplifies a diversified market-oriented economy with a democratic federal system. The research question asks "how" structural differences shape policy; a question requiring causal-process analysis rather than variance explanation. This epistemological orientation is methodologically incompatible with regression or econometric modeling for two reasons: (a) the key independent variable, "political-economic structure," is a complex institutional arrangement that cannot be reduced to a numerical quantity without distorting its meaning; and (b) the goal is to trace causal pathways and mechanisms, which is best achieved through process tracing and structured comparison. This methodological choice is consistent with established practice in comparative political economy and institutional analysis.

Data collection is derived from secondary sources, encompassing official documents, government reports, scholarly articles, and reports from international organizations such as the United Nations and the OECD. Methodological limitations include restricted access to governmental data and an emphasis on secondary sources. This research focuses on economic-political dimensions and does not encompass social aspects such as climate justice and just transition. Ultimately, this methodology is limited yet has profound generalizability, particularly for nations characterized by rentier political-economic structures reliant on hydrocarbons. This research applies a qualitative comparative, within a most different systems framework to explain mechanisms connecting political economy structures (independent variable) to climate policy results (dependent variable). Effectiveness of climate policies is operationally defined as the degree of real progress in reducing greenhouse gas (GHG) emissions and implementing climate measures, measured by the following indicators:

Percentage change in total GHG emissions from a baseline year (2005 for Canada; recent levels for Saudi Arabia) to the latest available data.

Progress toward 2030 targets. Share of renewables in electricity generation and installed capacity. Approximate ratio of investment in fossil fuels (upstream oil/gas) versus renewables [29]. These indicators allow for objective comparison. However, data for Saudi Arabia depend more on international sources because of limited domestic transparency. Also, a content analysis of key policy documents was also conducted: Saudi Green Initiative (2021) and Vision 2030 progress reports, which emphasize goals versus actual implementation. Additionally, Canada's Net-Zero Emissions Accountability Act (2021) and its annual progress reports show mandatory reporting but limited overall progress. This strengthens the evidence beyond secondary literature.

3. Results and Discussion

3.1. Comparative Analysis of Saudi Arabia's Green Initiative and Canada's Net Zero Program

In the comparative study of climate commitments, the juxtaposition of Saudi Arabia's Green Initiative and Canada's Net Zero Program reveals that economic and political structures exert a profound influence on environmental policies. Saudi Arabia, as a rentier state dependent on hydrocarbon exports, launched the Green Initiative in 2021 as part of Vision 2030 to aid in reducing oil dependency; whereas Canada, with a diversified economy and a federal democratic system, formulated the Net Zero Program based on the Net-Zero Emissions Accountability Act in 2021. This comparison not only highlights structural differences but also illustrates how economic, political, and institutional factors impact the implementation of climate policies and the attainment of sustainable objectives. By examining aspects such as economic structure, objectives, challenges, and governance approaches, a deeper understanding of the barriers and opportunities in transitioning to a low-carbon economy in these two countries can be achieved.

Table 1. Comparative Analysis of Environmental Policies in Saudi Arabia and Canada

Dimension of Comparison	Saudi Arabia's Green Initiative	Canada's Net-Zero Plan
Economic Structure	Rentier and oil-dependent (approximately 70% of revenues from oil); economic diversification pursued through state-led investments	Diversified and market-oriented, encompassing hydrocarbons, services, and technology; lower dependence on fossil fuels (35% of exports from high-emission sectors)
Climate Goals	Reduction of greenhouse gas emissions; planting of 10 billion trees; protection of 30% of land and marine areas; carbon neutrality by 2060 through a circular carbon economy	Reduction of emissions by 40–45% by 2030 (relative to 2005 levels); net-zero by 2050; strong emphasis on clean technology and innovation
Challenges	Resistance from traditional institutions; lack of indigenous technology; fiscal dependence on oil; societal resistance to subsidy reforms	Federal–provincial tensions (e.g., Alberta); risk of carbon leakage; resistance from fossil fuel industries; policy incoherence
Opportunities	Geographical advantage for solar energy; sovereign wealth fund resources; rapid decision-making capacity in an authoritarian system, yet remained unrealized due to rentier priorities favoring fossil fuel exports.	Robust regulatory frameworks; active private sector participation; provincial-level innovation; support for green industries
Governance Approach	Authoritarian and centralized within the royal family; limited transparency; focus on international legitimacy	Federal democratic system; public and provincial participation; high transparency; combination of competition and cooperation

Source: Research finding

The Saudi Green Initiative and Canada's Net Zero Program are influenced by the economic and political structures of these two countries. In Saudi Arabia, the rentier economy, predicated on external revenues from oil, has transformed the Green Initiative into a tool for diversification; however, this policy often functions as a veneer for maintaining dependency on hydrocarbons—or, in other words, as greenwashing. For instance, investments in renewable energy and tree planting are funded by oil revenues, while challenges such as limited industrial diversification and resistance to reducing oil production impede genuine transition. Conversely, Canada, with a diversified economy where service and technology sectors predominate, advances its Net Zero Program through market mechanisms like carbon taxation. This structure enables the management of challenges, such as Alberta's dependency on shale oil, via federal-provincial negotiations, and opportunities like investments in clean technology ensure sustainable economic growth.

From the perspective of challenges and opportunities, the comparison between the two countries illustrates how political structures impact the implementation of climate policies. Saudi Arabia structurally contends with challenges such as the need for foreign investment and resistance from social groups and influential stakeholders against subsidy reforms; nevertheless, opportunities, including a favorable geographical position for solar energy and rapid decision-making in an authoritarian system, provide potential for accelerating the transition. This initiative frequently operates as a rentier strategy that amalgamates oil rents with "green rents." Canada, on the other hand, faces challenges like provincial-federal tensions and the risk of carbon leakage but leverages opportunities such as robust regulatory frameworks and private sector participation to enhance policy efficacy. For example, the carbon pricing system implemented since 2019 has generated incentives for emission reductions in industrial sectors, whereas Saudi Arabia grapples with a shortage of indigenous technology to achieve its objectives. These disparities ultimately underscore that Canada's opportunities are grounded in diversification and collaboration, while Saudi Arabia's rely on vast financial resources and oil rents. Table 2 presents a standardized comparison of key effectiveness indicators based on the operational definition provided in the methodology section. These indicators—drawn from reputable international sources such as Climate Action Tracker (2025), IEA (2025), and Climatescope (2025) —enable a more testable and objective assessment of policy outcomes beyond descriptive narratives. The data highlight that while Canada exhibits modest progress in emissions reduction and carbon pricing coverage, both countries remain far from achieving their 2030 targets, with Saudi Arabia showing continued emissions growth and fossil fuel investment dominance. Provincial variations in Canada (e.g., stronger performance in Quebec versus weaker in Alberta) further nuance national-level comparisons.

Table 2. Comparison of Key Effectiveness Indicators for Climate Policies (2024–2025 data)

Indicator	Saudi Arabia (Saudi Green Initiative)	Canada (Net-zero Program)	Source (2025-2026)
Overall Climate Action Tracker rating	Critically Insufficient	Highly Insufficient	Climate Action Tracker (2025)
Carbon Pricing Mechanism (2025 level)	None	Federal/provincial ~CAD 95/tCO_2e (consumer portion zeroed April 2025)	Government of Canada (2025); ICAP
Sectoral Coverage	Limited (Mostly symbolic projects)	~50% of emissions (Mainly industrial)	Climate Action Tracker (2025)
Renewables share in electricity	~2-3% (installed capacity ~12.3 GW)	Varies by province; national ~20-30%	IEA (2025); Renewables Now
GHG emissions change	Projected 12-15% increases by 2030 vs. 2023	~8.5% reduction from 2005 to 2023-2024 (flatlined in recent years)	Climate Action tracker (2025); ECCC
Fossil vs. renewables investment ratio (approx. 2024-2025)	~4-6:1 (upstream oil/gas ~USD 40 billion vs. renewables ~7-10 billion annually)	More balanced, with shift toward clean energy	IEA (2025) Climatescope (2025)

Source:Research finding

Ultimately, the governance approaches of the two countries reveal profound differences in transparency and participation, which influence the long-term outcomes of climate policies. Saudi Arabia's centralized and authoritarian structure facilitates swift decision-making, yet limited transparency and the absence of public participation render these policies symbolic, primarily

employed to legitimize the country's international image. Canada, with its federal and democratic system, advances policies through dialogue and coordination, which, although resulting in a slower process, enhances sustainability and public acceptance. For some oil-dependent states, possessing a rentier structure akin to Saudi Arabia, this research indicates that without institutional reforms and diversification, climate policies remain symbolic; whereas the Canadian model highlights the importance of local participation and transparency. In general, these differences demonstrate that in rentier economies, climate and environmental policies evolve into tools for survival and international prestige, but in democratic systems, they transform into participatory processes that, in addition to coordination across various governmental levels, benefit from social engagement and support.

3.2.Causal Mechanisms: A Process Tracing Approach

Moving beyond descriptive comparison, this section traces the causal mechanism through which political-economic structure produces divergent climate policy outcomes in the two cases. Three mechanisms, identified theoretically in the conceptual framework, are empirically traced here using evidence from both countries. The analytical procedure follows the within-case process tracing logic developed by Beach and Pedersen (2013): for each mechanism, the theoretical causal chain is identified, empirical fingerprints in each case are presented, and a counterfactual test evaluates whether the evidence is consistent with the proposed pathway.

Mechanism 1 - Fiscal Dependency:



Figure4. Fiscal Dependency of Mechanism 1

Source: Research finding

Evidence in Saudi Arabia: Oil revenues constitute approximately 70% of the state budget. This fiscal structure creates a direct political incentive for the ruling elite to protect oil production volumes. Observable fingerprints include: upstream oil investment of USD 40 billion annually versus USD 7–10 billion in renewables [31]; Vision 2030's reliance on National Transformation Program funding derived from Aramco profits; and Saudi Arabia's promotion of a "circular carbon economy" framework at COP28 that explicitly preserves space for continued fossil fuel use through carbon capture rather than production cuts. These observable indicators are precisely what the fiscal dependency mechanism predicts.

Evidence in Canada: Canada exhibits partial fiscal dependency, concentrated in Alberta, where oil sands royalties contribute approximately 25% of provincial revenues. This subnational fiscal dependency explains Alberta's consistent resistance to federal carbon pricing and its use of the weaker TIER system. However, at the federal level, diversified revenue sources reduce the fossil fuel dependency effect, allowing the federal government to maintain and expand carbon pricing. This within-country variation provides additional support for the mechanism: where fiscal dependency is high (Alberta), climate action is weakest; where it is low (Quebec, British Columbia), climate action is strongest.

Counterfactual: If fiscal dependency were not the operative mechanism, we would not expect to observe the strong alignment between oil revenue dependence and climate policy marginalization across both cases and sub-cases. The consistent pattern across different scales supports the mechanism's validity.

Mechanism 2 - Institutional Accountability:



Figure5. Fiscal Dependency of Mechanism 1

Source: Research finding

Evidence in Canada: The Canadian Net-Zero Emissions Accountability Act (2021) mandates five-year emissions reduction milestones, independent review by the Canadian Net-Zero Advisory Body, and annual ministerial reporting to Parliament. Observable accountability outcomes include: the federal carbon price increased from CAD 20/tCO₂e in 2019 to CAD 80/tCO₂e in 2024; the Emissions Reduction Plan (2022) was subjected to critique by the Parliamentary Commissioner of Environment and Sustainable Development, resulting in documented policy revisions; and Supreme Court confirmation of federal carbon pricing authority in 2021 followed provincial legal challenges.
Evidence in Saudi Arabia: Institutional accountability mechanisms are absent or severely limited. Saudi Arabia has no independent environmental audit body, and no mandatory public reporting on implementation progress beyond government-produced communications. Observable fingerprints include: the absence of any third-party verification of tree-planting claims; the non-disclosure of disaggregated renewable energy capacity data; and Climate Action Tracker's (2025) [32] "Critically Insufficient" rating partly due to lack of transparent monitoring.
Counterfactual: If institutional accountability were not causally operative, Canada's oversight mechanisms would produce no observable policy response. In fact, documented instances where oversight bodies' reports directly triggered policy revisions constitute fingerprints inconsistent with a null causal effect.

Mechanism 3 - Legitimacy Function:

Evidence in Saudi Arabia: The Saudi Green Initiative was launched in March 2021, precisely at the period of heightened international pressure following the Paris Agreement review cycle and in the run-up to COP26.



Figure6. Fiscal Dependency of Mechanism 3

Source: Research finding

Fingerprints consistent with this mechanism include: the initiative's emphasis on high-visibility metrics (tree planting, carbon neutrality date) with no binding intermediate targets; the simultaneous announcement of increased oil production capacity expansion; and Saudi Arabia's advocacy at COP28 for carbon capture rather than phase-down of fossil fuels, a position that protects international legitimacy while preserving the rentier model domestically.

Evidence in Canada: Canada's climate policy is also partly driven by international legitimacy concerns, particularly its role as a G7 member. However, the legitimacy function operates differently: in Canada, international commitments create domestic political pressure through civil society and opposition parties, translating external normative pressure into binding domestic legislation. This contrasts with Saudi Arabia's pattern, where international pressure produces symbolic announcements without domestic enforcement mechanisms.

Counterfactual: If legitimacy concerns were not operative, the timing of the Saudi Green Initiative would not align with international pressure cycles, nor would its emphasis fall on high-visibility, low-enforcement metrics. The pattern of announcement without enforcement is the observable fingerprint of the legitimacy function mechanism.

3.3. Cross-Case Synthesis

The process tracing analysis demonstrates that the three mechanisms operate jointly and differently in the two cases. In Saudi Arabia, all three reinforce each other: fiscal dependency reduces incentives for genuine transition; absence of institutional accountability removes enforcement; and the legitimacy function channels international pressure into symbolic policy. The combined effect is a climate policy structurally constrained from achieving real emissions reductions.

In Canada, the mechanisms operate in tension: fiscal dependency exists at the subnational level (Alberta) and creates genuine resistance, but institutional accountability and a transformed legitimacy function partially counteract it. The result is a policy that achieves modest but real progress while remaining far from sufficient. This mechanistic analysis explains why Canada's ~8.5% emissions reduction from 2005, while inadequate, represents a categorically different type of policy outcome than Saudi Arabia's projected 12–15% emissions increase: one is produced by a system with partial accountability; the other by a system where symbolic action is structurally optimal for regime survival.

4. Conclusions

The comparative analysis of Saudi Arabia and Canada demonstrates that economic and political structures play a decisive role in shaping climate policies. The process tracing analysis conducted in this study identifies three causal mechanisms, fiscal dependency, institutional accountability, and the legitimacy function, that together explain why structurally different political economies produce categorically different climate policy outcomes, even when both face similar international pressures for decarbonization.

In Saudi Arabia, all three mechanisms operate in a mutually reinforcing direction. The structural fiscal dependence on oil revenues (~70% of state budget) creates powerful elite incentives to protect hydrocarbon production. The absence of independent oversight and mandatory reporting removes any enforcement pressure on announced targets. And international normative pressure, rather than translating into binding domestic action, is channeled into high-visibility symbolic commitments tree planting pledges, a 2060 carbon neutrality date with no binding intermediate milestones. The combined operation of these three mechanisms explains why the Green Initiative, despite its ambitious framing, functions in practice as a tool for reproducing the rentier social contract under a green veneer, rather than as a genuine transition plan.

Canada, despite federal-provincial frictions (e.g., Alberta's resistance versus Quebec's leadership), has achieved modest emissions reductions (~8.5% from

2005) through reporting mechanisms and pricing, though overall progress remains highly insufficient and has stagnated recently. Although institutional frictions between the federal and provincial governments have at times slowed decision-making and policy implementation, the same structure has also created opportunities for local innovation and the adaptation of policies to the specific conditions of each province. Canada's experience illustrates that even amid political and economic disagreements across levels of government, mechanisms can be developed to advance climate policies based on dialogue, compromise, and shared responsibility. From this perspective, while federalism complicates the policymaking process, it does not obstruct the energy transition; rather, it can provide opportunities for diverse approaches and greater engagement of local actors. The process tracing analysis reveals that the fundamental difference between the two cases lies not merely in institutional form, but in the direction in which causal mechanisms operate. In Saudi Arabia, fiscal dependency, absent accountability, and a legitimacy-driven policy function all point in the same direction, toward symbolic action. In Canada, the mechanisms operate in tension: subnational fiscal dependency (Alberta) pulls against federal accountability mechanisms and international normative commitments, producing a policy that is inadequate but not symbolic. This difference in mechanism configuration, reinforcing versus countervailing, explains why Canada's ~8.5% emissions reduction from 2005, while far from sufficient, is a categorically different outcome from Saudi Arabia's projected 12–15% emissions increase by 2030.For oil-dependent countries with a rentier structure similar to Saudi Arabia, this analysis offers three specific, mechanism-grounded policy implications. First, climate policy reform cannot succeed without addressing the fiscal dependency mechanism directly: states must diversify revenue sources before climate commitments can escape the structural incentive to protect hydrocarbon production. Second, establishing independent oversight institutions, equivalent to Canada's Net-Zero Advisory Body or Parliamentary Commissioner, is a prerequisite for converting announced targets into enforced policy. Third, the legitimacy function can be redirected: if international commitments are designed with binding domestic reporting requirements and civil society access, external pressure can feed into enforcement rather than symbolic announcements. Only by intervening in the causal mechanisms identified in this study, not merely adopting the surface features of another country's climate policy, can oil-dependent states achieve genuine progress toward decarbonization.

Author Contributions

All Authors contributed equally to the methodology, data analysis and findings, conclusion, and the abstract.

Conflict of Interest

The Authors, while observing publication ethics in the referencing, declare the absence of interest of conflict.

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