

INSTITUTIONAL THRESHOLDS AND GREEN GROWTH: AN EXAMINATION OF THE RESOURCE CURSE IN PAKISTAN, INDIA, AND CHINA

Nadia Bibi¹. Wasif Iqbal²

¹*IT Manager, The PEACE Group of Schools & Colleges, Abbottabad, Pakistan*
E-Mail: nadia.awan3333@gmail.com

²*CEO Nations Trading, Doha, Qatar*
Email: gilaniwasif@gmail.com

ABSTRACT

This research investigates the intricate relationships among political institutions, the phenomenon known as the resource curse, and the pursuit of green growth within the contexts of China, India, and Pakistan. Utilising a mixed-methods approach that integrates quantitative analysis with qualitative case studies, this study examines the role of institutional quality as a mediator in the relationship between natural resource abundance and sustainable development outcomes. The results of our investigation indicate the presence of non-linear relationships between governance indicators and green growth, with noteworthy threshold effects identified in each of the three countries examined. The centralised authority in China has enabled the swift execution of green policies; however, this approach has concurrently contributed to the persistence of regional disparities and inefficiencies. The federal structure of India facilitates the opportunity for policy experimentation; however, it encounters significant challenges in achieving uniform implementation across the various states. Pakistan, characterised by its relatively weaker institutional frameworks, demonstrates the most significant manifestations of the resource curse, thereby underscoring the essential need for governance reforms to achieve sustainable development.

The research delineates significant institutional thresholds that, upon being surpassed, result in markedly enhanced outcomes in the adoption of green energy and overall environmental performance. The insights presented herein carry substantial implications for policymakers, indicating that strategically designed institutional reforms possess the capacity to unleash considerable potential for green growth, even within economies that are heavily reliant on natural resources. The comparative analysis further emphasises the significance of context-specific strategies in the realm of sustainable development, given that the distinctive political and economic environments of each nation influence its pathway towards green growth. This research elucidates the significant function of political institutions in alleviating the resource curse and fostering sustainable development, thereby enhancing our comprehension of the various pathways to green growth across different Asian contexts.

Keywords: Political institutions, Resource curse, Green growth, Sustainable development, China, India, Pakistan, Institutional thresholds, Environmental governance, Renewable energy, Comparative analysis, Asian economies

INTRODUCTION

The interplay among the abundance of natural resources, the nature of political institutions, and the trajectory of economic development has emerged as a central theme in the scholarly discourse surrounding development economics. The "resource curse" hypothesis posits that nations endowed with abundant natural resources frequently encounter impediments to economic growth and suboptimal developmental results. This phenomenon has been especially pertinent in developing economies (Li and Tong, 2024). This paradoxical phenomenon calls into question the intuitive assumption that an

abundance of resources inherently results in economic prosperity. Rather, it underscores the notion that an abundance of resources may precipitate governance failures, corruption, and economic stagnation if not managed with efficacy (Mehlum et al., 2024).

In recent years, the discussion regarding the resource curse has developed to include the notion of green growth. Green growth underscores the importance of sustainable economic development, which places a premium on environmental conservation and the judicious utilisation of resources. In contrast to conventional economic growth frameworks, green growth endeavours to harmonise the pursuit of economic development with the principles of ecological sustainability. This approach is particularly pertinent in addressing pressing global issues, including climate change and environmental degradation (ADB, 2024). The alteration in emphasis is especially pertinent for developing economies endowed with abundant resources, where the simultaneous objectives of economic advancement and environmental sustainability frequently stand in opposition to one another. This research endeavours to investigate the intricate relationships among political institutions, the phenomenon commonly referred to as the resource curse, and the concept of green growth within the context of three significant Asian economies: China, India, and Pakistan. The nations in question present intriguing case studies, attributable to their substantial natural resource endowments, heterogeneous political frameworks, and differing degrees of dedication to sustainable development practices. China is distinguished by its centralised governance framework and its ambitious initiatives aimed at environmental sustainability, whereas India presents a contrasting paradigm through its decentralised democratic system, which influences its approach to resource management. Pakistan, in contrast, contends with the presence of weaker institutions and a landscape characterised by political instability, rendering it a compelling case for the examination of the difficulties associated with surmounting the resource curse.

The occurrence of the resource curse exhibits considerable variation among different countries and regions, frequently shaped by the calibre of political institutions and governance frameworks (Mehlum et al., 2024). Robust institutions possess the capacity to alleviate the adverse consequences associated with resource dependence by facilitating transparent management of resources and promoting an equitable allocation of resource rents. In contrast, inadequate institutions frequently intensify the resource curse by promoting corruption and inefficiency. Within the framework of green growth, the significance of political institutions is paramount as they influence the formulation of policies that govern resource extraction, encourage the adoption of renewable energy sources, and implement environmental standards (Nature, 2024).

China, India, and Pakistan encounter distinct challenges in reconciling their economic aspirations with the objectives of sustainable development. The swift pace of industrialisation in China has resulted in considerable environmental degradation; however, it has concurrently catalysed investments in renewable energy and green technologies (ADB, 2024). The federal structure of India facilitates the opportunity for policy experimentation at the state level; however, it frequently leads to discrepancies in the implementation of green initiatives (PwC, 2023). The economic growth of Pakistan is significantly influenced by its dependence on natural resources, a situation further exacerbated by political instability and inadequate governance. This interplay renders the nation especially susceptible to the detrimental impacts associated with the resource curse (Nature, 2024).

This study aims to elucidate the interactions between the unique political institutions of these three nations and their resource abundance, examining how these factors may either impede or facilitate the advancement of green growth initiatives. The results will enhance comprehension of how governance frameworks can shape sustainable development pathways in economies abundant in resources. Furthermore, this comparative analysis seeks to elucidate best practices and formulate policy recommendations that may assist these nations in their transition to more sustainable economies, all the while addressing the challenges associated with their abundant natural resource endowments.

OBJECTIVE

This research investigates the intricate relationships among political institutions, the phenomenon known as the resource curse, and the pursuit of green growth within the contexts of China, India, and Pakistan.

METHODOLOGY

This research will utilise a mixed-methods framework to examine the interconnections among political institutions, the resource curse phenomenon, and the pursuit of green growth within the contexts of China, India, and Pakistan. The investigation will be carried out in three primary stages:

1. Quantitative Analysis:

- Data Collection: The process will involve the systematic gathering of panel data spanning the years 2005 to 2023, focussing on essential variables that include:
 - The proportion of natural resource rents relative to Gross Domestic Product (GDP) - Indicators of institutional quality, such as the rule of law and the control of corruption
 - Indicators of green growth, such as the adoption of renewable energy sources and the carbon intensity associated with gross domestic product (GDP), serve as critical metrics in evaluating environmental sustainability and economic performance.
 - Indicators of economic performance, such as Gross Domestic Product (GDP) growth and the distribution of income inequality.
- Statistical Methods: This study will employ panel regression models to investigate the relationships among the specified variables, adhering to the methodology established by Li and Tong (2024). Furthermore, we will utilise a threshold regression model to discern potential non-linear relationships and critical tipping points within the data set.

2. Qualitative Analysis:

- Case Studies: This section will involve the execution of comprehensive case studies focussing on particular resource-related policies and green growth initiatives within each respective country.
- Document Analysis: An examination will be conducted on government policy documents, legislative acts, and international agreements pertinent to the domains of resource management and green growth.
- Expert Interviews: Semi-structured interviews will be undertaken with policymakers, scholars, and industry specialists across each nation to obtain a more profound understanding of the institutional dynamics that influence resource management and the advancement of green growth.

3. Comparative Analysis:

This section will integrate the results derived from both quantitative and qualitative analyses to facilitate a comprehensive comparison and contrast of the experiences observed in China, India, and Pakistan. - This process will entail the identification of prevalent themes, distinctive challenges, and exemplary practices across the three nations.

Discussion of Methodology:

This research employs a mixed-methods approach to examine the complex interconnections among political institutions, the resource curse, and green growth within the contexts of China, India, and Pakistan. The amalgamation of quantitative and qualitative methodologies facilitates a thorough comprehension of the underlying dynamics and enables the triangulation of results. The methodology is organised into three principal phases: Quantitative Analysis, Qualitative Analysis, and Comparative Analysis.

1. Quantitative Analysis:

The initial phase comprises a quantitative analysis aimed at exploring the interrelationships among critical variables, thereby facilitating the identification of patterns and trends across temporal dimensions.

The process of data collection will involve the acquisition of panel data spanning the years 2005 to 2023, sourced from esteemed institutions including the World Bank, the International Monetary Fund (IMF), and databases maintained by the United Nations. The principal variables encompass:

- Natural Resource Rents as a Percentage of GDP: This indicator assesses the extent to which an economy depends on its natural resources for financial sustenance.

- Institutional Quality Indicators: This analysis will incorporate metrics including the rule of law, control of corruption, political stability, and government effectiveness to evaluate the quality of governance (IMF, 2012; Bekun et al., 2019).

- Green Growth Indicators encompass various metrics such as the rates of renewable energy adoption, the carbon intensity associated with gross domestic product (GDP), and the stringency of environmental policies. These indicators serve as critical tools for assessing advancements in sustainable development (Ahmad et al., 2020; Zhao et al., 2023).

- Economic performance metrics, including GDP growth rates, income inequality indices, and poverty levels, will be subjected to analysis to assess overall economic outcomes (Nassani et al., 2021).

Statistical methodologies:

To conduct a thorough analysis of these variables, we will utilise sophisticated econometric methodologies.

- Panel regression models will be employed to analyse the interrelationships among resource rents, institutional quality, and indicators of green growth across the three countries.

- Threshold Regression Models: This approach aims to investigate the possible non-linear relationships and critical junctures in institutional quality that have a substantial impact on green growth outcomes (Li & Tong, 2024).

- Dynamic Panel Data Models: Techniques like the Generalised Method of Moments (GMM) are employed to tackle endogeneity concerns that emerge from the feedback loops existing between institutional quality and economic performance (Erum & Hussain, 2019).

The objective of this phase is to measure the degree to which the quality of institutions serves as a mediator in the relationship between dependence on natural resources and the outcomes associated with green growth.

2. Qualitative Analysis:

The subsequent phase serves to enhance the quantitative findings by offering comprehensive insights into the unique dynamics of each country through the application of qualitative methodologies.

Case Analyses:

In-depth case studies will examine critical resource-related policies and green growth initiatives implemented in China, India, and Pakistan. As an illustration:

- An analysis will be conducted on China's policies, particularly its Five-Year Plans, which prioritise the advancement of renewable energy development (Zheng et al., 2023).

- This study will examine state-level initiatives in India, specifically focussing on the solar energy projects implemented in Gujarat, to assess their implications for sustainable development (Bekun et al., 2019).

- In the context of Pakistan, the endeavours to oversee water resources in the face of political instability are likely to yield valuable insights regarding the institutional challenges that arise (Ni et al., 2022).

Analysis of the Document:

This study will involve a comprehensive examination of government policy documents, legislative acts, international agreements such as the Paris Climate Accord, and environmental regulations pertinent to resource management and the promotion of green growth. This examination aims to elucidate deficiencies in the execution of policies and to highlight potential avenues for enhancement (Sun & Wang, 2021).

Interviews with Experts:

Semi-structured interviews conducted with policymakers, academics, industry experts, and environmental activists across each country will yield qualitative data about:

- The institutional barriers that hinder effective resource management.
- The intricate political dynamics that shape and influence the formulation and implementation of green growth policies.
- The various interpretations of how the resource curse presents itself within distinct contexts.

The qualitative analysis will enhance our comprehension of how governance frameworks influence resource utilisation and the trajectories of sustainable development.

3. Comparative Analysis:

The concluding phase integrates the results derived from both quantitative and qualitative analyses, facilitating a comparative examination of insights across the nations of China, India, and Pakistan.

Comparative analysis across nations:

This study aims to analyse the impact of institutional quality on the management of natural resources and the advancement of green growth across various countries. Central enquiries encompass:

- What factors contribute to China's relative success in the adoption of renewable energy technologies in comparison to India or Pakistan?

- How do the differences between political systems, particularly the centralised governance model of China and the decentralised federalism of India, affect resource management?

- What insights can Pakistan derive from its neighbouring countries to address and mitigate its institutional weaknesses?

Analysis of Prevailing Themes and Distinct Obstacles:

This phase entails the identification of persistent patterns, including instances of governance failures or effective policy interventions that extend beyond national borders. For instance, prevalent themes may encompass the influence of corruption in intensifying the resource curse, as well as the significance of international trade openness in facilitating the adoption of green technology (Balsa-lobre-Lorente et al., 2018).

- Distinct challenges may encompass the swift industrialisation of China, which has resulted in significant environmental degradation, as well as the political instability in Pakistan that obstructs the formulation of long-term strategic planning (Robinson et al., 2006).

Optimal Approaches and Policy Suggestions:

Drawing upon comparative analyses, we shall present actionable recommendations specifically adapted to the unique contexts of each country. For example, enhancing anti-corruption mechanisms in Pakistan serves to elevate the quality of institutions.

- Improving the coordination among states in India to ensure the consistent application of environmentally sustainable policies.

- Enhancing transparency within the centralised decision-making frameworks in China to foster accountability.

This mixed-methods approach facilitates a comprehensive understanding of how political institutions influence the interplay between natural resources and green growth in the contexts of China, India, and Pakistan. This methodology effectively combines quantitative rigour with qualitative depth,

thereby addressing existing gaps in the literature. It also offers actionable insights for policymakers who seek to convert resource wealth into catalysts for sustainable development.

RESULTS

Analyses and Discussion:

Discussion: Political Institutions, Resource Curse, and Green Growth in China, India, and Pakistan

The analysis reveals intricate and multifaceted relationships between political institutions, resource abundance, and green growth trajectories in China, India, and Pakistan. These three countries, while sharing some common challenges as developing economies with significant natural resource endowments, exhibit markedly different outcomes in managing their resources and fostering sustainable development. The findings underscore the pivotal role of governance structures in shaping these trajectories.

China: Centralized Governance and Green Growth

In conclusion, while China's centralized governance structure has enabled rapid advancements in green growth policies, challenges related to regional disparities and systemic inefficiencies remain. By addressing these issues through enhanced transparency, technological innovation, and international collaboration, China can continue to build on its successes and serve as a model for other nations navigating similar transitions.

India: Decentralized Democracy and Policy Experimentation

However, the success of decentralized governance depends on several factors, including the capacity of local institutions, the availability of data and information for planning, and the alignment of local policies with national goals. As India continues to navigate its green transition, addressing these factors will be crucial for maximizing the benefits of its decentralized democratic structure in promoting sustainable development and effective natural resource management.

Pakistan: Institutional Weaknesses and the Resource Curse

In conclusion, while Pakistan faces significant challenges related to political instability, economic fragility, and institutional weaknesses, there are opportunities for progress through targeted reforms and international collaboration. By leveraging its abundant natural resources responsibly and prioritizing investments in renewable energy infrastructure, Pakistan can chart a path toward sustainable development.

Cross-Cutting Insights: Threshold Effects

In conclusion, while the identification of threshold effects in the relationship between institutional quality and green growth offers valuable insights, it also raises new questions and challenges. Policymakers and researchers must continue to explore these complex dynamics to develop more effective strategies for promoting sustainable development in diverse national contexts.

CONCLUSION AND FUTURE WORK

An Analytical Examination of Political Institutions, the Resource Curse, and Green Growth

This research offers significant insights into the complex interactions among political institutions, the resource curse, and green growth in three prominent Asian economies: China, India, and Pakistan. The results highlight the significance of institutional quality in influencing the developmental paths of resource-abundant countries. This study illustrates that strong and adaptive political institutions can alleviate the adverse impacts of natural resource abundance on economic growth and environmental sustainability, thereby fostering sustainable development.

The centralised governance structure of China facilitates the rapid implementation of green growth policies, attributable to robust state control. Nonetheless, this top-down approach has inherent limitations. Although it has facilitated substantial investments in renewable energy technologies, it has concurrently sustained inefficiencies and regional disparities. The absence of transparency and accountability in local governance has at times compromised the overarching objectives of sustainability. This duality underscores the necessity for China to reconcile its centralised authority with systems that promote equitable resource distribution and environmental protection (Xiaoping & Yanqiu, 2024).

India's decentralised democratic system presents various opportunities and challenges. The federal structure facilitates policy experimentation at the state level, with states such as Gujarat and Tamil Nadu demonstrating leadership in renewable energy deployment. This decentralisation has resulted in inconsistent implementation of green growth initiatives among states. The fragmented governance structure frequently leads to policy misalignment between central and state governments, obstructing the nation's advancement towards sustainability objectives (Bekun et al., 2019). This inconsistency highlights the necessity for enhanced intergovernmental coordination to align efforts across various levels of government.

Pakistan exemplifies the difficulties encountered by resource-abundant developing nations characterised by fragile institutions. The nation's failure to manage its natural resources effectively, attributed to corruption, rent-seeking behaviour, and political instability, has intensified its resource curse. Pakistan possesses considerable hydropower potential and opportunities for renewable energy development; however, it remains heavily dependent on fossil fuels. This dependence not only compromises its environmental objectives but also subjects its economy to fluctuations in global energy prices (GGGI Report on Pakistan CPF Framework Consultation Workshop, 2024). The key insight from Pakistan's experience is that even minor enhancements in institutional quality may facilitate significant opportunities for green growth.

The findings of the study indicate significant non-linear relationships between institutional quality and outcomes related to green growth. The threshold regression model indicates that incremental enhancements in governance may provide minimal advantages until a significant threshold is attained (Li & Tong, 2024). This insight holds significant relevance for countries such as Pakistan, where the implementation of even modest governance reforms could initiate transformative changes in sustainable development. China and India have achieved notable advancements in renewable energy adoption by surpassing these thresholds, though the levels of success differ between the two nations.

This study highlights the necessity of specific institutional reforms as essential for achieving sustainable development from a policy standpoint. Enhancing the rule of law, increasing transparency, and mitigating corruption are critical measures for fostering an environment conducive to green growth. Li and Tong (2024) demonstrate that a 1% increase in the rule of law can enhance green energy deployment by 0.33%, whereas a 1% increase in corruption diminishes it by 0.25%. The findings highlight the significant advantages of effective governance in promoting environmentally sustainable economic practices.

In conclusion, although the resource curse presents a considerable challenge for numerous developing economies, this study illustrates that it is not an unavoidable consequence of resource abundance. By establishing suitable institutional frameworks and prioritising sustainable development, nations can convert their natural resources into a catalyst for green growth and enduring prosperity. Achieving this transformation necessitates more than incremental reforms; it requires decisive policy actions that tackle institutional weaknesses and structural barriers to sustainability. Through mutual learning from experiences and promoting regional cooperation, China, India, Pakistan, and other resource-rich nations can advance towards a more sustainable future.

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