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Interpreting the Legal Frameworks of Climate Technology in Developing Countries: Interviews with Policy Makers and Legal Experts

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Climate technology is central to global efforts aimed at mitigating and adapting to climate change, particularly in developing countries that face disproportionate environmental and socio-economic vulnerabilities. This study examines the legal frameworks governing climate technology through a qualitative interpretive approach based on secondary data, simulating insights from policymakers and legal experts. Drawing on institutional theory, legal pluralism, and global governance perspectives, the research explores how international agreements, domestic legal systems, and intellectual property regimes interact to shape climate technology adoption. The findings reveal that fragmented legal structures, limited institutional capacity, financial constraints, and restrictive intellectual property regimes pose significant barriers to effective technology transfer and implementation. At the same time, emerging mechanisms such as adaptive regulatory frameworks, public-private partnerships, and South-South cooperation provide promising avenues for reform. The study contributes to the literature by offering an integrated analytical framework for understanding legal complexities and by proposing policy recommendations to enhance legal coherence, institutional effectiveness, and equitable access to climate technologies in developing countries.

Keywords: Climate technology, legal frameworks, developing countries, climate governance, intellectual property, technology transfer, institutional capacity

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1. Introduction

Climate change has emerged as one of the most significant global challenges of the twenty-first century, affecting ecological systems, economic development, and social stability across nations. While climate change is a global phenomenon, its impacts are disproportionately borne by developing countries due to their geographic vulnerability, limited financial resources, and weaker institutional capacity (IPCC, 2023). These countries often depend heavily on climate-sensitive sectors such as agriculture, fisheries, and forestry, making them particularly susceptible to environmental disruptions. As a result, the urgency of adopting climate mitigation and adaptation strategies is more pronounced in these regions.

Climate technology, defined broadly as technologies that reduce greenhouse gas emissions or enhance climate resilience, plays a central role in addressing climate change challenges. These technologies include renewable energy systems (e.g., solar, wind), energy-efficient infrastructure, climate-resilient agricultural practices, and carbon capture mechanisms (UNFCCC, 2015). The deployment and diffusion of such technologies are essential for achieving the objectives of global climate agreements, particularly those articulated in the Paris Agreement, which emphasises technology transfer and capacity building for developing countries (UNFCCC, 2015).

However, the adoption and implementation of climate technologies in developing

countries are not merely technical or financial issues; they are deeply embedded in legal and institutional frameworks. Legal systems govern how technologies are developed, transferred, financed, and regulated. These frameworks include international environmental agreements, national legislation, intellectual property (IP) laws, and trade regulations. The interaction among these legal regimes significantly influences the accessibility and effectiveness of climate technologies (Bodansky, 2016).

The global legal architecture surrounding climate technology is characterised by complexity and fragmentation. At the international level, agreements such as the United Nations Framework Convention on Climate Change (UNFCCC) and the Paris Agreement establish broad commitments for technology transfer and financial support. However, these agreements often lack binding enforcement mechanisms, leaving implementation largely dependent on national legal systems (Rajamani, 2016). At the domestic level, developing countries exhibit varying degrees of legal sophistication and institutional capacity, which affect their ability to implement climate policies effectively.

Moreover, intellectual property rights (IPRs) present a significant challenge in the context of climate technology. While IPRs are designed to incentivise innovation by protecting the rights of inventors, they can also restrict access to essential technologies, particularly for low-income countries that cannot afford licensing fees (Maskus, 2012). This tension between innovation and

accessibility remains a critical issue in global climate governance.

In addition to legal and economic barriers, institutional challenges further complicate the adoption of climate technologies. Many developing countries face governance issues such as bureaucratic inefficiencies, a lack of technical expertise, and limited coordination among agencies. These challenges hinder the effective implementation of climate policies and reduce the impact of international support mechanisms (World Bank, 2020).

Despite these challenges, there is growing recognition of the need for adaptive and context-specific legal frameworks that can facilitate climate technology deployment. Emerging approaches such as climate-smart regulation, public-private partnerships (PPPs), and South–South cooperation offer promising avenues for overcoming existing barriers (OECD, 2021). These approaches emphasise flexibility, collaboration, and local adaptation, aligning legal frameworks with the socio-economic realities of developing countries.

Although a substantial body of literature has examined climate technology and legal frameworks, there remains a significant gap in understanding how these frameworks are interpreted and applied in practice. In particular, the perspectives of policymakers and legal experts, who play a crucial role in shaping and implementing legal systems, are underexplored. Their interpretations provide valuable insights into the practical challenges and opportunities associated with climate technology governance.

This study seeks to address this gap by analysing legal frameworks through a qualitative interpretive approach based on secondary data. By synthesising insights from policy documents, academic literature, and expert analyses, the research aims to provide a comprehensive understanding of the legal landscape governing climate technology in developing countries.

The specific objectives of this study are threefold. First, it aims to examine the structure and evolution of legal frameworks related to climate technology in developing countries. Second, it seeks to interpret expert perspectives on the effectiveness of these frameworks, identifying key barriers and enabling factors. Third, the study aims to propose policy recommendations that can enhance the legal and institutional environment for climate technology adoption.

In doing so, the study contributes to the existing literature by integrating multiple theoretical perspectives, including institutional theory, legal pluralism, and global governance theory. It also provides a nuanced analysis of legal frameworks that accounts for the complex interplay between international agreements, national policies, and socio-economic conditions.

Ultimately, the study underscores the importance of aligning legal frameworks with development priorities to ensure that climate technologies can be effectively deployed in developing countries. Such alignment is essential not only for addressing climate change but also for achieving broader goals of sustainable development and social equity.

2. Literature Review

Climate technology has become a central component of global efforts to mitigate and adapt to climate change. These technologies encompass a wide range of innovations, including renewable energy systems, energy efficiency solutions, and climate-resilient agricultural practices (UNEP, 2022). For developing countries, the adoption of such technologies is critical for achieving sustainable development while minimising environmental impacts.

However, the diffusion of climate technology in developing countries faces multiple barriers. Financial constraints are among the most significant challenges, as the high upfront costs of many technologies make them inaccessible to low-income economies (IEA, 2021). In addition, inadequate infrastructure and limited technical capacity further hinder the effective implementation of these technologies.

Another key challenge is the lack of supportive policy and regulatory environments. Without clear legal frameworks, investors may be reluctant to finance climate projects due to uncertainties and risks. This highlights the importance of robust legal systems in facilitating technology adoption and innovation (Dechezleprêtre et al., 2015).

2.1 International Legal Frameworks for Climate Technology

At the international level, climate technology governance is primarily guided by the UNFCCC and its associated agreements. The

Paris Agreement, in particular, emphasises the importance of technology development and transfer as a means of achieving global climate goals (UNFCCC, 2015). It establishes mechanisms such as the Technology Mechanism and the Climate Technology Centre and Network (CTCN) to support developing countries.

Despite these efforts, the effectiveness of international legal frameworks remains limited. One of the main challenges is the non-binding nature of many provisions, which reduces accountability and enforcement (Bodansky, 2016). Furthermore, disparities in financial contributions and political commitments among developed countries often hinder the implementation of technology transfer initiatives (Rajamani, 2016).

2.2 National Legal Systems and Policy Frameworks

National legal systems play a crucial role in translating international commitments into actionable policies. In developing countries, these systems vary widely in terms of capacity, coherence, and effectiveness. Some countries have developed comprehensive climate laws and policies, while others rely on fragmented or outdated legal frameworks (Nachmany et al., 2017).

Institutional capacity is a key determinant of legal effectiveness. Strong institutions are necessary for enforcing regulations, coordinating policies, and managing resources. However, many developing countries face institutional weaknesses that limit their ability to implement climate policies effectively (World Bank, 2020).

2.3 Intellectual Property Rights and Technology Transfer

Intellectual property rights (IPRs) are a critical component of the legal framework governing climate technology. They provide incentives for innovation by granting exclusive rights to inventors, but they can also create barriers to technology access (Maskus, 2012).

The relationship between IPRs and technology transfer is complex and contested. Some scholars argue that strong IP protection is necessary to encourage innovation and investment (Hall & Helmers, 2013). Others contend that restrictive IP regimes can hinder the dissemination of technologies to developing countries, particularly when licensing costs are high (Barton, 2007).

Recent research suggests that alternative mechanisms, such as patent pools, open-source innovation, and public-private partnerships, may offer more effective solutions for facilitating technology transfer (Dechezleprêtre et al., 2015).

2.4 Legal Pluralism and Fragmentation

The concept of legal pluralism provides a useful framework for understanding the complexity of climate technology governance. Multiple legal systems, including international law, national legislation, and customary practices, coexist and interact in shaping policy outcomes (Merry, 1988).

This plurality often leads to fragmentation, where different legal regimes operate

independently or even conflict with one another. For example, trade laws under the World Trade Organisation (WTO) may conflict with environmental regulations aimed at promoting climate technologies (Bodansky, 2016). Such inconsistencies create challenges for policymakers and hinder effective governance.

2.5 Institutional and Governance Perspectives

Institutional theory emphasises the role of formal and informal rules in shaping organisational behaviour and policy outcomes (Scott, 2014). In the context of climate technology, institutions determine how policies are designed, implemented, and enforced.

Global governance theory further highlights the importance of international cooperation in addressing climate change. Institutions such as the UNFCCC facilitate coordination among countries, but their effectiveness depends on the willingness of member states to comply with commitments (Keohane & Victor, 2011).

2.6 Emerging Trends and Innovations

Recent developments in climate governance indicate a shift toward more flexible and adaptive legal frameworks. Climate-smart regulations, which integrate environmental and economic objectives, are gaining traction in many developing countries (OECD, 2021).

Public-private partnerships (PPPs) have also emerged as a key mechanism for financing and implementing climate technologies. These partnerships leverage the strengths of

both sectors, combining public oversight with private sector efficiency (World Bank, 2020).

South–South cooperation represents another important trend, enabling developing countries to share knowledge, technologies, and best practices. This approach reduces dependence on developed countries and promotes more equitable forms of collaboration (UNDP, 2021).

2.7 Research Gap

Despite the extensive literature on climate technology and legal frameworks, several gaps remain. First, most studies focus on either international or national frameworks, without integrating the two into a comprehensive analysis. Second, there is limited research on the practical interpretation of legal frameworks by policymakers and legal experts. Third, the specific challenges faced by developing countries are often underexplored or generalised.

This study addresses these gaps by adopting an interpretive approach that synthesises insights from multiple sources, providing a holistic understanding of climate technology governance in developing countries.

3. Theoretical Framework

Understanding the legal frameworks governing climate technology in developing countries requires a multidimensional analytical approach. This study adopts a composite theoretical framework integrating institutional theory, legal pluralism, and global governance theory. These perspectives collectively provide a robust lens for

interpreting how legal systems shape the development, transfer, and implementation of climate technologies.

3.1 Institutional Theory

Institutional theory offers a foundational perspective for analysing how formal rules, norms, and organisational structures influence policy outcomes. Institutions are defined as “regulative, normative, and cultural-cognitive elements that provide stability and meaning to social life” (Scott, 2014, p. 56). In the context of climate technology, institutions determine how laws are formulated, interpreted, and enforced within specific socio-political environments.

Developing countries often exhibit institutional asymmetries characterised by weak governance structures, limited administrative capacity, and fragmented policy coordination. These institutional limitations directly affect the implementation of climate-related legal frameworks. For instance, even when comprehensive climate laws exist, weak enforcement mechanisms and bureaucratic inefficiencies may hinder their effectiveness (World Bank, 2020).

Institutional theory also highlights the concept of isomorphism, where countries adopt similar legal frameworks due to international pressures, norms, or best practices (DiMaggio & Powell, 1983). In climate governance, developing countries often align their policies with international agreements such as the Paris Agreement. However, such alignment does not always translate into effective implementation due to contextual differences.

Furthermore, institutional theory emphasises the importance of path dependency, where historical legal and administrative structures shape current policy choices (North, 1990). Many developing countries inherit legal systems from colonial administrations, which may not be well-suited to addressing contemporary climate challenges. This historical legacy influences the design and functionality of climate technology regulations.

3.2 Legal Pluralism

Legal pluralism provides a critical framework for understanding the coexistence and interaction of multiple legal systems within a single socio-political context. According to Merry (1988), legal pluralism refers to the presence of diverse legal orders, including state law, international law, and customary norms.

In the domain of climate technology, legal pluralism is particularly relevant due to the overlapping nature of legal regimes. Climate governance involves international environmental agreements, national legislation, trade laws, and intellectual property regimes. These systems often operate simultaneously, creating a complex and sometimes contradictory legal environment (Bodansky, 2016).

For example, international climate agreements encourage technology transfer to developing countries, while intellectual property laws may restrict access to patented technologies. Similarly, trade regulations under the World Trade Organisation (WTO) may conflict with environmental policies designed to promote renewable energy

technologies. These tensions illustrate the fragmented nature of legal governance in climate technology.

Legal pluralism also underscores the role of informal and customary practices in shaping legal outcomes. In many developing countries, local communities rely on traditional knowledge and practices for climate adaptation. These informal systems often operate alongside formal legal frameworks, influencing the adoption and implementation of climate technologies.

By incorporating legal pluralism, this study acknowledges that climate technology governance cannot be understood through a single legal lens. Instead, it requires an integrated analysis of multiple legal systems and their interactions.

3.3 Global Governance Theory

Global governance theory focuses on the role of international institutions, norms, and actors in addressing transnational challenges. Climate change is inherently a global issue, requiring coordinated action across countries and regions. Institutions such as the United Nations Framework Convention on Climate Change (UNFCCC) play a central role in facilitating international cooperation.

Keohane and Victor (2011) describe climate governance as a “regime complex, characterised by a network of partially overlapping and non-hierarchical institutions. This complexity reflects the diverse interests and priorities of different actors, including states, international organisations, and private entities.

In the context of climate technology, global governance mechanisms aim to promote technology transfer, capacity building, and financial support for developing countries. The Paris Agreement, for example, emphasises the importance of enhancing technology development and transfer through collaborative efforts (UNFCCC, 2015).

However, global governance frameworks often face challenges related to coordination, accountability, and equity. Developing countries frequently argue that existing systems do not adequately address their needs, particularly in terms of financing and access to technology (Rajamani, 2016).

Global governance theory also highlights the role of non-state actors, such as multinational corporations, non-governmental organisations, and research institutions, in shaping climate policy. These actors contribute to the development and dissemination of climate technologies, often operating across national boundaries.

3.4 Integrated Conceptual Framework

By integrating institutional theory, legal pluralism, and global governance theory, this study develops a comprehensive analytical framework for examining climate technology governance. The framework conceptualises legal systems as dynamic and interconnected structures influenced by:

- Institutional capacity and governance quality
- Interactions among multiple legal regimes

- International cooperation and global norms
- Economic and technological factors

This integrated approach enables a nuanced understanding of how legal frameworks function in practice, particularly in the complex and resource-constrained environments of developing countries.

4. Methodology

This study adopts a qualitative interpretive research design, which is particularly suitable for exploring complex legal and policy frameworks. Qualitative research emphasises understanding social phenomena through the interpretation of meanings, experiences, and perspectives (Creswell & Poth, 2018). In this study, the focus is on interpreting legal frameworks and expert perspectives related to climate technology in developing countries.

Given the challenges of conducting primary interviews across multiple jurisdictions, the study relies on secondary data sources to simulate expert insights. This approach allows for the analysis of a wide range of perspectives while maintaining methodological rigour.

4.1 Research Approach

The research follows an interpretivist paradigm, which assumes that reality is socially constructed and context-dependent (Schwartz-Shea & Yanow, 2012). Legal frameworks are not merely objective structures; they are interpreted and applied differently by policymakers, legal experts, and stakeholders.

By adopting an interpretivist approach, the study seeks to uncover the underlying meanings and assumptions embedded in legal systems. This perspective is particularly relevant for analysing climate technology governance, where legal frameworks are influenced by political, economic, and cultural factors.

4.2 Data Sources

The study utilises a diverse range of secondary data sources, including:

- Peer-reviewed journal articles
- International policy documents (e.g., UNFCCC, World Bank reports)
- Legal analyses and case studies
- Reports from international organisations and think tanks

These sources provide insights into the perspectives of policymakers and legal experts, enabling the reconstruction of “interview-like” narratives.

4.3 Data Collection Method

A systematic documentary analysis was conducted to collect relevant data. Documentary analysis involves the identification, selection, and interpretation of documents to extract meaningful information (Bowen, 2009).

The data collection process involved the following steps:

- **Selection of Documents:** Relevant documents were identified based on their relevance to climate technology and legal frameworks in developing countries.

- **Screening and Inclusion Criteria:** Documents were selected based on credibility, relevance, and recency.
- **Data Extraction:** Key statements and findings were extracted and categorised as:
 - Policy perspectives
 - Legal interpretations
 - Institutional observations

4.4 Data Analysis Technique

The study employs thematic analysis, a widely used qualitative method for identifying and analysing patterns within data (Braun & Clarke, 2006).

The analysis followed a six-step process:

- Familiarisation with data
- Initial coding of key themes
- Searching for patterns and relationships
- Reviewing and refining themes
- Defining and naming themes
- Interpreting findings in relation to the theoretical framework

Key themes identified include:

- Legal fragmentation
- Institutional capacity
- Intellectual property challenges
- Financial barriers
- Emerging governance innovations

4.5 Validity and Reliability

To ensure the rigour of the study, several strategies were employed:

- **Triangulation:** Multiple data sources were used to validate findings

- **Theoretical consistency:** Findings were interpreted within established theoretical frameworks
- **Transparency:** The research process was clearly documented

These measures enhance the credibility and reliability of the study (Creswell & Poth, 2018).

4.6 Ethical Considerations

Although the study relies on secondary data, ethical considerations remain important. All sources were properly cited to ensure academic integrity. The study avoids misrepresentation of original authors' views and maintains objectivity in interpretation (Mannan & Farhana, 2026).

4.7 Limitations of the Study

Despite its strengths, the study has several limitations:

- Reliance on secondary data may limit the depth of insights compared to primary interviews
- Potential bias in source selection
- Limited generalizability due to the qualitative nature of the research

However, these limitations are mitigated through rigorous data selection and analysis procedures.

4.8 Justification of Methodology

The chosen methodology is appropriate for the research objectives, as it allows for a comprehensive analysis of legal frameworks and expert perspectives. By combining documentary analysis with thematic interpretation, the study provides a rich and

nuanced understanding of climate technology governance in developing countries.

5. Findings and Analysis

The findings of this study are derived from a qualitative thematic analysis of secondary data representing the perspectives of policymakers, legal scholars, and institutional reports. The analysis reveals a set of interrelated structural, legal, and institutional challenges that shape the governance of climate technology in developing countries, alongside emerging opportunities that signal pathways for reform.

5.1 Fragmentation and Incoherence of Legal Frameworks

A dominant finding is the fragmentation of legal frameworks governing climate technology. Climate governance is not regulated by a single cohesive legal regime; rather, it operates within a "regime complex" consisting of overlapping international agreements, domestic policies, trade laws, and intellectual property regimes (Keohane & Victor, 2011). This fragmentation often leads to inconsistencies and contradictions that complicate implementation.

For instance, while the Paris Agreement encourages the transfer of climate technologies to developing countries, trade-related agreements under the World Trade Organisation (WTO) emphasise non-discrimination and market liberalisation, which may limit the use of subsidies or protective measures for local green industries (Bodansky, 2016). Similarly, intellectual property regimes under the Agreement on

Trade-Related Aspects of Intellectual Property Rights (TRIPS) can restrict access to patented climate technologies, thereby conflicting with the objectives of environmental treaties.

From an interpretive perspective, policymakers often view this fragmentation as a source of legal uncertainty that discourages investment and innovation. Legal experts, on the other hand, emphasise the need for harmonisation across regimes to create a coherent policy environment. The absence of coordination mechanisms between international and domestic legal systems further exacerbates these challenges.

5.2 Institutional Capacity Constraints

Another critical finding relates to institutional capacity limitations in developing countries. Effective implementation of legal frameworks requires strong institutions capable of enforcing regulations, coordinating policies, and managing resources. However, many developing countries face significant governance challenges, including bureaucratic inefficiencies, a lack of technical expertise, and limited administrative capacity (World Bank, 2020).

Institutional theory helps explain these constraints by highlighting the role of organisational structures and norms in shaping policy outcomes (Scott, 2014). In many cases, climate policies are adopted to align with international commitments, but their implementation is hindered by weak institutional foundations. This phenomenon reflects the concept of “decoupling,” where

formal policies exist without corresponding practical enforcement (DiMaggio & Powell, 1983).

The findings also indicate that institutional fragmentation within countries, such as a lack of coordination between ministries responsible for environment, energy, and finance, further undermines policy effectiveness. Policymakers frequently identify inter-agency coordination as a major challenge, emphasising the need for integrated governance structures.

5.3 Financial and Economic Barriers

Financial constraints emerge as a central barrier to climate technology adoption. The high cost of acquiring, deploying, and maintaining advanced technologies limits their accessibility in developing countries. According to international reports, there is a significant gap between the financial resources required for climate action and the funds currently available (IEA, 2021).

Legal frameworks play a crucial role in shaping financial flows by influencing investment environments, regulatory certainty, and risk perceptions. However, the findings suggest that many developing countries lack clear and stable legal frameworks that can attract private investment. Uncertain regulatory environments increase perceived risks, discouraging investors from funding climate projects (OECD, 2021).

Moreover, public funding mechanisms are often insufficient to bridge the financing gap. While international climate finance initiatives exist, their distribution is uneven,

and access procedures are often complex and bureaucratic. Policymakers highlight the need for simplified procedures and increased financial support, while legal experts emphasise the importance of creating enabling legal environments for private sector participation.

5.4 Intellectual Property Rights and Technology Access

Intellectual property rights (IPRs) represent a complex and contentious aspect of climate technology governance. The findings reveal a dual role of IPRs as both enablers and barriers. On one hand, strong IP protection incentivises innovation by ensuring that inventors can benefit from their creations. On the other hand, it can limit access to essential technologies for developing countries (Maskus, 2012).

The analysis indicates that policymakers in developing countries often perceive IPRs as restrictive, particularly when licensing fees are high. Legal experts, however, emphasise that the impact of IPRs on technology transfer is context-dependent. In some cases, weak IP protection may deter foreign investment and technology transfer, while in others, strong IP regimes may hinder access.

Recent literature suggests that alternative mechanisms, such as patent pools, voluntary licensing, and open innovation models, can help balance these competing interests (Dechezleprêtre et al., 2015). The findings support this view, highlighting the potential of collaborative approaches to facilitate technology diffusion.

5.5 Role of Global Governance and International Cooperation

Global governance mechanisms play a critical role in shaping climate technology frameworks. Institutions such as the UNFCCC provide platforms for international cooperation, enabling the exchange of knowledge, resources, and technologies. The Paris Agreement, in particular, emphasises the importance of technology transfer and capacity building (UNFCCC, 2015).

However, the findings reveal significant disparities in the effectiveness of global governance systems. Developing countries often express concerns about the adequacy and predictability of international support. Issues such as unequal power dynamics, lack of accountability, and insufficient financial commitments hinder the effectiveness of global mechanisms (Rajamani, 2016).

Despite these challenges, global governance frameworks have facilitated important initiatives, such as the Climate Technology Centre and Network (CTCN), which supports technology transfer and capacity building. Policymakers generally view these initiatives positively but emphasise the need for greater inclusivity and responsiveness to local needs.

5.6 Emergence of Adaptive and Innovative Legal Mechanisms

Despite the challenges identified, the findings also highlight several emerging trends that offer promising solutions. One such trend is the development of adaptive legal frameworks that emphasise flexibility and responsiveness. These frameworks allow policymakers to adjust regulations in

response to changing technological and environmental conditions (OECD, 2021).

Public-private partnerships (PPPs) are another significant innovation. By combining public oversight with private sector expertise and resources, PPPs can facilitate the financing and implementation of climate technologies (World Bank, 2020). The findings indicate that PPPs are increasingly being used in sectors such as renewable energy and infrastructure development.

South-South cooperation also emerges as a key mechanism for knowledge and technology transfer. Developing countries are increasingly collaborating to share best practices, technologies, and policy experiences. This approach reduces dependence on developed countries and promotes more equitable forms of collaboration (UNDP, 2021).

5.7 Synthesis of Findings

Overall, the findings suggest that the governance of climate technology in developing countries is shaped by a complex interplay of legal, institutional, and economic factors. While significant challenges remain, there are also emerging opportunities for reform and innovation. The key issues can be summarised as follows:

- Fragmentation and incoherence of legal frameworks
- Institutional capacity limitations
- Financial and economic barriers
- Intellectual property challenges
- Inefficiencies in global governance systems

- Emergence of adaptive and collaborative approaches

These findings provide a foundation for deeper analysis in the discussion section, where they are interpreted through the theoretical frameworks outlined earlier.

6. Discussion

The findings of this study reveal a complex and multifaceted landscape of climate technology governance in developing countries. This section interprets these findings through the lenses of institutional theory, legal pluralism, and global governance theory, offering a deeper understanding of the underlying dynamics and their implications for policy and practice.

6.1 Interpreting Legal Fragmentation through Legal Pluralism

The fragmentation of legal frameworks identified in the findings can be effectively understood through the concept of legal pluralism. The coexistence of multiple legal regimes, international environmental law, trade law, intellectual property law, and domestic legislation, creates a complex governance environment characterised by overlapping and sometimes conflicting rules (Merry, 1988).

This plurality reflects the diverse objectives and priorities of different legal systems. For example, environmental laws prioritise sustainability and climate mitigation, while trade laws emphasise market efficiency and non-discrimination. Intellectual property laws, meanwhile, focus on protecting

innovation. The interaction of these regimes often results in tensions that complicate policy implementation.

From a policy perspective, this fragmentation necessitates the development of coordination mechanisms that can align different legal systems. Without such mechanisms, policymakers face significant challenges in designing coherent and effective legal frameworks.

6.2 Institutional Constraints and Policy Effectiveness

Institutional theory provides valuable insights into the role of governance structures in shaping policy outcomes. The findings highlight the importance of institutional capacity in determining the effectiveness of legal frameworks. Weak institutions undermine policy implementation, leading to gaps between formal commitments and actual practices.

The concept of decoupling is particularly relevant in this context. Developing countries often adopt climate policies to meet international expectations, but these policies may not be fully implemented due to resource constraints and institutional weaknesses (DiMaggio & Powell, 1983). This gap between policy and practice reduces the overall effectiveness of climate governance.

Strengthening institutional capacity is therefore a critical priority. This includes improving administrative efficiency, enhancing technical expertise, and promoting inter-agency coordination. Institutional reforms should also focus on creating transparent and accountable governance

systems that can build trust among stakeholders.

6.3 Economic Constraints and Legal Effectiveness

The findings underscore the interdependence of legal and economic factors in climate technology governance. Legal frameworks alone are insufficient to drive technology adoption without adequate financial resources. This highlights the importance of integrating economic considerations into legal design.

From an institutional perspective, financial constraints can be seen as a form of structural limitation that shapes policy outcomes. Developing countries often lack the fiscal capacity to invest in climate technologies, making them dependent on international support. However, the effectiveness of such support depends on the design of legal frameworks that can facilitate investment and reduce risks.

This suggests the need for enabling legal environments that can attract private investment. Such environments include clear regulatory frameworks, stable policies, and incentives for innovation. Public-private partnerships and blended finance mechanisms can play a key role in addressing financial barriers.

6.4 Rethinking Intellectual Property Regimes

The dual role of intellectual property rights identified in the findings reflects a broader tension between innovation and accessibility. While strong IP protection is necessary to incentivise technological development, it can

also limit access to essential technologies in developing countries.

This tension calls for a more nuanced approach to IP governance. Rather than viewing IP as a binary issue, policymakers should consider flexible mechanisms that can balance competing interests. For example, voluntary licensing agreements, patent pools, and open innovation platforms can facilitate technology transfer while maintaining incentives for innovation (Dechezleprêtre et al., 2015).

Global governance frameworks can also play a role in addressing IP-related challenges. International agreements could incorporate provisions that promote equitable access to climate technologies, particularly for low-income countries.

6.5 Global Governance and Equity Considerations

Global governance theory highlights the importance of international cooperation in addressing climate change. The findings indicate that while global frameworks such as the UNFCCC have made significant contributions, they are often limited by issues of equity and accountability.

Developing countries frequently argue that existing systems do not adequately reflect their needs and priorities. This raises important questions about fairness and justice in global climate governance. The principle of common but differentiated responsibilities (CBDR), which underpins international climate agreements, emphasises the need for developed countries to provide support to developing nations.

However, the implementation of this principle remains uneven. Addressing these disparities requires stronger commitments from developed countries, as well as more inclusive decision-making processes within international institutions.

6.6 Emerging Pathways for Reform

The findings suggest several promising pathways for improving climate technology governance. Adaptive legal frameworks, which emphasise flexibility and responsiveness, can help address the dynamic nature of climate challenges. These frameworks allow policymakers to experiment with new approaches and adjust regulations based on feedback and changing conditions.

Public-private partnerships offer another avenue for reform by leveraging the strengths of both sectors. These partnerships can facilitate innovation, mobilise resources, and enhance implementation capacity. However, they require robust legal frameworks to ensure transparency, accountability, and equitable outcomes.

South–South cooperation represents a particularly important development. By enabling developing countries to share knowledge and resources, this approach promotes more equitable and context-specific solutions. It also reduces reliance on traditional North–South models of technology transfer.

6.7 Implications for Policy and Future Research

The discussion highlights several key implications for policymakers and

researchers. First, there is a need for greater integration and coordination among legal frameworks. Second, institutional capacity building should be prioritised to enhance policy effectiveness. Third, innovative financial and legal mechanisms should be developed to address economic constraints.

For future research, there is a need for empirical studies that examine the implementation of legal frameworks in specific country contexts. Comparative studies could also provide valuable insights into best practices and lessons learned.

7. Conclusion

This study has critically examined the legal frameworks governing climate technology in developing countries through a qualitative, interpretive analysis grounded in secondary data. The findings underscore that legal systems play a pivotal role in shaping the development, transfer, and implementation of climate technologies. However, these frameworks are often characterised by fragmentation, institutional weaknesses, and misalignment with economic and technological realities.

One of the key conclusions is that the coexistence of multiple legal regimes, ranging from international environmental agreements to national legislation and intellectual property laws, creates a complex and often incoherent governance landscape. This fragmentation not only generates legal uncertainty but also hinders effective policy implementation and discourages investment in climate technologies. Addressing this challenge requires greater harmonisation and

coordination across legal systems at both international and domestic levels.

Institutional capacity emerges as another critical determinant of policy effectiveness. Weak governance structures, limited administrative capabilities, and insufficient technical expertise significantly constrain the ability of developing countries to implement climate-related legal frameworks. Strengthening institutional capacity through targeted reforms and capacity-building initiatives is therefore essential for enhancing the effectiveness of climate governance.

The study also highlights the importance of financial and economic factors in shaping climate technology adoption. Legal frameworks alone cannot drive technological transformation without adequate financial support and enabling economic conditions. Innovative financing mechanisms, including public-private partnerships and blended finance models, are necessary to bridge existing funding gaps.

Intellectual property rights present both opportunities and challenges. While they incentivise innovation, they may also restrict access to essential technologies. A balanced approach that incorporates flexible mechanisms such as voluntary licensing and collaborative innovation platforms is required to ensure equitable access.

In conclusion, effective climate technology governance in developing countries requires a holistic and integrated approach that combines legal reform, institutional strengthening, and economic support. Future research should focus on empirical case

studies and primary data collection to further validate and expand upon these findings.

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