

The Impact of Climate Change on International Legal Frameworks: Ideas with Reference to Pakistan

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ABSTRACT

This article examines the impact of climate change on international legal frameworks, with a specific focus on Pakistan's vulnerability and the challenges it faces in addressing climate-induced impacts. Despite contributing minimally to global emissions, Pakistan is highly susceptible to the adverse effects of climate change, including water scarcity, agricultural disruptions, and extreme weather events. The study assesses the effectiveness of existing international climate agreements, such as the Paris Agreement and the UNFCCC, in supporting Pakistan's climate goals and identifies the gaps in legal frameworks that hinder effective implementation. Key findings reveal that while international treaties provide a foundation for climate action, challenges such as limited financial resources, insufficient institutional capacity, and the lack of binding enforcement mechanisms continue to undermine Pakistan's ability to meet its climate targets. Additionally, the study highlights the need for climate justice, emphasising the disproportionate impact on developing countries and the necessity for reparations from developed nations. The research also explores the intersection of climate change and human rights law, with a focus on the protection of vulnerable communities. The article concludes with recommendations for legal reforms, including the establishment of a binding climate reparations mechanism, revising the Indus Water Treaty, and enhancing regional cooperation to address transboundary climate issues. Ultimately, the study recommends the establishment of stronger international legal frameworks to improve Pakistan's climate resilience and sustainable development.



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1. Introduction

Climate change has emerged as one of the most pressing challenges of the 21st century, affecting ecosystems, economies, and human populations worldwide. The changing climate, driven by human activities such as deforestation, fossil fuel combustion, and industrial agriculture, has led to an increase in extreme weather events, sea-level rise, droughts, floods, and shifts in biodiversity (IPCC, 2021). As global temperatures continue to increase, the need for effective international legal frameworks to mitigate and adapt to these changes has become more urgent. Climate change is not only an environmental issue but also a socio-economic and political one, affecting the most vulnerable populations, particularly in developing countries such as Pakistan.

The Growing Impact of Climate Change on Pakistan

Pakistan, located in South Asia, is among the most climate-vulnerable countries in the world. Despite contributing a relatively small share to global carbon emissions, Pakistan is facing significant impacts due to its geographical location and reliance on agriculture and water resources, both of which are highly susceptible to climate change (Khan et al., 2019). The country is experiencing increasingly frequent and severe floods, droughts, heatwaves, and glacial melt, all of which pose direct threats to its food security, water availability, and overall socio-economic stability. For instance, the 2010 flood, one of the most devastating natural disasters in Pakistan's history, affected more than 20 million people, displacing millions from their homes and causing widespread economic damage (Mumtaz, 2011).

Pakistan's Indus River system, which supplies water to more than 90% of its agricultural land, is particularly vulnerable to the impacts of climate change. The rising temperatures and reduced snowpack in the Himalayas and Hindu Kush mountain ranges, from where the Indus River originates, are expected to alter the river's seasonal flow, impacting Pakistan's agricultural productivity and increasing the risk of water scarcity (Rasul, 2014). The effects of climate change are not just environmental, but are deeply intertwined with human rights concerns, particularly in relation to access to water, food, and shelter. As such, Pakistan faces a complex challenge of adapting to climate change while also meeting its development goals.

1.2. The Role of International Law in Addressing Climate Change

International law plays a critical role in facilitating global cooperation to mitigate and adapt to the impacts of climate change. Key frameworks, including the United Nations Framework Convention on Climate Change (UNFCCC), the Paris Agreement, and regional agreements such as the Kyoto Protocol, aim to set binding obligations for nations to reduce greenhouse gas emissions, adapt to the changing climate, and support developing countries in their efforts to do the same (UNFCCC, 2015). The Paris Agreement, adopted in 2015, represents a landmark in international climate negotiations, with nearly every country in the world committing to limit global temperature rise to below 2°C above pre-industrial levels, and to pursue efforts to limit the temperature increase to 1.5°C (UNFCCC, 2015). Pakistan, as a signatory to the Paris Agreement, has committed to reducing its emissions by 50% by 2030, conditional on receiving international support for its mitigation and adaptation efforts (Government of Pakistan, 2021).

However, despite these global efforts, existing international legal frameworks often fail to address the specific needs of developing countries, such as Pakistan. While developed nations have made substantial reductions in emissions, many developing countries, including Pakistan, continue to face barriers such as financial limitations, a lack of technological capacity, and political challenges in implementing climate action (Stern, 2007). Moreover, international legal instruments on climate change often overlook issues

like climate-induced migration, transboundary water rights, and the protection of vulnerable populations, which are of particular concern to countries like Pakistan.

1.3. Pakistan's Engagement with International Legal Frameworks

Pakistan's engagement with international climate law reflects its commitment to global climate efforts, but challenges remain in translating international agreements into actionable domestic policies. Pakistan has actively participated in the **UNFCCC negotiations**, advocating for the inclusion of **climate justice** in international legal discourse, which calls for responsibility to be shared based on historical emissions and capacity (Siddiqui, 2015). However, Pakistan's national policies are still in the early stages of developing comprehensive climate strategies, and the country faces significant obstacles in achieving its climate goals due to insufficient resources and institutional capacity (Iqbal, 2020).

Additionally, Pakistan's reliance on the **Indus Water Treaty** with India, which governs the distribution of water from the Indus River, raises complex legal issues in light of climate change. As climate change exacerbates water stress in the region, the question of how existing treaties and agreements can be adapted to ensure equitable and sustainable water distribution between countries remains unresolved. This issue underscores the importance of regional cooperation in managing transboundary water resources and the need for more robust international legal frameworks to address climate-related disputes.

1.4. Purpose and Structure of the Study

This article aims to examine the impact of climate change on international legal frameworks, with a particular focus on Pakistan. It will evaluate how existing international treaties and agreements can be adapted to better address the climate challenges faced by Pakistan and other developing nations. The article will focus on three main areas: (1) the role of international climate agreements, (2) the intersection of climate change and human rights law, and (3) the challenges of transboundary water management in the context of climate change. By identifying gaps in the current legal framework, the article will propose recommendations for strengthening international cooperation and legal mechanisms to better support countries like Pakistan in adapting to and mitigating the effects of climate change.

2. Background

2.1 Climate Change as an International Legal Issue

Climate change is widely recognised as one of the most significant global challenges, with the potential to undermine both human and ecological systems on a massive scale. The rising concentration of greenhouse gases (GHGs), primarily carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O), resulting from human activities such as the burning of fossil fuels, deforestation, and industrial processes, has contributed to global warming. As a result, the global average temperature has increased by approximately 1.1°C since pre-industrial times, and it is projected to rise by an additional 1.5°C to 2°C by the end of the century if significant action is not taken (IPCC, 2021).

In response to the growing recognition of climate change as a global threat, international legal frameworks have emerged over the past few decades to address its impacts. The United Nations Framework Convention on Climate Change (UNFCCC), adopted in 1992, is the primary international legal instrument guiding global climate governance. Its objective is to stabilize atmospheric GHG concentrations to prevent

dangerous anthropogenic interference with the climate system. Since its adoption, several key agreements have been negotiated under the UNFCCC, most notably the Kyoto Protocol (1997) and the Paris Agreement (2015), which aim to regulate GHG emissions and promote global efforts to mitigate climate change (UNFCCC, 2015). These agreements have laid the groundwork for international cooperation but have also revealed the complexities and challenges of achieving meaningful global climate action.

The Paris Agreement is a pivotal milestone in international climate law, with 196 countries, including Pakistan, committing to limit global temperature rise to well below 2°C above pre-industrial levels, and to pursue efforts to limit it to 1.5°C. Additionally, the Agreement aims to enhance adaptive capacities, promote resilience, and reduce vulnerability to the impacts of climate change, especially for developing countries. However, implementing these global commitments requires extensive cooperation among legal, economic, and political stakeholders, which has proven difficult to achieve in practice. For countries like Pakistan, which are disproportionately affected by climate change despite contributing minimally to global emissions, the ability to implement and enforce international climate law remains a significant challenge (Stern, 2007).

2.2 Pakistan's Climate Vulnerability

Pakistan is ranked among the most vulnerable countries to the impacts of climate change, as it faces a wide range of climate-related challenges, including extreme weather events, water scarcity, agricultural stress, and flooding. Despite contributing less than 1% of global greenhouse gas emissions, Pakistan is highly susceptible to the consequences of climate change, largely due to its geographical location, socio-economic conditions, and dependence on agriculture (Khan et al., 2019).

One of the most critical climate challenges faced by Pakistan is **water scarcity**. The country relies heavily on the **Indus River System**, which provides approximately 90% of its water for irrigation. However, the river's flow is increasingly affected by climate change, particularly through altered rainfall patterns and the accelerated melting of glaciers in the Himalayas and the Hindu Kush mountain ranges, which are the primary sources of water for the Indus River (Rasul, 2014). As temperatures rise, Pakistan's water resources are expected to become more unpredictable, which could exacerbate already existing water stress. The **Indus Water Treaty**, signed between India and Pakistan in 1960 to allocate water from the river system, may become more difficult to manage as climate change affects the seasonal distribution of water, particularly in the context of **transboundary water management** and geopolitical tensions between the two countries.

In addition to water scarcity, Pakistan also experiences frequent **flooding** and **droughts**. The 2010 **floods** in Pakistan were one of the most devastating climate-related events in the country's history, displacing over 20 million people and causing extensive damage to infrastructure, agriculture, and livelihoods. Floods are expected to become more frequent and severe due to the combination of rising temperatures, erratic rainfall, and glacial melt. On the other hand, the country is also prone to periods of severe **drought** that affect its agricultural output, leading to food insecurity and loss of income for rural communities that depend on farming (Mumtaz, 2011).

Moreover, Pakistan's agricultural sector, which is highly sensitive to climate variability, faces significant risks from changing weather patterns, including shifting monsoon seasons, changes in crop yields, and increased pest and disease outbreaks (Khan et al., 2019). This has major implications for the food security of the country's growing population, as well as for the broader economy, given that agriculture is a major contributor to Pakistan's GDP and employment.

2.3 International Legal Frameworks Addressing Climate Change

Pakistan's climate vulnerability highlights the need for effective international legal frameworks to support adaptation and mitigation efforts, particularly for developing countries. International climate agreements, such as the **Paris Agreement**, provide a structure for global cooperation to reduce emissions and enhance resilience to climate impacts. Under the Paris Agreement, Pakistan has committed to reducing its greenhouse gas emissions by 50% by 2030, conditional on receiving financial support and technological assistance from developed countries (Government of Pakistan, 2021). This commitment reflects Pakistan's recognition of the urgency of climate action and its need for external support to achieve its climate goals.

The Green Climate Fund (GCF), established under the UNFCCC, plays a significant role in providing financial assistance to developing countries for climate change mitigation and adaptation projects. Pakistan has sought GCF funding to enhance its climate resilience, particularly in areas such as water management, renewable energy, and disaster risk reduction (Iqbal, 2020). However, access to these funds has been challenging due to administrative hurdles, insufficient capacity at the national level, and the complexity of the application process.

In addition to climate financing, there is growing recognition of the role of climate justice within international law. Climate justice seeks to hold developed countries accountable for their historical contributions to climate change, while ensuring that developing countries, such as Pakistan, receive the necessary resources to adapt to its impacts. Pakistan has been a vocal advocate for climate justice at international forums, arguing that countries with lower emissions should not bear the same burden of mitigation and adaptation as those responsible for the majority of historical emissions (Siddiqui, 2015). This discourse calls for equitable solutions that address both the environmental and social dimensions of climate change.

2.4 Legal Gaps and Future Directions

While international climate law has made significant strides, notable gaps remain in its ability to address climate-related challenges, particularly for developing countries like Pakistan. First, there is a lack of clarity on how existing treaties and mechanisms can be adapted to account for climate-induced migration and transboundary resource disputes. International law does not currently provide comprehensive legal frameworks for climate refugees, leaving countries like Pakistan without legal protections for climate-induced migrants who are displaced due to rising sea levels or extreme weather events.

Second, there is a growing need for regional cooperation in addressing climate change impacts, especially in South Asia. Shared resources, such as the Indus River, require coordinated efforts to manage water distribution. Yet, existing legal frameworks, such as the Indus Water Treaty, are ill-equipped to address climate-induced water stress. Reforms to international water law, particularly in the context of transboundary climate impacts, will be critical for promoting stability and cooperation in regions vulnerable to climate change.

3. Literature Review

3.1 International Legal Frameworks Addressing Climate Change

International legal frameworks have evolved to address the multifaceted challenges posed by climate change. The United Nations Framework Convention on Climate Change (UNFCCC), established in 1992, serves as the foundational treaty guiding global efforts to combat climate change. It set the stage for

subsequent agreements, notably the Kyoto Protocol (1997) and the Paris Agreement (2015). The Paris Agreement, in particular, marked a significant shift by adopting a bottom-up approach, where countries submit their own nationally determined contributions (NDCs) to reduce greenhouse gas emissions. These frameworks emphasise the principles of Common but Differentiated Responsibilities (CBDR), recognising that developed countries bear a greater responsibility due to their historical emissions and greater financial and technological capabilities .

However, despite these advancements, challenges remain in the implementation and enforcement of international climate agreements. Issues such as inadequate financing, lack of technological transfer, and insufficient political will have hindered the effectiveness of these frameworks. Moreover, the absence of binding legal obligations for developed countries to fulfill their commitments has led to criticisms regarding the equity and adequacy of international climate governance.

3.2 Pakistan's Climate Vulnerability and Legal Challenges

Pakistan, despite contributing less than 1% to global greenhouse gas emissions, ranks among the most vulnerable countries to the impacts of climate change. The country's reliance on agriculture, which constitutes a significant portion of its economy, makes it particularly susceptible to climate-induced disruptions. Studies have highlighted the adverse effects of climate change on Pakistan's agriculture, including altered precipitation patterns, an increased frequency of droughts and floods, and shifts in crop productivity.

In response to these challenges, Pakistan has developed national policies and legal frameworks to address climate change. The Pakistan Climate Change Act of 2017 established the Climate Change Council and the Climate Change Authority to oversee and implement climate policies. However, the effectiveness of these institutions has been questioned due to issues such as lack of coordination, limited resources, and political instability .

3.3 Judicial Interventions and Climate Litigation in Pakistan

The judiciary in Pakistan has played a pivotal role in addressing climate change issues through litigation. A landmark case is **Asghar Leghari v. Federation of Pakistan** (2015), where the Lahore High Court held that the government's failure to implement the National Climate Change Policy violated citizens' fundamental rights to life and a healthy environment. The court directed the establishment of a **Climate Change Commission** to ensure the enforcement of climate policies .

This case underscores the potential of judicial interventions in compelling governments to take climate action. However, the effectiveness of such interventions depends on the judiciary's independence, the clarity of legal provisions, and the government's willingness to comply with court orders.

3.4 Climate Justice and the Call for Reparations

Pakistan has been an advocate for **climate justice**, emphasising the need for developed countries to compensate developing nations for the loss and damage caused by climate change. The country's minister for climate change has called for reparations, arguing that Pakistan, despite its minimal contribution to global emissions, suffers disproportionately from climate-induced disasters .

The concept of climate reparations has gained traction in international forums, with the establishment of the **Warsaw International Mechanism for Loss and Damage** under the UNFCCC. However, the

implementation of reparations remains contentious, with debates over the sources of funding, the criteria for compensation, and the mechanisms for distribution.

3.5 Regional Cooperation and Transboundary Legal Issues

Pakistan shares several transboundary water resources, notably the Indus River, with neighbouring countries. Climate change exacerbates the challenges related to water scarcity, altered river flows, and potential conflicts over water resources. The Indus Water Treaty, established between Pakistan and India in 1960, has been a cornerstone of regional cooperation. However, climate-induced changes in water availability pose new challenges to the treaty's provisions .

Regional cooperation mechanisms, such as the South Asian Association for Regional Cooperation (SAARC), have been proposed to address the impacts of climate change collaboratively. However, political tensions and differing national interests have impeded the effectiveness of such regional initiatives.

3.6 Studies on Pakistan's Climate Legal Frameworks

Several studies have examined Pakistan's climate legal frameworks and their effectiveness. Research indicates that while Pakistan has developed comprehensive climate policies, the implementation remains weak due to factors such as inadequate institutional capacity, lack of public awareness, and insufficient funding .

Moreover, studies suggest that integrating climate change considerations into existing legal frameworks, such as environmental laws, disaster management policies, and human rights protections, can enhance the country's resilience to climate impacts. This integrated approach necessitates a comprehensive understanding of the interconnections between climate change and various sectors, including agriculture, water resources, health, and urban planning.

4. Research Questions

The central objective of this study is to critically examine the impact of climate change on international legal frameworks, with a focus on Pakistan's unique challenges and opportunities in addressing this global issue. The study aims to identify the key legal barriers and opportunities for enhancing international legal responses to climate change, particularly for developing countries such as Pakistan. The research questions outlined below will guide this exploration, enabling the analysis of existing legal frameworks and the formulation of recommendations to enhance climate governance at both national and international levels.

4.1 Primary Research Question

- **How effective are current international legal frameworks in addressing the climate change challenges faced by Pakistan, and what reforms are necessary to enhance these frameworks?**

This primary research question aims to evaluate the overall effectiveness of international legal instruments, including the **Paris Agreement**, the **UNFCCC**, and the **Kyoto Protocol**, in supporting Pakistan's climate change mitigation and adaptation efforts. The study will assess whether these frameworks are sufficient for addressing Pakistan's climate challenges, including water scarcity, climate-induced migration, and agricultural vulnerabilities. Additionally, the research will examine whether

reforms are necessary within these frameworks to better align them with the specific needs of developing countries, such as Pakistan.

4.2 Secondary Research Questions

1. **How do international climate agreements like the Paris Agreement impact Pakistan's climate action goals, and what are the challenges in meeting these targets?**

This question aims to explore the specific provisions of the **Paris Agreement** to which Pakistan has committed, particularly the country's pledge to reduce emissions by 50% by 2030. The study will assess whether the provisions of the Agreement are feasible and how Pakistan can overcome challenges such as financial limitations, technological capacity, and political hurdles in fulfilling these commitments. This will involve examining how international climate agreements influence national policies and the practical challenges of implementation.

2. **How does climate change influence transboundary legal issues in South Asia, particularly in relation to water management, and how can international law improve cooperation?**

This research question focuses on the **Indus Water Treaty** and other regional legal instruments governing shared resources in South Asia. The study will investigate how climate change affects the availability and distribution of water resources, exacerbating tensions between neighboring countries. This question will examine how international legal frameworks can promote regional cooperation in water management and mitigate conflicts arising from climate-induced water scarcity.

3. **What legal mechanisms are in place to protect climate-induced migrants, and how can international law better address the protection of climate refugees in Pakistan and South Asia?**

Pakistan, like many other developing nations, is facing an increasing number of people displaced by climate change. This question will examine the existing legal protections for climate refugees under international law, focusing on how the **1951 Refugee Convention** and other international instruments address the specific needs of climate-induced migrants. The study will assess whether Pakistan's legal framework adequately addresses the protection of displaced populations and whether reforms are needed to recognize climate refugees in international law.

4. **How can international trade law be adapted to support Pakistan's transition to a low-carbon economy while ensuring sustainable development?**

Pakistan's economy, particularly its agriculture and energy sectors, is highly dependent on carbon-intensive industries. This research question aims to investigate the potential role of **international trade law** in facilitating Pakistan's transition to a low-carbon economy. The study will examine policies such as **carbon pricing**, **green trade barriers**, and **subsidies for renewable technologies** that can support climate goals while promoting sustainable economic growth. The question will also address the challenges Pakistan faces in accessing global green markets and how international legal frameworks can help overcome these barriers.

5. **What role can human rights law play in addressing the impacts of climate change in Pakistan, particularly for vulnerable communities?**

This question will examine the intersection between climate change and human rights law, focusing on the protection of vulnerable populations in Pakistan, such as women, children, rural communities, and indigenous peoples. The research will examine how existing international human rights frameworks, including the International Covenant on Civil and Political Rights (ICCPR) and the International Covenant on Economic, Social and Cultural Rights (ICESCR), can be utilised to protect the rights of those most vulnerable to the impacts of climate change. Additionally, it will examine whether climate-induced violations of human rights, such as the right to water, food, and shelter, can be litigated under international law.

4.3 Rationale for the Research Questions

The selection of these research questions is based on the recognition that climate change is a multifaceted issue that requires a **holistic approach** involving various aspects of law, including international environmental law, human rights law, trade law, and regional cooperation frameworks. Each of these questions addresses a critical gap in the existing literature on climate change governance and law, particularly in the context of developing countries like Pakistan. By focusing on both international and domestic legal responses, the research aims to provide a comprehensive understanding of how international law can be reformed and strengthened to support better Pakistan's efforts to mitigate and adapt to climate change.

Furthermore, these questions are grounded in the **principle of climate justice**, which advocates for equitable legal responses to climate change, particularly for countries that have contributed least to the problem but are suffering the most from its impacts (Siddiqui, 2015). This principle emphasizes the need for international solidarity and cooperation, with developed countries taking on greater responsibility for providing financial and technological support to developing countries like Pakistan.

5. Methodology

5.1 Research Design

This research will employ a qualitative research design, utilising a combination of **doctrinal** and **empirical** methods to examine the impact of climate change on international legal frameworks, with a particular focus on Pakistan. The doctrinal approach will be used to analyze the existing legal instruments, treaties, and policies that address climate change, while the empirical approach will include case studies and an evaluation of real-world examples to understand the practical challenges and successes of implementing international climate laws. This mixed-method approach will provide both a theoretical and practical understanding of the legal frameworks and their impact on Pakistan's climate action strategies.

5.2 Data Collection

This study will collect data from both **primary** and **secondary** sources:

- **Primary Data:**
 - International Legal Texts: The primary data will consist of international legal documents, including the Paris Agreement (2015), United Nations Framework Convention on Climate Change (UNFCCC), Kyoto Protocol, Indus Water Treaty, and relevant national legal texts, such as Pakistan's Climate Change Act (2017) and Nationally Determined Contributions (NDC). These documents will be analyzed to assess their provisions related to climate

change adaptation and mitigation, their relevance to Pakistan's needs, and their implementation status.

- Case Studies: Specific case studies of Pakistan's climate change legal interventions, such as the Asghar Leghari case (2015), will be examined to understand how the judiciary has influenced climate policy and governance in the country. Case studies of transboundary water disputes, particularly related to the Indus River, will also be included to highlight the legal challenges in managing shared water resources under changing climate conditions.
- Interviews: Semi-structured interviews will be conducted with key stakeholders involved in climate change policy and governance in Pakistan, including representatives from the Ministry of Climate Change, Climate Change Authority, Pakistan Environmental Protection Agency (PEPA), UNFCCC delegates, and climate change experts. These interviews will offer insights into the practical challenges and opportunities associated with implementing climate policies and legal frameworks.
- **Secondary Data:**
 - Academic Literature: Extensive review of scholarly articles, books, and policy reports on climate change law, particularly with a focus on developing countries, transboundary water law, and climate justice. Studies on Pakistan's climate vulnerability, adaptation strategies, and legal frameworks will also be analysed to contextualise the issue.
 - Government Reports: National reports on Pakistan's climate vulnerability and adaptation strategies, as well as documents detailing the country's compliance with international climate agreements, will provide secondary data for analysis.
 - International Organisations' Reports: Reports by organisations like the Intergovernmental Panel on Climate Change (IPCC), Green Climate Fund (GCF), and United Nations Development Programme (UNDP) will be consulted to understand global climate governance and Pakistan's engagement with international climate finance and adaptation initiatives.

5.3 Research Methods

The research will employ the following methods for data analysis:

- **Doctrinal Legal Research:**
 - Doctrinal research will be used to analyze the legal texts, treaties, and conventions, with a focus on understanding the legal obligations of Pakistan under international law. This approach will allow for a detailed examination of the provisions of key climate agreements and national policies and assess their effectiveness and compatibility with Pakistan's needs.
 - The analysis will involve identifying gaps in international legal frameworks, particularly in areas like **climate justice**, **transboundary water law**, and **climate-induced migration**. The doctrinal analysis will also help in identifying areas where reforms are necessary to enhance the relevance and impact of international climate law for countries like Pakistan.
- **Case Study Method:**
 - Case studies will be used to evaluate specific instances of climate change legal responses in Pakistan, with a particular focus on **climate litigation** (e.g., the Asghar Leghari case) and **transboundary water disputes**. These case studies will highlight the practical challenges Pakistan faces in implementing climate policies and international agreements. The case study method will help to assess the role of the judiciary in shaping climate action and the effectiveness of existing legal frameworks in addressing climate change.
- **Interviews and Expert Opinions:**

- Semi-structured interviews will be conducted with climate policy experts, government officials, and legal practitioners to gather qualitative insights on the barriers to implementing climate change laws and policies. Interviews will enable a deeper understanding of the practical challenges, such as a lack of funding, technological capacity, and political will, that hinder the effective implementation of international legal commitments in Pakistan.
- The interviews will also provide recommendations for improving the legal frameworks and strengthening Pakistan's climate adaptation and mitigation strategies.

5.4 Data Analysis

The data collected from primary and secondary sources will be analyzed using **thematic analysis**. Thematic analysis is a qualitative method that involves identifying, analysing, and reporting patterns (or themes) within the data. The following steps will guide the analysis:

- **Identification of Legal Gaps:** Using the doctrinal approach, the research will identify gaps in existing international climate legal frameworks that hinder Pakistan's ability to meet its climate change objectives. These gaps may include areas such as climate-induced migration, regional water-sharing issues, and the lack of a comprehensive mechanism for climate reparations.
- **Evaluating Legal Effectiveness:** The case studies and interview data will be analyzed to assess the effectiveness of Pakistan's climate change legal frameworks and the international treaties it has ratified. This will include an examination of how well these frameworks have been implemented at the national level and the challenges faced in fulfilling international commitments.
- **Proposals for Reform:** Thematic analysis will also be used to generate recommendations for legal reforms. The research will identify key areas where changes in international legal frameworks are needed to address the unique challenges faced by countries like Pakistan. This may involve proposing new provisions in international treaties, enhancing regional cooperation mechanisms, or revising existing legal obligations to better align with climate justice principles.

5.5 Limitations of the Study

While this study will provide valuable insights into the intersection of climate change and international law, several limitations must be acknowledged:

- **Access to Data:** Given the complexity of climate change governance, access to some data, such as government reports and internal documents, may be restricted or limited.
- **Jurisdictional Variability:** International legal frameworks may vary in their application across different jurisdictions. This study will focus on Pakistan's legal context but may not fully capture the nuances of international climate law in other regions, which could limit the generalizability of some findings.
- **Time Constraints:** The research will be limited by time constraints, which may prevent the exploration of every possible aspect of international climate law and Pakistan's legal challenges.

6. Analysis and Discussion

6.1 Evaluation of Existing International Legal Frameworks

International climate agreements, notably the **Paris Agreement** and the **UNFCCC**, form the backbone of the global effort to combat climate change. These frameworks are designed to promote cooperation

between countries, establish legally binding emission reduction targets, and mobilize financial resources for climate mitigation and adaptation. For Pakistan, a developing country heavily impacted by climate change, these frameworks represent both an opportunity and a challenge.

The **Paris Agreement** (2015) marks a significant milestone in climate governance, encouraging countries to set their own emission reduction targets (Nationally Determined Contributions, or NDCs) while pursuing a collective goal to limit global warming to well below 2°C. Pakistan's NDC commits to reducing its greenhouse gas emissions by 50% by 2030, conditional on receiving financial and technical support from developed countries (Government of Pakistan, 2021). However, Pakistan faces several challenges in fulfilling these commitments. First, the country has limited financial resources and technological capacity to implement the necessary changes. Second, the government's ability to integrate climate action into its development policies is constrained by political and institutional limitations (Iqbal, 2020). The **Paris Agreement's** reliance on voluntary national targets has raised questions about the effectiveness of global emissions reductions, particularly when countries, including developing nations, struggle to meet their commitments.

Similarly, the **UNFCCC** provides a broad framework for international climate governance, aiming to stabilize atmospheric concentrations of greenhouse gases. Although Pakistan is a signatory to the UNFCCC and participates actively in global negotiations, the implementation of the framework at the national level has been inconsistent. For example, Pakistan has not yet fully incorporated climate change considerations into its core development policies, and its national climate policies often lack enforceability. This gap between international commitments and domestic action highlights the limitations of international legal frameworks, which often lack robust enforcement mechanisms.

6.2 Challenges in Implementing International Climate Law in Pakistan

The implementation of international climate law in Pakistan faces significant hurdles, primarily due to **institutional capacity constraints**, **financial limitations**, and **political instability**. Pakistan's climate policies are often fragmented across different ministries, with limited coordination between national, provincial, and local levels of government (Iqbal, 2020). For example, while the **Climate Change Act** (2017) created institutions such as the **Climate Change Authority** to oversee the implementation of climate policies, these institutions often lack the resources, political backing, and expertise to carry out their mandates effectively.

Financial limitations are another significant challenge for Pakistan. Although Pakistan has made progress in securing climate financing from international funds, such as the **Green Climate Fund (GCF)**, the country has struggled to access these funds due to bureaucratic delays and technical barriers. Additionally, the complexity of international climate finance mechanisms has meant that Pakistan has not fully benefited from global financial support for climate change adaptation and mitigation projects (Siddiqui, 2015). The gap between the availability of funds and the ability of Pakistan to utilize them highlights the need for more accessible, transparent, and efficient climate finance mechanisms.

Political instability and lack of political will also play a significant role in hindering the effective implementation of international climate law. Climate change policies often compete with short-term political and economic priorities, such as energy production, industrial growth, and economic stability. This lack of long-term vision impedes the formulation of comprehensive climate action plans that align with international climate commitments.

6.3 Climate Justice and Pakistan's Advocacy for Reparations

Pakistan has been a strong advocate for **climate justice** in international forums, emphasizing the disproportionate impact that climate change has on developing countries, which are the least responsible for the problem. The principle of climate justice calls for developed countries to take greater responsibility for addressing the adverse impacts of climate change, given their historical contribution to global emissions. Pakistan has consistently argued for the inclusion of **loss and damage** in international negotiations, seeking reparations and compensation for the loss of lives, livelihoods, and infrastructure due to climate-related disasters (Siddiqui, 2015).

International legal frameworks, such as the **Warsaw International Mechanism for Loss and Damage**, established under the **UNFCCC**, have made some progress in acknowledging the need for financial support for vulnerable countries. However, the implementation of compensation mechanisms for loss and damage remains limited. The lack of binding commitments on **climate reparations** means that Pakistan, despite being one of the most climate-vulnerable nations, is left to bear the full brunt of climate impacts without adequate international support. Pakistan's advocacy for climate reparations raises questions about the equity of current international climate frameworks, which often fail to address the historical responsibility of developed countries.

6.4 Transboundary Water Issues and Climate Change

Climate change poses significant challenges to the **Indus Water Treaty**, which governs the distribution of water from the Indus River system between Pakistan and India. The treaty, established in 1960, allocated water rights for the six rivers of the Indus Basin, with three rivers (the Beas, Ravi, and Sutlej) allocated to India, and three rivers (the Indus, Jhelum, and Chenab) allocated to Pakistan. However, climate change is expected to disrupt the flow of these rivers by altering rainfall patterns and accelerating glacial melt in the Himalayas and Hindu Kush mountain ranges, which supply a significant portion of the river's water (Rasul, 2014). As temperatures rise and the glaciers retreat, the flow of water into Pakistan's rivers will become less predictable, potentially leading to water shortages, increased competition, and tensions between Pakistan and India.

The **Indus Water Treaty** does not account for the impacts of climate change on river flows, and there is currently no legal framework within the treaty to adapt to these changes. Given the growing importance of water security for both Pakistan and India, there is a clear need for **regional cooperation** and legal reform to integrate climate change adaptation into the management of shared water resources. This issue is a critical area where international law could play a pivotal role in preventing conflict and promoting collaboration in addressing the challenges posed by climate-induced changes in water availability.

6.5 Recommendations for Legal Reform and Strengthening Climate Governance

To address the challenges identified, several reforms to international climate law are necessary:

1. **Creation of a Binding Climate Reparations Mechanism:** International climate frameworks must include binding mechanisms for loss and damage, ensuring that developing countries, such as Pakistan, receive adequate compensation for the climate impacts they face. A dedicated climate reparations fund, with clear legal obligations on developed countries, could provide much-needed financial support to vulnerable nations.
2. **Strengthening the Role of Regional Legal Instruments:** There is a need for stronger regional cooperation in managing transboundary resources, particularly water. The **Indus Water Treaty** should be revised to include provisions that account for the impacts of climate change on water availability. Additionally, regional organizations like

SAARC could play a more proactive role in promoting cooperation on climate adaptation and resource management.

3. **Improving Access to Climate Finance:** Simplifying access to climate finance mechanisms, such as the **Green Climate Fund**, and improving the capacity of national institutions to implement climate projects is crucial. This will require enhancing the technical expertise of Pakistan's climate institutions and streamlining the process for accessing and utilizing international climate funds.
4. **Integration of Climate Change into National Policies:** Pakistan's national policies must integrate climate change considerations into all sectors, including agriculture, energy, water, and urban planning. The creation of a **National Climate Change Act** with enforceable regulations could help ensure that climate change adaptation and mitigation are prioritized in development planning.

7. Conclusion and Findings

7.1 Summary of Key Findings

This study critically examines the impact of climate change on international legal frameworks, with a specific focus on Pakistan's vulnerability to climate change and its role in international climate governance. The research explored how international agreements, such as the **Paris Agreement**, the **UNFCCC**, and the **Indus Water Treaty**, address the challenges faced by Pakistan, while also identifying significant gaps and barriers to effective climate action.

Several key findings emerged from the study:

1. **International Legal Frameworks Are Insufficient for Addressing Pakistan's Climate Needs:** The **Paris Agreement** and the **UNFCCC** have established a framework for global climate governance; however, these international treaties have not fully addressed the specific needs of developing countries, such as Pakistan. Pakistan's reliance on agriculture, water resources, and its socio-economic vulnerability to climate-induced disasters means that the existing legal mechanisms are not robust enough to support the country's climate adaptation efforts. While Pakistan has committed to reducing its greenhouse gas emissions, its ability to achieve these targets is constrained by limited financial resources, technological gaps, and institutional weaknesses (Iqbal, 2020).
2. **Transboundary Water Issues Are Critical in Pakistan's Climate Change Governance:** Climate change poses significant challenges to Pakistan's management of shared water resources. The **Indus Water Treaty**—a historic agreement between Pakistan and India—has played a crucial role in water allocation; however, it does not account for the changing dynamics resulting from climate change, such as altered river flows and reduced water availability. The research highlights the necessity for international legal frameworks to adapt to these evolving conditions, thereby facilitating stronger regional cooperation and ensuring equitable water distribution among transboundary states (Rasul, 2014).
3. **Climate Justice and Pakistan's Advocacy for Reparations:** Pakistan has actively championed the cause of **climate justice** on the international stage, calling for reparations from developed countries for the disproportionate damage caused to its environment by global warming. The study found that international legal frameworks, including the **Warsaw International Mechanism for Loss and Damage**, have made some progress in addressing loss and damage. Still, concrete actions and financial support remain limited. The country's advocacy for climate reparations underscores the ethical and legal dimensions of climate

change, emphasising the need for developed countries to assume responsibility for their historical contributions to global emissions (Siddiqui, 2015).

4. **Human Rights Law Is Essential in Addressing Climate Change's Impact on Vulnerable Populations:**

Pakistan's climate vulnerability disproportionately affects its most vulnerable populations, including rural communities, women, children, and indigenous groups. This research found that international human rights law must play a more prominent role in climate governance to ensure the protection of the rights of those most affected by climate change. The intersection of **human rights** and **climate change** should be more deeply embedded in international legal frameworks, providing greater protections for climate refugees and ensuring that climate change does not further marginalise already vulnerable populations (Siddiqui, 2015).

7.2 Recommendations for Legal Reform and Strengthening Climate Governance

The findings of this study suggest several key reforms that could strengthen international legal frameworks and improve Pakistan's ability to address the impacts of climate change effectively:

1. **Establishing a Binding Climate Reparations Mechanism:**
The research emphasizes the need for a **binding climate reparations mechanism** under international law to ensure that countries like Pakistan, which have contributed little to global emissions but bear the brunt of climate change, are adequately compensated. This mechanism should provide financial support to vulnerable nations, not just for mitigation efforts but also for climate adaptation, including addressing loss and damage resulting from extreme weather events (Siddiqui, 2015).
2. **Revising the Indus Water Treaty to Address Climate Change:**
Given the significant impact of climate change on water availability in South Asia, this study recommends revising the **Indus Water Treaty** to account for the effects of climate change on river flow patterns. There is an urgent need for a new framework for **regional cooperation** in managing shared water resources, with legal provisions that enable flexible adjustments in water allocation in response to changing hydrological conditions.
3. **Strengthening Climate Finance Access:**
Access to climate finance remains a major barrier for Pakistan in its efforts to implement climate policies. This study recommends simplifying the process for accessing funds from international climate finance mechanisms, such as the **Green Climate Fund (GCF)**, and improving the capacity of national institutions to implement climate projects effectively. Additionally, the international community should provide financial support for Pakistan's transition to renewable energy and its efforts to build resilience in key sectors, including agriculture, water management, and infrastructure (Iqbal, 2020).
4. **Integrating Climate Change and Human Rights in International Law:**
Given the growing intersection of **climate change** and **human rights**, it is crucial to ensure that international legal frameworks effectively protect vulnerable populations from the most severe impacts of climate change. The study recommends that the international community work to integrate climate change within the broader framework of human rights law, ensuring that climate-induced displacement is addressed through binding legal protections for climate refugees and migrants. Legal instruments should also ensure access to **essential services**, such as water, food, and shelter, for affected populations (Siddiqui, 2015).
5. **Promoting Regional Cooperation on Climate Change:**
Pakistan is part of the **South Asian Association for Regional Cooperation (SAARC)**, and the study recommends that regional cooperation mechanisms like SAARC play a greater role in

facilitating cross-border action on climate change. This includes creating a regional climate change treaty focused on collaborative solutions to everyday challenges, such as water management, disaster risk reduction, and the sharing of climate-resilient technologies. Strengthening **regional cooperation** on climate adaptation would provide a more effective response to the shared vulnerabilities of countries in the region.

7.3 Implications for Policy and Future Research

This study underscores the need for more integrated and adaptive climate governance at the global, regional, and national levels. Policymakers in Pakistan and other developing countries must advocate for the incorporation of climate justice principles into international law, ensuring that those most vulnerable to climate change receive adequate support. Additionally, there is a need for further research into the specific legal frameworks that can better support climate-induced migration and protect the human rights of affected populations.

Future research should explore how international trade law can contribute to Pakistan's climate action efforts, especially in promoting green technologies and carbon tariffs that facilitate sustainable development. Research should also delve deeper into the specific legal challenges posed by transboundary water resources and propose new frameworks for regional cooperation in South Asia that account for the impacts of climate change.

7.4 Concluding Remarks

In conclusion, the impact of climate change on international legal frameworks is a pressing issue, particularly for developing countries like Pakistan. Although international legal instruments, such as the Paris Agreement and the UNFCCC, provide a basis for action, their implementation remains insufficient, especially in addressing the specific challenges faced by countries like Pakistan. There is a need for reforms in international climate law, particularly in the areas of climate justice, transboundary water law, and human rights protection. Strengthening international cooperation, improving access to climate finance, and revising existing legal frameworks will be crucial in helping Pakistan mitigate the impacts of climate change and adapt to its evolving challenges.

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