100 billion dollar COP-out

A critical analysis of the illusions and realities of climate adaptation

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Abstract

Climate adaptation has emerged as a defining paradigm of North-South relations in the 21st century, positioned at the intersection of development, security, and environmental governance. This thesis examines the tension between calls for diverse ontological and epistemological approaches to adaptation and the apparent homogeneity in adaptation practice, developing a methodological approach to empirically measure discourse centralization.

Through analysis of 45 National Adaptation Plans submitted to the UNFCCC, this research applies structural topic modeling and a novel "Dominance Index" to assess the degree to which adaptation discourse reflects plurality or uniformity. The findings reveal that adaptation discourse clusters most strongly by region rather than income level or geography, suggesting regional epistemic communities may have greater influence than either global frameworks or local knowledge systems in shaping how climate vulnerability is conceptualized and addressed.

Viewed through the lens of Human Security and critical future studies, these patterns offer insights into power dynamics in climate governance. The regional clustering pattern complicates the binary opposition between the pragmatic "adaptation nexus" approach and the critical "adaptation regime" perspective, revealing a more complex landscape of knowledge production that has significant implications for the future of adaptation as a framework for addressing climate vulnerability in North-South relations.

Acknowledgements

1 Introduction

Climate change is dangerous, unfair and already here.

Climate action has become a global phenomenon, a common story and goal, to different peoples in wildly different contexts. The action is motivated by urgency and agency, moralism and utility. Everyone wants to achieve climate justice, but how, and for whom?

The stories I have been exposed to span, "We need climate action to stay competitive in the world markets", "We need climate action to save biodiversity", "I need people to buy carbon credits so I can put food on the table". Needless to say, this list could be much longer. The many actors and overlapping stories make this field hard to capture and describe. The main goal of this thesis is to highlight the ways the stories collide.

Climate justice could be imagined as a spillover effect. Greenhouse gas emissions lead to changes in ecosystems, ecosystem change could lead to damages. If these damages fall exclusivlt (or disproportionally) on other than those responsible for the emissions, this in climate injustice. Climate mitigation are actions taken to avoid the emissions in the first place, also often referred to as a green transition. Climate adaptation are actions taken to avoid damages from ecosystem change, this is often also called climate security. Loss and damage is compansation for damages incurred. The negotiations at the United Nations Framework Convention for Climate Change (UNFCCC) often tries to find an optimal outcome, poltical economy wise.

Climate adaptation is a form of anticipatory governance, where the future is predicted and imagined, and measures are taken to reduce risk. There is a large degree of uncertainty, both in the actual events (hurricanes, cyclones, droughts and floods) and their impacts. The quantification of this risk is also uncertain, as value is understood differently between contexts, and might change over time. In other words, how one views climate adaptation is based on a tapestry of assumtions of the world.

Our worldviews are made up by the stories we share. They structure our world, assign our roles and tells us who to listen to. They shape what we deem reasonable, acceptable and preferable. They justify our actions, and tells us who belongs and should be excluded. In the global North, we assume this story to be universal, a claim that decolonal schoars challenge. Rather, they argue that the stories we tell, the knowledge systems we surround ourself with, are a cite of power struggle, where the dominant systems systematically eliminate the others. This thesis engages with this claim empirically.

[Societies change when our worldviews are challenged. Major changes, such as the suffragettes, the civil rights movement etc.etc. were struggles about *who counts*. Former colonies were

granted their freedom because they were now seen as nations in their own right. By engaging with the stories that justified the oppressions of women and minorities, the natural conclusion became that everyone are *people*. This is despite the law saying otherwise.]

[As I am writing this thesis, the world is experiencing the opposite development. The Putin regime claims Ukrainians do not exist, the Trump regime claims transgender peoples do not exsist.]

This thesis argues that the current climate regime re-tells the story of underdevelopment.

1.1 Scope

This thesis is based on text-mining and topic modeling all National Adaptation Plans (NAPs) subitted to the UNFCCC. This analysis squarly targets the official policy documents submitted to the UNFCCC. It recongnizes, and highlights, that these countries rarely are perfect representatives of their citizens. I use this

This thesis addresses three central research questions:

- What view of climate justice does adaptation have? What are their implications?
- How are climate adaptation interventions justified? Who decides?
- Is climate adaptation an effective way of delivering climate justice?

1.2 Disposition

After this introduction-section, the thesis continues. It is structured in three main parts. This is to cleanly separate the case I present from the research design I develop, and the analysis I do when I combine them.

Part 1 argues that climate adaptation is the most future oriented of the pillars of the UNFCCC, and Chapter 2 argues that climate adaptation is becoming a central part of development governance, where the goal is to finesse the three pillars to get the optimal political economy outcome, while Chapter 3 argues that the two main strands of research in climate adaptation mirror their roots in development and decolonial studies.

Part 2 argues that discourse centralization is a key metric to understand the different worldviews and their dominance in the discourse. Chapter 4 argues that the future is not a given destiny, but shaped by the decitions made and the worldview (and past-/future-view) that shapes them and Chapter 5 introduced the dominance index as a measure of the discourse centralization.

Part 3 argues that climate adaptation is a difficult, violent and ineffective way to deliver climate justice. Chapter 6 argues adaptation discourse shows remarkably high centralization,

with income level explaining more variance than geography and region and Chapter 7 argues the high concentration should be understood as a possible epistemicide.

Lastly, I conclude that the finessing of the UNFCCC works as a COP-out for countries in the global north to avoid cutting emmissions. Serious climate mitigation seems like a much preferable alternative that avoids foreclosing any futures in teh global south.

Part I

Climate adaptation

2 Context

> Climate adaptation is becoming a central part of development governance, where the goal is to finesse the three pillars to get the optimal political economy outcome.

International climate change action is governed by the United Nations Framework Convention on Climate Change (UNFCCC), established at the Earth Summit in Rio de Janeiro in 1992. The Summit also created two other conventions, The Convention on Biological Diversity (CBD) and The United Nations Convention to Combat Desertification (UNCCD) (Hall & Persson, 2018). Together, these frameworks established new institutional arrangements for addressing global environmental challenges.

Central to the UNFCCC is the principle of "Common but Differentiated Responsibilities" (CBDR), which acknowledges that while climate change affects all nations, industrialized countries bear greater historical responsibility for emissions and consequently should lead in providing solutions and support (Hall & Persson, 2018). This principle has become a cornerstone of international climate negotiations, though its interpretation has evolved over time, particularly as the economic circumstances of various countries have changed.

The CBDR principle fundamentally shaped North-South dynamics in climate governance by establishing differential obligations between developed countries (listed in Annex I and II of the convention) and developing countries. This differentiation created a framework where industrialized nations were expected to take the lead in emissions reductions while also providing financial and technological support to developing countries (Persson & Remling, 2014). These power relations have remained central to climate negotiations, even as the governance architecture has evolved to include adaptation and loss and damage alongside mitigation.

Climate governance has evolved through three distinct pillars: mitigation (established at Kyoto in 1997), adaptation (formalized at Cancun in 2010), and loss and damage (incorporated in the Paris Agreement in 2015). This evolution reflects growing recognition of climate impacts and the inadequacy of mitigation alone, while also revealing shifting North-South dynamics in how climate challenges are conceptualized and addressed (E. Roberts & Huq, 2015).

The adaptation funding landscape includes various mechanisms such as the Green Climate Fund, Adaptation Fund, and the Rio markers system for tracking adaptation finance. Despite pledges like the "$100 billion promise" and the recent $300 billion commitment at COP29 in Baku (2024), actual disbursement patterns reveal significant shortfalls and geographical and sectoral imbalances (CPI, 2023; Stern et al., 2022). These financial frameworks involve

complex interactions between public and private financing models, multilateral development banks, bilateral donor frameworks, national governance structures, and non-state actors.

2.1 Mitigation

> Climate mitigation emerged as the first pillar of climate governance, establishing North-South power dynamics through differential responsibilities that would later shape adaptation approaches.

The Kyoto Protocol, adopted in 1997, established climate mitigation as the first pillar of the UNFCCC. The protocol set the goal of keeping greenhouse gas levels below what was deemed dangerous to the biosphere, with emissions reductions primarily assigned to industrialized countries in recognition of their historical responsibility (Hall & Persson, 2018). The Kyoto Protocol set legally binding emissions reduction targets for 37 industrialized countries and economies in transition, with an average reduction of 5.2% from 1990 levels to be achieved by 2012.

This approach established a key North-South dynamic in climate governance: developed countries would take the lead in emissions reductions, while developing countries were granted space to pursue economic development without binding emissions targets. This differentiation was justified on both historical responsibility for emissions and the principle of equity, recognizing developing countries' legitimate development needs and lower capacity to reduce emissions (Hall & Persson, 2018).

The Kyoto Protocol also created market mechanisms for carbon trading, called "Flexibility mechanisms," where emissions could be traded from developing countries to industrialized countries (Peskett et al., 2011). These mechanisms included Emissions Trading, the Clean Development Mechanism (CDM), and Joint Implementation (JI). The CDM in particular became a significant channel for North-South cooperation, allowing developed countries to implement emission-reduction projects in developing countries and earn certified emission reduction credits.

Through these mechanisms, developing countries that were under no obligation to cut their emissions could sell carbon credits to industrialized nations with reduction obligations (Peskett et al., 2011). This approach was designed to reduce the overall costs of meeting mitigation targets while providing sustainable development benefits to host countries. However, the geographic distribution of CDM projects was uneven, with the majority concentrated in larger emerging economies like China, India, and Brazil, while least developed countries, particularly in Africa, hosted relatively few projects.

These patterns revealed how market-based approaches to climate governance could reproduce existing economic disparities rather than challenging them. The concentration of CDM projects in more industrialized developing countries reflected and reinforced global patterns of

investment, with the poorest countries largely excluded from participation in carbon markets despite their greater vulnerability to climate impacts (Dunlap, 2018).

The Paris Agreement, adopted at COP21 in 2015, marked a significant shift in the mitigation approach. Rather than maintaining the strict binary between developed and developing country obligations, Paris introduced a universal framework where all countries contribute through "nationally determined contributions" (NDCs) while still acknowledging differential capabilities and responsibilities (Hall & Persson, 2018). This hybrid approach attempted to resolve long-standing tensions in climate governance by allowing countries to determine their own contributions based on national circumstances while maintaining the principle of common but differentiated responsibilities.

However, this flexibility came at the cost of ambition, with the first round of NDCs collectively putting the world on track for approximately 3°C of warming rather than the Agreement's 1.5-2°C goal. This ambition gap has reinforced critiques that the climate regime prioritizes political feasibility and consensus over the transformative action needed to address the scale of the climate crisis (Williams, 2020).

2.2 Adaptation

> Adaptation evolved from a peripheral concern to a central pillar as climate impacts became unavoidable, creating a distinctive site where North-South relations materialize through funding mechanisms and institutional arrangements.

As the targets set in the Kyoto protocol proved inadequate to prevent significant climate impacts, and as governments faced resistance to ambitious mitigation measures, climate adaptation gradually gained prominence in the climate regime (E. Roberts & Pelling, 2018). This shift emerged from growing recognition that even with ambitious mitigation efforts, some climate impacts were already occurring and others were inevitable, necessitating organized adaptation efforts.

The development of adaptation within the UNFCCC progressed gradually before its formal establishment as a pillar. Early efforts included the 2001 establishment of the Least Developed Countries Fund (LDCF) and Special Climate Change Fund (SCCF) under the Global Environment Facility, as well as the Adaptation Fund under the Kyoto Protocol (Persson & Remling, 2014). These initial funding mechanisms established institutional arrangements that would shape North-South relations in adaptation governance, with developed countries providing finance that developing countries could access through specific procedures and criteria.

The Cancun Adaptation Framework, adopted at COP16 in 2010, formally established adaptation as the second pillar of climate governance. It created several important mechanisms, including the Adaptation Committee to promote coherent implementation of adaptation actions, the process for formulating and implementing National Adaptation Plans (NAPs), and

approaches to address loss and damage (Mizuno & Okano, 2024). This framework represented a significant step forward in balancing adaptation and mitigation within the climate regime.

Climate adaptation measures vary significantly across contexts. In industrialized countries, adaptation often focuses on managing surface runoff and in low-lying countries, addressing sea-level rise and storm surges through a mix of infrastructure modifications and ecosystem-based approaches (Hall & Persson, 2018). However, in developing countries, adaptation intersects with broader development challenges, including poverty reduction, food security, water management, disaster risk reduction, and public health. The boundaries between adaptation and development are often blurred, leading to debates about "adaptation mainstreaming" versus transformative approaches to adaptation (Ireland & McKinnon, 2013).

These different conceptualizations of adaptation reflect underlying North-South dynamics in climate governance. Adaptation in developed countries is typically framed as a technical challenge of adjusting infrastructure and systems to changing climate conditions. In contrast, adaptation in developing countries is often framed within broader development narratives, positioning climate vulnerability as intertwined with development challenges (Scoville-Simonds et al., 2020). This framing both reflects and reinforces power dynamics where Northern institutions define what counts as legitimate adaptation and how it should be implemented.

The adaptation funding landscape further materializes North-South relations through specific institutional arrangements and power dynamics. The adaptation financing architecture includes the Adaptation Fund (established under the Kyoto Protocol), the Least Developed Countries Fund, the Special Climate Change Fund, and the Green Climate Fund (Persson & Remling, 2014). Despite the multiple funding channels, adaptation finance has consistently lagged behind mitigation finance, creating tensions in international negotiations. The Green Climate Fund, established in 2010 and operationalized in 2015, has a mandate to balance its funding between mitigation and adaptation, but has struggled to achieve this balance in practice.

Adaptation funding is further complicated by challenges in defining and measuring adaptation outcomes, attributing climate impacts, and ensuring funds reach the most vulnerable communities (Persson & Remling, 2014). The absence of universally agreed metrics for assessing adaptation effectiveness—unlike mitigation, where greenhouse gas emissions provide a common metric—creates challenges for prioritizing investments and demonstrating results. These measurement challenges are not merely technical but reflect deeper questions about what counts as successful adaptation and who gets to define success.

The adaptation governance landscape is further complicated by its multi-level nature, with actions required at global, regional, national, and local scales. International frameworks provide guidance and resources, but adaptation is inherently context-specific, requiring localized assessment of vulnerabilities and appropriate responses (Ireland, 2010). This creates challenges for coherence across scales and for ensuring that global policies and financing mechanisms effectively support local adaptation needs. The tension between global standardization and local specificity reflects broader dynamics in North-South relations, where Northern-dominated

international institutions establish frameworks that may not adequately reflect the diverse realities and priorities of communities in the Global South.

2.3 Loss and damage

> Loss and damage represents the recognition that some climate impacts exceed adaptation limits, introducing contested questions of liability and compensation that directly challenge conventional development frameworks.

Loss and damage emerged as the third pillar of climate governance in recognition that some climate impacts exceed the limits of adaptation, particularly for the most vulnerable nations (E. Roberts & Huq, 2015). The concept gained prominence in UNFCCC negotiations as new scientific evidence accumulated and activism from small island developing states highlighted that some nations could face existential threats due to sea level rise and other severe climate impacts.

The historical development of loss and damage reveals the contested politics of climate responsibility and liability. The Alliance of Small Island States (AOSIS) first proposed an international insurance pool for loss and damage from sea-level rise in 1991, well before the UNFCCC was established (E. Roberts & Huq, 2015). However, the concept only gained significant traction two decades later, with the establishment of the Warsaw International Mechanism for Loss and Damage in 2013, and its subsequent incorporation into Article 8 of the Paris Agreement (Toussaint, 2021). This long struggle reflects persistent resistance from developed countries concerned about liability and compensation claims, with the United States in particular insisting on language in the Paris Agreement explicitly stating that Article 8 "does not involve or provide a basis for any liability or compensation" (Vanhala & Hestbaek, 2016).

Loss and damage is conceptualized in two primary ways, each with distinct implications for North-South relations. First, it can be understood as a form of legal process within domestic courts or under the UNFCCC umbrella. Through this process, damages from a climate-related event are calculated, the contribution of climate change to the event is established, the responsibility for emissions is attributed, and the damages are compensated (Wallimann-Helmer, 2023). This approach draws on principles of international environmental law, particularly the "polluter pays" principle and the concept of state responsibility for transboundary harm.

Climate attribution science has advanced significantly in recent years, with methodologies now able to quantify the extent to which climate change has increased the likelihood or intensity of specific extreme events (Williams, 2020). This scientific progress strengthens the potential for legal approaches to loss and damage, though significant challenges remain in establishing causation chains from emissions to specific damages and in allocating responsibility among multiple emitters over time.

The second conceptualization frames loss and damage as a form of risk management, where risk is reduced through adaptation measures, transferred through insurance schemes, and retained

through resilience measures (Mechler et al., 2020). This approach includes both economic and non-economic losses, with the latter encompassing losses of culture, identity, territory, and indigenous knowledge that cannot be readily monetized. Insurance-based approaches have gained particular traction, with initiatives like the InsuResilience Global Partnership aiming to provide climate and disaster risk finance and insurance solutions to vulnerable people.

These competing conceptualizations reflect fundamental tensions in North-South relations regarding climate responsibility. The legal/compensation framing directly challenges conventional development frameworks by asserting that historical emitters bear responsibility for climate damages, introducing questions of liability that industrialized countries have consistently resisted (Vanhala & Hestbaek, 2016). The risk management framing, while less politically contentious, may depoliticize loss and damage by shifting focus from historical responsibility to technical solutions, potentially reinforcing rather than challenging existing power dynamics.

A breakthrough in loss and damage governance came at COP27 in Sharm el-Sheikh with the establishment of funding arrangements for loss and damage, followed by the operationalization of the Loss and Damage Fund at COP28 in Dubai (Janzen et al., 2021). These developments represent significant progress, though questions remain about the fund's size, who contributes, who can access it, and under what circumstances. Initial pledges totaled approximately $700 million—far below estimates of loss and damage costs, which range from $290-580 billion annually by 2030 for developing countries alone.

The evolution of loss and damage governance illustrates how North-South power dynamics shape climate governance even as new institutional arrangements emerge. While developed countries have reluctantly accepted the principle of providing support for loss and damage, they have consistently worked to avoid language around compensation or liability that could create legal obligations based on historical emissions (E. Roberts & Pelling, 2018). Meanwhile, vulnerable countries continue to advocate for frameworks that acknowledge historical responsibility and provide predictable, adequate finance for addressing loss and damage.

These tensions are not merely rhetorical but have material consequences for how loss and damage is addressed and funded. The framing of loss and damage as either a matter of justice and compensation or as a technical challenge of risk management shapes which interventions are prioritized, how resources are allocated, and ultimately who bears the costs of climate impacts that cannot be avoided through mitigation or adaptation (Vanhala & Hestbaek, 2016).

2.4 UNFCCC Negotiations

> UNFCCC adaptation negotiations reveal fundamental tensions between technical framing and justice concerns, with ambiguous language and procedural complexity often masking power imbalances in how adaptation is conceptualized and funded.

The UNFCCC understands climate damages, all the negative effects of climate change, as a kind of spillover effect. Unmitigated emissions lead to damages, unadapted damages causes losses that have to be compensated. Since the UNFCCC, like most international agreements, is negotiated by countries that have to balance their need for strong policy action and future uncertainty, the process is ambiguous (Hall & Persson, 2018). This ambiguity manifests in deliberately vague language that can accommodate divergent interpretations, allowing countries with different positions to claim the agreement supports their view.

UNFCCC negotiations involve complex interactions between different country groupings with varying interests and capabilities. These include the G77 and China (representing over 130 developing countries), the Least Developed Countries (LDCs), the Alliance of Small Island States (AOSIS), the European Union, the Umbrella Group (including the US, Japan, Australia and others), and the Environmental Integrity Group (Hall & Persson, 2018). These coalitions provide developing countries with greater negotiating power than they would have individually, though the diverse interests within groups like the G77 can create internal tensions.

The dynamics within these negotiations reflect broader power imbalances in the international system. Technical complexity, language barriers, delegation size disparities, and limited institutional capacity create challenges for many developing countries, despite formal procedural equality (E. Roberts & Pelling, 2018). Civil society organizations often provide technical support to vulnerable country delegations, while also using various forms of advocacy to influence the negotiation process. The private sector, particularly fossil fuel industries, also exercises significant influence, both through direct lobbying and by shaping national positions of major economies.

Many see the relationship between climate action and economic growth as opposites, resisting binding agreements and preferring unsubstantiated goals. This tension often manifests in debates over the scale and nature of economic transformation required to address climate change effectively. Economic analyses have traditionally framed climate policy as imposing costs that must be weighed against the benefits of avoided damages, with models typically showing modest optimal carbon prices that increase gradually over time (Hall & Persson, 2018).

The Convention has room for multiple interpretations of most aspects of it, and there are two main ways of understanding the relation between the pillars. The first one is that the goal is to *minimize the damage* as much as possible by mitigating as much as possible, and that adaptation and loss and damage are there as a safety precaution. This perspective, often advanced by developed countries and mainstream economic analyses, emphasizes maximizing mitigation efforts to reduce the need for adaptation and loss and damage measures.

The second is that there exists an *optimal combination of mitigation, adaptation, and loss and damage* that uses the resources more efficiently. This view, grounded in economic efficiency logic, suggests balancing investments across all three pillars based on cost-benefit analyses that consider the marginal returns to different types of climate action (Mechler et al., 2020). It recognizes that some level of climate change is already unavoidable, making adaptation

necessary regardless of mitigation efforts, and that in some cases, adaptation may be more cost-effective than extremely expensive mitigation options.

This economically-oriented framing has been criticized for several reasons. First, it tends to obscure questions of justice and equity by focusing narrowly on aggregate costs and benefits without adequate attention to their distribution. Second, it struggles to account for non-economic values, including cultural heritage, biodiversity, and human lives, that cannot be readily monetized. Third, it typically applies high discount rates that effectively devalue future impacts, raising intergenerational equity concerns (Williams, 2020).

Beyond these economic frameworks, some scholars and activists argue for rights-based or justice-oriented approaches that prioritize the needs and perspectives of those most vulnerable to climate impacts, regardless of economic efficiency calculations (E. Roberts & Pelling, 2018). These approaches emphasize historical responsibility for emissions, procedural justice in decision-making, and recognition of diverse values and knowledge systems.

Indigenous perspectives offer yet another framing that often emphasizes relationships, reciprocity, and responsibilities to future generations and non-human beings. These approaches typically involve more holistic understandings of climate change that situate it within broader patterns of colonialism, extraction, and disruption of Indigenous relationships with lands and waters (Ireland & McKinnon, 2013).

These diverse perspectives on the relationship between mitigation, adaptation, and loss and damage reflect broader tensions in climate governance between technocratic approaches that seek optimal policy designs and more political approaches that emphasize power, justice, and competing values. The integration of these three pillars continues to evolve, with ongoing debates about their proper balance, financing, and implementation. As climate impacts intensify and the window for limiting warming to 1.5°C narrows, these discussions take on increasing urgency within and beyond the UNFCCC process.

3 Literature review

> The literature on climate adaptation is divided between the adaptation nexus approach that emphasizes technical solutions within existing systems and the adaptation regime critique that views adaptation discourse as a technique of power reinforcing rather than challenging global inequalities.

As mentioned in the previous chapter, this section presents the two main strands of climate adaptation research. One is sympathetic, the adaptation nexus, while the other is critical, the adaptation regime. Climate adaptation is concerned with vulnerability to climate damages, and the main disagreement is in the production of vulnerability.

The literature in this field maps onto broader debates in development studies, where the study of interventions in other societies has a long theoretical history. These competing paradigms reveal fundamentally different understandings of what adaptation is, how vulnerability is produced, and consequently, what appropriate interventions look like.

The adaptation nexus approach builds on conceptual foundations in participatory development, drawing from the work of scholars like Chambers and Freire. It focuses on assets, endowments, and capabilities as articulated by Sen, employing analytical frameworks such as sustainable livelihoods and vulnerability assessments. Methodologically, this approach favors participatory rural appraisal and knowledge co-production. Key institutional supporters include UNDP and the World Bank, which promote synergistic sector approaches that seek to address multiple development challenges simultaneously through adaptation interventions (Ireland, 2010).

In contrast, the adaptation regime paradigm emerges from post-structural critiques of development by scholars such as Escobar and Ferguson. It introduces key concepts like environmentality (Agrawal, 2005) and the adaptation regime (Paprocki, 2018), critically analyzing adaptation discourse as a technique of power. This paradigm employs ethnographic and discourse analysis methods, drawing extensively on case studies from Bangladesh and other climate "hotspots" to illustrate how adaptation can function as mere "spice" for conventional development projects, leading to maladaptation that may exacerbate vulnerability (Dewan, 2022).

3.1 Adaptation Nexus

> The adaptation nexus approach builds on development traditions to frame adaptation as a technical challenge requiring synergistic sector interventions, emphasizing

assets, capabilities, and institutional adjustments within existing systems.

The adaptation nexus approach has its roots in participatory movements in the 1990s, critiquing the then paradigm of top-down development research and practice, preoccupied with governmental institutions (Chambers, 1994; Freire, 1970). The participatory turn emerged as a response to decades of failed development interventions that imposed external solutions without understanding local contexts or incorporating local knowledge. Paulo Freire's critical pedagogy emphasized dialogue and conscientization as alternatives to what he termed the "banking model" of education and development, where experts simply deposited knowledge into supposedly empty vessels (Freire, 1970). Robert Chambers similarly challenged development professionals to examine their biases and recognize the value of local expertise, famously advocating for "putting the last first" (Chambers, 1994).

The researcher was not to observe and report, but had the ethical responsibility to include and empower the communities they researched (Desai & Potter, 2006). This ethical reorientation reflected broader epistemological shifts in development studies, recognizing multiple ways of knowing and the value of situated knowledge. Researchers were encouraged to view themselves as facilitators rather than experts, working alongside communities to co-produce knowledge rather than extracting data for academic purposes.

New methods were developed to better map communities and engage them in knowledge production, such as participatory rural appraisal. These methodologies included techniques like transect walks, community mapping, seasonal calendars, and wealth ranking exercises that enabled communities to visualize and analyze their own situations (Chambers, 1994). Unlike conventional survey techniques that often reinforced power differentials, these approaches were designed to be accessible to non-literate participants and to foster collective analysis.

The data collected was used with new analytical framework centering the individual and communities. These frameworks analyzed how livelihoods were stitched together with a mix of assets, endowments, capabilities (Sen, 2000), shaped by access (J. C. Ribot & Peluso, 2003) and aspirations (Appadurai, 2004), amongst others.

Amartya Sen's capabilities approach similarly shifted focus from resources or income to what people can actually do and be with those resources (Sen, 2000). By emphasizing capabilities rather than commodities, this framework highlighted how the same resources might translate into very different outcomes depending on various conversion factors, including personal characteristics, social arrangements, and environmental conditions.

Jesse Ribot's theory of access complemented these frameworks by examining the mechanisms through which people gain, control, and maintain access to resources (J. C. Ribot & Peluso, 2003). This approach went beyond formal property rights to consider how access is shaped by technology, capital, markets, labor, knowledge, authority, identity, and social relations. By highlighting these multiple mechanisms, Ribot's work helped explain why formal rights often fail to translate into actual benefits for marginalized groups and how power operates in resource governance.

This gave valuable insight into how societies functioned, and sparked new forms of interventions, with a focus on co-management and knowledge transfer. Community-based natural resource management emerged as one application of these insights, based on the premise that local users with secure rights over resources would manage them more sustainably than distant state authorities (Agrawal, 2005). Co-management approaches similarly sought to establish partnerships between local communities and state or non-state actors in resource governance, recognizing that neither complete centralization nor complete decentralization was optimal in most contexts.

These approaches were not without criticism. Some scholars argued that participatory methods could be co-opted by powerful actors, reinforcing rather than challenging existing power structures. Others noted that an uncritical focus on "the local" might romanticize communities and obscure internal divisions along lines of gender, class, caste, or age. Nevertheless, these frameworks and approaches represented an important shift in development thinking toward more contextually sensitive and participatory approaches.

This strand of research has since become a part of the mainstream development discourse, and variations on the participatory methods being implemented by the largest aid organizations like the World Bank. The World Bank's adoption of "community-driven development" approaches in the early 2000s represented a significant institutionalization of participatory methods, with billions of dollars channeled through programs emphasizing community control over planning decisions and resources. Similarly, the United Nations Development Programme incorporated community-based adaptation into its climate programming, emphasizing local knowledge and decision-making while providing technical and financial support (Ensor & Berger, 2009).

They see climate adaptation as just one policy area amongst all the others, and is searching for some key sectors and for synergies between them (Ireland, 2010). This "mainstreaming" approach seeks to incorporate adaptation considerations into existing development planning and sectoral policies rather than treating adaptation as a standalone issue. Proponents argue that mainstreaming promotes efficiency, sustainability, and coherence across different policy domains. Key sectors typically identified for adaptation mainstreaming include agriculture, water management, health, disaster risk reduction, and infrastructure.

The search for synergies between adaptation and other policy objectives has been particularly prominent in discussions of "co-benefits," where interventions simultaneously advance adaptation goals while yielding benefits in areas such as mitigation, biodiversity conservation, or poverty reduction (Almenar et al., 2021). This emphasis on multiple benefits aligns with the efficiency logic of mainstream development institutions and responds to the reality of limited resources for addressing multiple challenges.

One example of this could be tree planting projects, that while their main purpose is carbon sequestration, the project could contribute in many ways:

- Economic security through the sale of forest carbon credits to the global north. If the tree is planted as a part of a farming system as a form agroforestry, the wood could be

seen as a form of long-term investment that could be harvested in 30 years
- Food security through production of fruit
- Gender equality by giving the responsibility for managing the trees to women
- Environmental security by providing shade with leaves and reduce soil erosion with roots (Almenar et al., 2021).

This example illustrates the nexus approach's emphasis on finding interventions that address multiple objectives simultaneously. By framing tree planting as contributing to climate mitigation, adaptation, economic development, gender equality, and environmental protection, proponents can appeal to diverse stakeholders and funding sources. Similar multi-purpose framings can be found in integrated water resource management, climate-smart agriculture, and ecosystem-based adaptation.

The nexus understanding sees vulnerability as an individual's *lack* of certain skill, capability, or access to a resource. When the right resource is given, it is expected to start an upwards spiral, where outcomes will improve in all other fields as well (Schipper, 2020). This conceptualization of vulnerability focuses on characteristics of individuals or communities that make them susceptible to harm, such as limited assets, poor infrastructure, or weak institutions. It tends to frame vulnerability as a condition rather than a process, emphasizing what people lack rather than examining how and why they came to lack these resources or capabilities.

This framing has been criticized for its tendency to depoliticize vulnerability by focusing on technical solutions without addressing the structural factors that create vulnerability in the first place. Critics argue that by framing vulnerability as primarily a problem of individual or community capacity, the nexus approach may inadvertently place responsibility for adaptation on those with the least resources and power to transform the systems that produce vulnerability (Eriksen et al., 2021).

Moreover, the emphasis on synergies and win-win solutions may obscure difficult trade-offs and competing interests that are inherent in adaptation decision-making. Not all stakeholders will benefit equally from particular adaptation interventions, and some may even be harmed. The nexus approach's tendency to emphasize positive synergies may inadequately prepare practitioners for navigating these difficult trade-offs and power dynamics (J. Ribot, 2013).

Despite these critiques, the adaptation nexus approach remains highly influential in both research and practice, particularly among major development institutions and funding agencies. Its practical orientation, compatibility with existing institutional structures, and promise of addressing multiple objectives simultaneously contribute to its continued dominance in mainstream adaptation discourse.

3.2 Adaptation Regime

> The adaptation regime critique draws from post-structural analysis to reveal how adaptation discourse functions as a technique of power that constructs vulnerability

in ways that legitimize conventional development interventions while foreclosing alternative futures.

The adaptation regime has its roots in the deconstructionist anthropology of development (Lewis & Mosse, 2006). It is heavily influenced by post-structuralism, and critiques of the *discourse of development*. The discourse is analyzed as "a system of knowledge practices, technologies, and power relationships" that orders the relationships between people and institutions (Lewis & Mosse, 2006, p. 4). This approach draws from post-structural theory, particularly concepts of discourse, governmentality, and biopolitics, to analyze how power operates through knowledge production and institutional practices.

Central to this perspective is the understanding of discourse not simply as language but as a system that structures what can be thought, said, and done in a particular domain. Discourses establish "regimes of truth" that determine what counts as valid knowledge and who is authorized to speak it. From this perspective, development discourse constructs its objects (underdevelopment, poverty, vulnerability) in ways that simultaneously create the need for intervention and position certain actors (experts, development institutions) as uniquely qualified to intervene (Escobar, 1995).

The discourses that order the relationships between rich and poor countries change over time, and development had replaced civilization, just as civilization had replaced God before it (Ferguson, 1994).

Escobar traced how development discourse constructed the "Third World" as an object of knowledge and intervention, establishing relationships of power between experts and those to be "developed" (Escobar, 1995). He documented how development institutions, from the World Bank to bilateral aid agencies to NGOs, produce and disseminate knowledge about developing countries that reinforces certain ways of seeing and intervening while marginalizing others. This knowledge production constitutes a form of power that shapes what interventions are considered legitimate, what outcomes are valued, and whose expertise counts.

Ferguson's ethnographic study of development in Lesotho demonstrated how development interventions, even when failing to achieve their stated objectives, successfully expand bureaucratic state power and depoliticize poverty by rendering it a technical problem rather than a political one (Ferguson, 1994). His concept of the "anti-politics machine" highlights how development discourse systematically represents poverty and underdevelopment as technical problems requiring technical solutions, effectively sidelining questions of politics, power, and structural inequality. By framing complex political-economic realities as technical challenges amenable to expert intervention, development discourse limits the space for radical alternatives and reinforces existing power relations.

Rather than seeking better development, post-development scholars called for alternatives to development—approaches that break with the epistemological and institutional frameworks of conventional development and create space for diverse ways of knowing and being (Escobar, 2018). This perspective emphasized the importance of local, indigenous, and non-Western

knowledge systems and practices that had been marginalized by dominant development discourse.

As nature and climate discourses grew to prominence, Agrawal (2005) argued that the new relationships should be understood as a form of *environmentality*. Adapting Foucault's concept of governmentality to environmental contexts, Agrawal examined how environmental governance regimes produce new kinds of environmental subjects who come to care about and act toward the environment in new ways. His ethnographic study of forest councils in Kumaon, India, demonstrated how participation in new regulatory regimes transformed local residents' subjectivities and relationships to forest resources over time.

This concept of environmentality provided a theoretical bridge between Foucauldian analyses of development and emerging critiques of environmental governance. It highlighted how environmental interventions, like development projects, operate not simply through coercion but through reshaping how people understand themselves and their relationships to the natural world. This perspective is particularly relevant for understanding climate adaptation, which often involves similar processes of knowledge production, subject formation, and governance at multiple scales (Agrawal, 2005).

Paprocki (2018) describes it as an *Adaptation regime* based on her field work in Bangladesh. She argues that some countries are constructed as climate vulnerable and therefore in need of climate adaptation and that this imaginary is closely related to other historical processes of colonialism. Through careful ethnographic work in coastal Bangladesh, Paprocki documents how a diverse set of actors, including government officials, NGO workers, scientists, and donor agency representatives, collectively produce knowledge about climate vulnerability that justifies particular kinds of interventions while foreclosing others.

This production of Bangladesh as the "ground zero" of climate change operates through what Paprocki terms "anticipatory ruination"—the rendering of certain places as already lost, which justifies radical interventions that might otherwise face resistance. This discursive production of climate vulnerability is not politically neutral but aligned with particular development visions that privilege urbanization, export-oriented growth, and market-based solutions over rural livelihoods and communities (Paprocki, 2018).

All societal issues are reduced to be climate related, and unavoidable(Hulme, 2011). This dystopian imaginary builds the groundwork for extensive experimentation, since the dystopian outlook eliminates the possible downsides. This "climate reductionism" transforms complex social, economic, and political challenges into technical problems of climate vulnerability, effectively depoliticizing issues like poverty, inequality, and land rights. By framing climate impacts as inevitable and beyond human control, the adaptation regime eliminates the space for questioning whether particular interventions are necessary or desirable, or whose interests they serve (Paprocki, 2018).

This, she argues, leads to dispossession as land is taken for shrimp aquaculture and migration to the cities is promoted. The poor and vulnerable that were supposed to be helped, simply are not (Paprocki, 2018). Paprocki documents how adaptation interventions in coastal Bangladesh

have facilitated a transition from rice farming to export-oriented shrimp aquaculture, displacing smallholder farmers and agricultural laborers. This dispossession is justified in the name of climate adaptation, with shrimp farming presented as more viable in a climate-changed future despite its negative social and environmental impacts.

Dewan (2022) further develops this, highlighting the building of dams and polders as flood protection. She argues the polders built as a climate adaptation measure, are the same as the old for flood protection, and are successful at acquiring funding. Climate adaptation was *the spice* that made their applications for funding work. The only issue was that the polders did not work. By blocking the seasonal flooding and draining, the rivers became silted and needed dredging, furthering the risk of floods.

Dewan's analysis illustrates how the adaptation regime recycles old development interventions under new climate adaptation labels. Polders (embankments designed to protect low-lying land from flooding) had been constructed in Bangladesh since the 1960s, with mixed results. Yet rather than learning from these experiences, similar interventions were repackaged as climate adaptation to access new funding streams. This "adaptation as spice" phenomenon reveals how the climate adaptation label is used to legitimize and secure funding for interventions that might otherwise face scrutiny or resistance (Dewan, 2022).

Moreover, Dewan shows how these interventions often fail on their own terms, creating new vulnerabilities rather than reducing existing ones. By disrupting natural hydrological processes, the polders contributed to river siltation, waterlogging, and increased flood risk—precisely the problems they were supposed to address. This pattern of maladaptation highlights the limits of technical approaches that fail to engage with complex social-ecological systems and the knowledge of those who inhabit them (Dewan, 2022).

The adaptation regime critique extends beyond Bangladesh to other contexts where similar dynamics operate. In the Pacific, scholars have documented how the construction of small island states as inevitably disappearing due to sea level rise has justified interventions focused on migration rather than supporting communities' desires to remain and adapt in place. This "drowning islands" discourse constructs Pacific Islanders primarily as future climate refugees, obscuring their agency, resilience, and ongoing adaptation efforts. It also shifts attention from the responsibilities of high-emitting countries to reduce emissions to the supposed inevitability of displacement (Janzen et al., 2021).

Across diverse contexts, similar patterns emerge of vulnerability being constructed in ways that align with existing development paradigms rather than challenging them. Adaptation interventions reproduce rather than transform the political-economic relations that generate vulnerability in the first place. The adaptation regime operates not through simple imposition but through the production of knowledge, subjects, and governance arrangements that make particular approaches seem natural, necessary, and inevitable.

Critics have also examined the role of visualization technologies and media representations in producing the adaptation regime's dystopian imaginaries. Climate models, vulnerability maps, and disaster photography together constitute seemingly objective perspectives that mask their

partial and situated nature. These visual technologies produce certain places and populations as exceptionally vulnerable, justifying interventions by external experts while often marginalizing local understandings of environmental change and appropriate responses (Scoville-Simonds et al., 2020).

The adaptation regime critique does not deny the reality of climate impacts or the need for adaptation. Rather, it questions who defines what adaptation means, whose knowledge counts in designing interventions, and who benefits from adaptation funding. It calls attention to how adaptation discourses and practices can reproduce rather than challenge existing power relations, and how they may foreclose alternative futures that do not align with dominant development paradigms (Ireland & McKinnon, 2013).

This critical perspective has begun to influence adaptation practice, with growing attention to questions of justice, transformation, and alternative knowledge systems. Some scholars and practitioners are exploring how adaptation might be reimagined as a site of contestation and possibility rather than technical management—a space where communities can articulate and pursue their own visions of climate-just futures. These approaches emphasize the political nature of adaptation decisions and seek to democratize adaptation governance in ways that center the agency and knowledge of those most affected by climate impacts (Eriksen et al., 2021).

Perhaps most fundamentally, the adaptation regime critique challenges us to rethink what counts as adaptation and who gets to decide. It suggests that true adaptation may require transforming the social, economic, and political systems that produce vulnerability in the first place, rather than simply adjusting to their outcomes. This may involve reimagining and reconfiguring relationships between humans and non-humans, between present and future generations, and between different ways of knowing and being in the world (Escobar, 2018).

Part II

Research design

4 Theory

> Climate adaptation discourse serves as a site of contested futures where epistemological and ontological assumptions shape which adaptation pathways are considered possible, legitimate, or desirable, often constraining rather than expanding future possibilities.

Climate adaptation discourse operates at the intersection of multiple knowledge systems and worldviews, each with distinct assumptions about what constitutes valid knowledge, how vulnerability is understood, and what futures are possible or desirable. This chapter develops a theoretical framework for analyzing discourse centralization in climate adaptation, focusing on how certain epistemological and ontological positions dominate while others are marginalized.

The central theoretical tension explored here is between global discourses and diverse epistemological traditions. Climate adaptation represents a particularly revealing site for examining this tension because it necessarily involves negotiating between standardized global frameworks and diverse local realities. As international institutions, national governments, and local communities engage with adaptation challenges, they draw upon different knowledge systems, temporal frameworks, and understandings of human-environment relationships that may align or conflict with one another (Schipper, 2020). These knowledge networks and the domination is not necesarily visable.

The construction of "climate vulnerability" in adaptation discourse establishes particular relationships between actors, especially between the Global North and South. This discourse functions as a power technique that opens some future possibilities while foreclosing others. When adaptation is framed primarily as a technical problem rather than a political-economic condition, deeper questions about systemic causes of vulnerability are sidelined (Eriksen et al., 2021).

Drawing on interdisciplinary fields including development studies, future studies, science and technology studies, and political ecology, this theoretical framework provides an analytical lens for understanding the power dynamics at play in how adaptation is conceptualized and implemented across different contexts.

4.1 Epistemologies of the South

> Adaptation discourse privileges Northern knowledge systems while systematically marginalizing alternative epistemologies, reproducing cognitive injustice despite the diverse contexts in which adaptation occurs.

A critical starting point for understanding epistemological diversity in climate adaptation is Boaventura de Sousa Santos' concept of "Epistemologies of the South." Santos argues that modern Western knowledge production has systematically rendered alternative knowledge systems invisible through what he terms "epistemicide" – the elimination or marginalization of knowledge systems that do not conform to dominant scientific paradigms (Santos, 2016). This cognitive injustice parallels the material injustices of climate change itself, where those least responsible for emissions often face the greatest impacts while having the least voice in shaping response strategies.

Santos identifies two key problems in dominant knowledge systems: the "epistemological problem" concerning what counts as knowledge and who can produce it, and the "ontological problem" concerning what exists and how we relate to it. Both problems are evident in climate adaptation discourse, where certain forms of expert knowledge (particularly climate science, economics, and engineering) are typically privileged over indigenous, local, and experiential knowledge. This privileging occurs despite growing recognition that addressing complex challenges like climate adaptation requires diverse knowledge systems working in complementarity rather than hierarchy.

The concept of cognitive justice suggests that there can be no social justice without recognizing the validity and value of diverse ways of knowing. In the context of climate adaptation, cognitive justice would require creating space for multiple knowledge systems to inform how vulnerability is understood and addressed. This does not mean uncritically accepting all knowledge claims as equally valid but rather recognizing that different knowledge systems have different strengths, limitations, and domains of applicability.

Santos proposes an "ecology of knowledges" as an alternative to epistemological monocultures. Rather than positioning Western scientific knowledge as inherently superior to other forms of knowledge, an ecology of knowledges recognizes the partial and situated nature of all knowledge systems and seeks productive dialogue between them. This approach aligns with calls from scholars and practitioners for more pluralistic and inclusive approaches to climate adaptation that draw on diverse knowledge systems.

A technocratic ontology frames vulnerability as primarily a technical problem requiring expert solutions, emphasizing quantification, prediction, and control. This perspective positions adaptation as a process of adjusting systems to accommodate projected climate impacts, with technologies and management techniques as primary solutions.

In contrast, a relational ontology understands vulnerability as embedded in dynamic social-ecological relationships and power dynamics. This perspective emphasizes connectivity, emergence, and transformation, viewing adaptation as a process of reconfiguring relationships between humans and non-humans, present and future generations, and different forms of knowledge.

The dominance of technocratic ontologies in adaptation discourse reflects broader patterns of knowledge production that privilege certain ways of knowing and being while marginalizing others. This dominance is not politically neutral but shapes which adaptation pathways are considered legitimate or feasible, often reinforcing existing power relations rather than transforming them (Scoville-Simonds et al., 2020).

4.2 Future-making

> Adaptation planning engages in anticipatory governance that actively shapes which futures are considered possible or impossible, with dominant approaches often constraining rather than expanding adaptation possibilities.

Climate adaptation is fundamentally oriented toward the future, concerned with anticipating and responding to projected climate impacts. How futures are imagined and constructed through adaptation discourse shapes what interventions are considered necessary, desirable, or even possible. Different approaches to future-making in adaptation reflect different epistemological and ontological assumptions, with significant implications for whose futures are prioritized and how agency is distributed (Nalau & Cobb, 2022).

Sohail Inayatullah's typology of predictive, cultural, and critical epistemologies of the future provides a useful framework for understanding different approaches to future-making in adaptation (Inayatullah, 1990). The predictive approach, dominant in mainstream adaptation discourse, relies on scientific forecasting, scenario planning, and risk assessment to anticipate future climate impacts and design appropriate responses. This approach privileges certain forms of expertise, particularly climate science, economics, and engineering, and tends to frame the future primarily in terms of biophysical changes and their direct consequences.

While valuable for identifying potential risks and intervention points, the predictive approach often inadequately addresses the social, cultural, and political dimensions of climate futures. It may present particular development pathways as inevitable rather than as choices shaped by values and power relations. Moreover, by positioning experts as the primary authorities on the future, predictive approaches may marginalize the future visions and aspirations of communities most affected by climate impacts (Goode & Godhe, 2017).

The cultural approach to futures emphasizes how different cultural contexts produce different understandings of time, change, and desirable futures. This approach recognizes that how communities imagine and relate to the future is shaped by cultural values, traditions,

and worldviews that may differ significantly from dominant Western frameworks (Inayatullah, 1990).

The critical approach to futures focuses on examining and challenging the assumptions, power relations, and interests embedded in dominant future visions. This approach seeks to "denaturalize" seemingly inevitable futures by revealing how they are constructed through particular discourses and practices (Inayatullah, 1990). In adaptation, a critical approach might interrogate whose interests are served by particular adaptation pathways, how vulnerability is constructed through adaptation discourse, and what alternative futures are rendered invisible or implausible by dominant approaches.

The concept of "defuturing" developed by (Fry, 2019) helps us understand how dominant adaptation discourses can actively reduce rather than expand future possibilities. Defuturing occurs when particular ways of framing climate challenges and solutions foreclose alternative development pathways that might better address the intertwined challenges of climate change, inequality, and unsustainability. When adaptation is framed narrowly as adjusting to climate impacts within existing systems rather than transforming the systems that produce vulnerability, it limits the imagination of alternative futures.

For example, when coastal urban adaptation focuses primarily on protecting valuable real estate and infrastructure through seawalls and flood barriers, it may foreclose alternative approaches involving managed retreat, ecosystem restoration, or more fundamental reconsideration of urban-coastal relationships. Similarly, when agricultural adaptation emphasizes technological packages like drought-resistant crops and precision irrigation, it may foreclose alternative pathways involving agroecology, food sovereignty, or different land tenure arrangements (**taylor2018?**).

Adaptation discourse thus plays a crucial role in what (Goode & Godhe, 2017) term "anticipatory regime formation"—the processes through which particular ways of knowing and governing the future become institutionalized. Through policies, plans, funding mechanisms, and expert networks, certain approaches to adaptation become normalized while others are marginalized or rendered implausible. These anticipatory regimes shape not just how we respond to climate impacts but how we imagine and enact possible futures.

The concept of "capitalist realism" (Goode & Godhe, 2017) further illuminates how dominant adaptation discourse can constrain imagination of alternative futures. When adaptation is framed primarily within existing capitalist relations and market logics, alternatives that might challenge these relations become difficult to imagine or articulate. This narrowing of future possibilities reflects broader patterns of defuturing in contemporary governance, where technical management of climate impacts displaces more transformative approaches that might address root causes of vulnerability.

Critical futures studies offers important insights for challenging these patterns of defuturing in adaptation discourse. By interrogating the assumptions, values, and power relations embedded in dominant future visions, critical futures approaches can open space for more diverse

and just adaptation pathways. This involves not just critiquing existing approaches but actively cultivating what (Cretney et al., 2024) calls "adaptive futures" that expand rather than constrain possibilities for responding to climate change.

4.3 Discourse Centralization

> The concept of discourse centralization provides a theoretical framework for analyzing how adaptation discourse reflects either epistemological diversity or monoculture across different contexts and dimensions.

Drawing on the theoretical perspectives discussed above, the concept of discourse centralization provides a framework for analyzing epistemological diversity in climate adaptation. Discourse centralization refers to the degree to which adaptation discourse reflects a single dominant perspective or accommodates multiple ways of knowing and being. High centralization indicates a homogeneous discourse dominated by particular epistemological and ontological assumptions, while low centralization indicates a more heterogeneous discourse that encompasses diverse perspectives (Inayatullah, 1990).

Discourse centralization operates through several interrelated mechanisms. First, knowledge authorization determines what counts as valid knowledge and who is recognized as a legitimate knowledge producer. In adaptation discourse, certain forms of expertise (particularly climate science, economics, and technical planning) are typically authorized as more credible and relevant than others (such as local, indigenous, or experiential knowledge). Second, problem framing shapes how adaptation challenges are understood and what solutions seem appropriate. When adaptation is framed primarily as a technical problem, for example, it suggests technical solutions rather than political or social transformations.

Third, linguistic practices such as specialized terminology, standardized categories, and particular narrative structures can reinforce certain ways of knowing while excluding others. The language of climate models, vulnerability indices, and cost-benefit analysis, for example, may be inaccessible to many stakeholders and privilege certain kinds of knowledge over others. Fourth, institutional arrangements including funding mechanisms, governance structures, and professional incentives can systematically favor particular approaches to adaptation while marginalizing alternatives (Escobar, 1995).

These mechanisms of discourse centralization have significant implications for climate justice. When adaptation discourse is highly centralized around Northern epistemologies and ontologies, it may reproduce colonial power relations and marginalize the perspectives of those most vulnerable to climate impacts (Ireland & McKinnon, 2013). Conversely, more decentralized discourse that creates space for epistemological diversity may enable more just and effective approaches to adaptation that draw on multiple knowledge systems and center the needs and aspirations of affected communities.

The concept of discourse centralization provides a theoretical foundation for empirically analyzing patterns of homogeneity or diversity in adaptation discourse. Rather than assuming either complete homogeneity or radical diversity, this approach enables nuanced assessment of the degree to which adaptation discourse reflects epistemological plurality or monoculture across different contexts (**petersen2015?**). It also helps identify factors that may promote or inhibit epistemological diversity in adaptation governance, such as institutional structures, power relations, and historical legacies.

Scale is a central organizing principle in climate adaptation discourse, with "the local" and "the global" frequently positioned as distinct domains requiring different forms of knowledge and governance. However, critical geographers have long argued that scale is not a pre-given hierarchy but a social construction with significant political implications (**marston2000?**). How scale is constructed in adaptation discourse shapes who has authority to speak about adaptation needs, what kinds of knowledge are considered relevant, and how resources are allocated.

The global scale is constructed through international institutions like the UNFCCC, scientific bodies like the IPCC, and financial mechanisms like the Green Climate Fund. These institutions produce standardized categories, metrics, and approaches that enable comparison and coordination across diverse contexts. The global framing of climate change emphasizes its planetary nature, positioning it as a challenge that transcends national boundaries and requires coordinated international action. This framing has been crucial for building political momentum for climate action but can also abstract from the differentiated responsibilities and impacts that characterize climate change.

The local scale, in contrast, is constructed as the site of concrete impacts and interventions. Local knowledge, institutions, and practices are increasingly recognized as essential for effective adaptation. The local framing emphasizes context-specific vulnerabilities, capacities, and priorities that may not be visible from global perspectives. However, "the local" is not a neutral category but is often constructed in ways that align with particular political agendas, whether romanticizing local communities as inherently sustainable or representing them as lacking capacity and requiring external assistance (Mac Ginty, 2015).

Between these poles lie various intermediate scales, including the national, regional, and sectoral. Regional knowledge systems, institutions, and networks may create spaces for more context-sensitive approaches to adaptation while still enabling coordination across diverse local contexts. The regional scale may thus offer possibilities for balancing the standardization needed for global action with the diversity needed for local relevance.

The politics of scale in adaptation governance involve ongoing negotiations about where different kinds of decisions should be made and by whom. These negotiations are not merely technical questions of efficiency or subsidiarity but fundamentally political questions about authority, legitimacy, and accountability. When adaptation is framed as primarily a global challenge requiring expert-driven solutions, local communities may be positioned as passive recipients rather than active agents in adaptation processes. Conversely, when adaptation

is framed as primarily a local responsibility, broader structural causes of vulnerability may be obscured, and communities may be left to address challenges that exceed their capacities without adequate support (Eriksen et al., 2021).

The degree of discourse centralization serves as an indicator of the dominance of what might be called the "anglobal discourse." Low fragmentation (high centralization) suggests the dominance of particular ways of knowing and being, limiting the range of futures considered legitimate. Conversely, higher fragmentation would indicate greater epistemological and ontological plurality, potentially enabling a wider range of future possibilities. By empirically measuring discourse centralization across different dimensions, we can better understand the factors that shape adaptation discourse and the implications for just and effective adaptation.

5 Methods

> Climate adaptation discourse serves as a site of contested futures where epistemological and ontological assumptions shape which adaptation pathways are considered possible, legitimate, or desirable. To empirically examine this discourse, I develop a methodological approach centered around the "Dominance Index"—a measurement tool for quantifying the degree to which adaptation discourse is concentrated around particular topics or perspectives.

This methodology bridges critical theoretical perspectives with quantitative text analysis, creating an interdisciplinary approach that can systematically analyze discourse patterns across a substantial corpus of documents. The approach moves beyond assumptions of either complete homogeneity or radical diversity in adaptation discourse, enabling empirical assessment of how discourse reflects epistemological plurality or monoculture across different contexts.

The Dominance Index measures the distribution of topics across documents and document groups, identifying patterns of concentration or dispersion. Topic distribution serves as a proxy for epistemological diversity, though this requires careful interpretation. Rather than assuming either complete uniformity or radical diversity, this approach enables empirical assessment of the degree to which discourse reflects epistemological plurality or monoculture across different contexts. It provides a quantitative foundation for examining whether adaptation discourse is characterized by a rich diversity of perspectives or dominated by particular ways of knowing and conceptualizing climate challenges.

5.1 Corpus Collection and Preparation

> National Adaptation Plans provide a revealing window into how countries frame their policies. To make the texts comparable, they have to be processed.

The corpus consists of 44 English-language National Adaptation Plans (NAPs) submitted to the UNFCCC. These documents represent a diverse range of countries across different regions, income levels, and vulnerability profiles. Geographic distribution spans Africa, Asia-Pacific, Latin America and Caribbean, and Europe, with additional categories including Small Island Developing States (SIDS) and Landlocked Developing Countries (LLDCs).

The focus on English-language documents introduces a methodological constraint, potentially skewing analysis toward Anglophone countries or those with stronger ties to international

institutions. This limitation means the analysis cannot claim to represent the full global landscape of adaptation discourse, but rather offers insights into patterns within the English-language subset of NAPs (Wright et al., 2023). Wright and colleagues (2023) used a similar approach in their analysis of how countries frame climate change in UNFCCC documentation, noting the limitations but also the valuable insights that can be gained from systematic analysis of official climate policy documents.

Document preparation involves multiple stages of processing to convert raw PDF documents into a format suitable for computational analysis. The process begins with text extraction from PDF documents, which presents technical challenges including handling complex formatting, tables, figures, and inconsistent document structures. Once extracted, the text undergoes a systematic preprocessing pipeline to prepare it for analysis.

First, the text is tokenized—broken into individual words or tokens, which serve as the basic units of analysis. This process includes removing punctuation, standardizing capitalization, and handling hyphenation. Next, lemmatization reduces words to their base or dictionary form, treating variations of the same word as a single unit.

The tokens then undergo validation against a comprehensive dictionary of 120,644 English words. This step is crucial for removing formatting artifacts, names, and non-English text that might have been introduced during PDF extraction. The whitelist approach during token validation is particularly important for handling the challenges of working with a PDF corpus, enabling meaningful comparison across documents by removing national acronyms, names, and formatting issues.

Following token validation, the process removes geographic stopwords—country and city names that could skew the analysis by overemphasizing geographic references. Standard stopword removal then filters common words with little semantic value, such as "the," "is," and "and." Finally, frequency filtering removes words appearing in fewer than 2% or more than 70% of documents, focusing the analysis on terms that are neither so rare as to be idiosyncratic nor so common as to be uninformative. This approach to frequency filtering follows established practice in computational text analysis (Silge & Robinson, 2017).

Documents must contain at least 50 tokens after preprocessing to be included in the analysis. This threshold ensures that each document contains sufficient text for meaningful topic modeling, while avoiding the risk that very short documents might distort the analysis. One document became too short during processing and was removed from the corpus, resulting in the final count of 44 documents.

The preprocessing reduces the original corpus to approximately 1,131,307 tokens representing about 25,317 unique terms. These processed tokens form the basis for the subsequent topic modeling. While preprocessing involves certain trade-offs—tokenization loses information about phrases, lemmatization may obscure subtle distinctions in word usage—these steps are necessary to enable computational analysis of discourse patterns across a substantial corpus of policy documents.

5.2 Structural Topic Modeling

> Structural topic modeling finds latent topics and measures how they are distributed across the corpus.

To identify patterns in how adaptation is conceptualized across different NAPs, I employ structural topic modeling (STM), a computational technique that identifies latent topics in a corpus and allows for the incorporation of document metadata as predictors of topic prevalence. Unlike simpler forms of topic modeling, STM enables examination of how topic prevalence varies with document characteristics like region or income level, making it particularly suitable for comparative analysis of adaptation discourse (M. E. Roberts et al., 2019).

Topic models emerged as computational methods to discover underlying patterns in text data without requiring supervision or labeled examples. Unlike modern AI language models that focus on predicting or generating text, topic modeling aims to uncover the hidden thematic structure of documents. The Structural Topic Model (STM) employed in this analysis treats documents as "bags of words" where word order is disregarded but co-occurrence patterns reveal meaningful latent topics.

The fundamental assumption in topic modeling is that documents are mixtures of topics, and topics are probability distributions over words. Each document can be described as a mixture of topics, with certain topics more prevalent than others in each document. These latent topics aren't explicitly stated in the text but emerge from statistical patterns of word co-occurrence. What distinguishes STM from other topic modeling approaches is its ability to incorporate document metadata as covariates that can affect topic prevalence, allowing examination of how topics vary with document characteristics like region or income level (M. E. Roberts et al., 2016).

A key methodological decision in topic modeling is determining the appropriate number of topics (k). Too few topics may obscure important distinctions in the corpus, while too many may result in incoherent or redundant topics that are difficult to interpret. I employ a data-driven approach to identify the optimal number of topics, using several metrics: semantic coherence (measuring how frequently high-probability words for a topic co-occur), exclusivity (measuring how distinctive topics are from one another), and held-out likelihood (measuring the model's ability to predict text not used in training). This optimization process identifies 15 as the optimal number of topics, providing sufficient granularity to capture meaningful variation while avoiding overly specific or redundant topics (Egami et al., 2022).

The final model is trained using the spectral initialization method, which provides more consistent results than random initialization, and with an appropriate number of iterations of the variational expectation-maximization algorithm to ensure convergence. This approach follows best practices in topic modeling as outlined by M. E. Roberts et al. (2019), who emphasize the importance of model selection and validation in ensuring that identified topics are both coherent and useful for substantive interpretation.

It's important to recognize what topic models can and cannot tell us. Topics identified through this process are statistical constructs representing patterns of word co-occurrence. They do not inherently align with human-intuitive conceptual categories, nor do they capture all aspects of discourse such as narrative structure, rhetorical devices, or implicit assumptions. The topics are also specific to this corpus—they represent patterns within the NAPs rather than universal categories of adaptation discourse.

These outputs enable systematic analysis of patterns in adaptation discourse across different contexts. Rather than imposing predetermined categories or frameworks, this approach allows patterns to emerge inductively from the text while still enabling structured comparison through metadata.

5.3 Dominance

> The index quantifies discourse centralization by measuring how much of the discourse is dominated by the top topics, and how much of the variance that can be explained.

To quantify the degree of discourse centralization, I develop a Dominance Index that measures how concentrated or dispersed topic distributions are across different groups of documents. A high Dominance Index indicates that a few topics dominate the discourse, suggesting a more homogeneous conceptualization of adaptation, while a low Dominance Index indicates a more even distribution of topics, suggesting greater diversity in conceptualization.

The Dominance Index focuses specifically on the concentration of the top 3 topics in a given group of documents. This approach directly addresses the core question of whether adaptation discourse is dominated by a small number of topics or distributed across many different topics. The calculation process involves several systematic steps.

First, documents are grouped according to relevant characteristics, such as all documents from a particular region or income level. For each topic, the average proportion across all documents in the group is calculated, providing the average prevalence of each topic within that group. Topics are then ranked by their average proportion in descending order to identify the most prevalent topics in the group. The proportions of the top three topics are summed to determine what fraction of the discourse they represent collectively. Finally, this sum is normalized to a 0-1 range, where 0 represents a perfectly even distribution across all topics and 1 represents complete concentration in a single topic.

The Dominance Index is conceptually similar to concentration measures used in ecology and economics, focusing on the degree to which a distribution is dominated by its most prevalent elements. This approach differs from entropy-based measures that capture overall evenness by specifically emphasizing the concentration of dominant topics, which more directly addresses questions of discourse centralization and power dynamics in knowledge production (M. E.

Roberts et al., 2020). M. E. Roberts et al. (2020) employ a similar approach in their analysis of text-based causal inference, demonstrating the utility of focused metrics that capture specific aspects of textual distributions.

The Dominance Index enables systematic comparison of discourse centralization across different groupings, including regional groups (Africa, Asia-Pacific, Latin America and Caribbean, Europe), income levels (Low, Lower-middle, Upper-middle, High), and special status designations (SIDS, LLDCs). This comparative approach helps identify factors that might influence the degree of epistemological diversity in adaptation discourse.

However, it's important to specify what the Dominance Index can and cannot tell us. The index measures the concentration of topics in a document group, which serves as a proxy for discourse centralization. A higher concentration suggests a more centralized discourse, while a lower concentration suggests a more diverse discourse. But this metric does not directly measure epistemological diversity or the substantive content of the discourse. Topic diversity is not necessarily equivalent to epistemological diversity—a discourse might include many different topics while still operating within a single epistemological framework.

The interpretation of Dominance Index results employs a variance decomposition approach that quantifies how much of the total variation in discourse centralization is explained by different dimensions such as region, income level, and special status designations. This analytical method helps determine which factors most strongly shape adaptation discourse patterns, providing insight into whether discourse aligns more closely with economic positioning, regional institutional frameworks, or particular geographic vulnerabilities (M. E. Roberts et al., 2019).

For each dimension (region, income level, etc.), the approach calculates the proportion of total variance explained through an ANOVA-like framework. This involves comparing the between-group variance (differences in Dominance Index values across categories within a dimension) to the total variance in the corpus. The dimension that explains the greatest proportion of variance can be considered the most influential factor in shaping discourse centralization patterns.

For categorical dimensions like income level or region, the analysis uses a formula-based approach that calculates how much of the overall variation in Dominance Index values can be attributed to differences between categories. This involves calculating both the total variance across all documents and the variance between group means, then determining the ratio of between-group variance to total variance. The resulting percentage represents the proportion of variance explained by that dimension.

For binary dimensions like special status designations (SIDS, LLDCs), the approach calculates the contribution of each designation to the overall variance. This involves comparing the mean Dominance Index values for documents with and without each designation, weighted by the proportion of documents in each category. The weighted squared differences between group means and the overall mean provide a measure of how much variance is explained by each binary distinction.

The statistical significance of differences in Dominance Index values between groups is assessed through confidence intervals generated by jackknife resampling. Non-overlapping confidence intervals provide evidence that observed differences reflect meaningful variations in discourse patterns rather than random fluctuation or sampling error. This approach is particularly important given the relatively small number of documents in some groupings (Yakir, 2019).

Part III

Analysis

6 Findings

> Adaptation discourse in National Adaptation Plans shows remarkably high centralization, with income level explaining more variance than region or geography, revealing how adaptation planning follows existing development categories despite diverse geographical contexts.

The analysis of discourse centralization in National Adaptation Plans (NAPs) reveals striking patterns in how climate adaptation is conceptualized across different contexts. This chapter presents the findings from applying the Dominance Index methodology to the corpus of 45 English-language NAPs submitted to the UNFCCC as of March 2025.

The most remarkable finding is the extremely high overall centralization of adaptation discourse, with a Dominance Index of 0.949 (where 1.0 would represent complete centralization). This indicates that across all NAPs, discourse is concentrated around a small number of dominant topics, with remarkably little variation in how adaptation is conceptualized despite the diverse contexts these plans address. This high level of centralization suggests a global standardization of adaptation discourse that transcends national and regional boundaries.

When examining which factors best explain the variation that does exist, we find that income level emerges as the primary explanatory dimension, accounting for 8.1% of the variance in discourse centralization. This is closely followed by regional groupings, which explain 8.0% of variance. Geographical characteristics such as being a Small Island Developing State (SIDS) or Landlocked Developing Country (LLDC) explain substantially less variance at just 3.7%.

These patterns suggest that adaptation discourse is shaped more by economic positioning and regional institutional influences than by similar geographical vulnerabilities. The dominance of income level as an explanatory factor indicates that adaptation planning follows existing development categories despite the diverse geographical contexts in which adaptation occurs.

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#| fig-cap: "Dominance Index values across dimensions (n=3)"
#| label: fig-dominance

# This is a placeholder for the actual visualization
# The actual implementation would display the Dominance Index values
# across different dimensions, likely as a bar chart or similar

```

6.1 Income

> Income level emerges as the primary explanatory factor for discourse centralization patterns, with low-income countries showing both highest centralization and lowest internal variation, suggesting stronger constraints on their discursive autonomy.

Analysis of discourse centralization by income level reveals significant patterns that suggest economic positioning strongly influences how adaptation is conceptualized and articulated in NAPs. Low-income countries show the highest degree of centralization with a Dominance Index of 0.980, followed by high-income countries (0.974), upper-middle income countries (0.947), and lower-middle income countries (0.928).

Perhaps more revealing than the absolute values is the internal variation within each income group. Low-income countries show remarkably low variation in discourse patterns, with a standard deviation of just 0.018, compared to 0.094 for lower-middle income countries. This suggests that low-income countries face stronger constraints on their discursive autonomy, potentially reflecting their greater dependence on international funding and technical assistance in developing NAPs.

In contrast, lower-middle income countries show greater discourse diversity, with more emphasis on sector-specific adaptation strategies and integration with national development planning. This greater diversity may reflect their intermediate position—less dependent on international climate finance than low-income countries but still actively engaged with international adaptation frameworks.

6.2 Region

> Regional groupings constitute the second strongest explanatory factor, reflecting how regional institutions mediate between global frameworks and national implementation while still operating within a highly centralized global discourse.

Regional analysis provides important insights into how adaptation discourse is shaped by regional institutions, knowledge networks, and shared historical contexts. While regional groupings explain slightly less variance than income level (8.0% versus 8.1%), they emerge as the second strongest explanatory factor for discourse centralization patterns.

Sub-Saharan Africa shows high centralization (Dominance Index of 0.967) with relatively low internal variation (standard deviation of 0.044), suggesting a relatively homogeneous regional discourse.

East Asia and the Pacific displays the lowest centralization (0.924) and highest internal variation (0.089), indicating greater diversity in how adaptation is conceptualized across this geographically and economically diverse region.

```{r}
#| fig-cap: "Dominance Index and internal variation by region"
#| label: fig-region-variation

# This is a placeholder for a visualization showing
# Dominance Index values and standard deviations across regions
# Possibly a scatter plot or dual-axis chart

```

South Asia demonstrates high centralization (0.959) with moderate internal variation (0.042).

Latin America and the Caribbean shows moderate centralization (0.941) with significant internal variation (0.071), suggesting diversity within a broadly similar regional approach.

The Middle East and North Africa region exhibits the second-lowest centralization (0.919) but the highest internal variation (0.149), suggesting significant diversity within the region despite some shared approaches. This may reflect the diverse economic circumstances within the region, from oil-rich Gulf states to lower-income countries.

Europe and Central Asia shows high centralization (0.969) with low internal variation (0.037), though the small sample size (6 documents) limits the robustness of this finding.

These regional patterns suggest that while adaptation discourse remains highly centralized globally, regional institutions and knowledge systems play an important role in mediating between global frameworks and national implementation. Regional bodies appear to influence how adaptation is conceptualized and articulated, creating distinctive regional emphases within the broader centralized discourse. This finding highlights the importance of the regional scale as a site where global adaptation norms are translated and contextualized, even if fundamental epistemological diversity remains limited.

6.3 Geography

> Geographical characteristics explain substantially less variance than economic or regional factors, challenging expectations that similar climate vulnerabilities would produce distinctive discourse patterns regardless of economic positioning.

The analysis of discourse centralization by geographical characteristics—specifically, whether countries are classified as Small Island Developing States (SIDS) or Landlocked Developing Countries (LLDC)—reveals that these factors explain substantially less variance (3.7%) than income level or regional groupings. This finding challenges expectations that similar climate

vulnerabilities would produce distinctive discourse patterns regardless of economic positioning.

Small Island Developing States show lower centralization (Dominance Index of 0.932) than the overall average (0.949), with moderate internal variation (standard deviation of 0.082). This suggests some diversification of adaptation discourse among SIDS, potentially reflecting their specific vulnerabilities to sea-level rise, extreme weather events, and ecosystem disruption. However, this diversification is less pronounced than might be expected given their distinctive geographical circumstances and climate vulnerabilities.

```
```{r}
#| fig-cap: "Comparison of discourse topics across geographical categories"
#| label: fig-geo-topics

# This is a placeholder for a visualization comparing
# the most prevalent topics across geographical categories
# Possibly a heatmap or similar visualization

```
```

Landlocked Developing Countries, in contrast, show higher centralization (0.971) with low internal variation (0.030), indicating a more homogeneous discourse despite the diverse regional contexts of LLDCs across Africa, Asia, and Latin America. This homogeneity suggests that for LLDCs, economic positioning and institutional factors may shape adaptation discourse more strongly than their shared geographical characteristic of being landlocked.

The finding that geographical characteristics explain relatively little variance in discourse centralization suggests that adaptation discourse is shaped more by economic and institutional factors than by specific climate vulnerabilities.

This pattern raises important questions about the responsiveness of adaptation planning to local contexts and specific vulnerabilities. If geographical characteristics—which directly shape climate vulnerability profiles—have less influence on adaptation discourse than economic positioning or regional institutional affiliations, this suggests potential limitations in how adaptation is currently conceptualized and planned. It may indicate that the global adaptation architecture prioritizes standardized approaches over context-specific responses, potentially limiting the effectiveness of adaptation interventions in addressing the diverse challenges faced by differently positioned countries.

These findings on geography as an explanatory factor complement the income and regional analyses, providing a more complete picture of how adaptation discourse is shaped by different dimensions. Together, they reveal a complex landscape where economic positioning emerges as the primary factor shaping adaptation discourse, followed by regional institutional influences, with specific geographical vulnerabilities playing a surprisingly limited role despite their direct relevance to climate impacts.

7 Discussion

> The main findings indicates that climate adaptations main organizing principles are non-climate related. I argue that vulnerability/adaptation-relation should be understood as an updated form of the underdevelopment/development-relation in North-South relations, paving the way for post-development critiques of adaptation.

The findings presented in the previous chapter reveal a striking centralization of adaptation discourse across National Adaptation Plans, with income level emerging as the primary explanatory factor for what variation does exist. This brings us closer to understanding how climate adaptation actually works in the real world, rather than as just a part of the UNFCCC negotiations.

The patterns provide empirical evidence for adaptation regime critiques that argue that adaptation functions as a regime that constructs vulnerability in particular ways while foreclosing alternative understandings and approaches. The following sections explore three key implications of these findings: how adaptation discourse constructs climate vulnerability, how this anticipatory governance functions as an anti-politics machine, and possibilities for better approaches to adaptation.

7.1 Adaptation and vulnerability

> Adaptation discourse constructs rather than responds to climate vulnerability, paralleling how development discourse produceses underdevelopment as its necessary counterpart.

The findings suggest that vulnerability construction occurs not only through direct claims about who or what is vulnerable, but through more subtle discursive processes that shape what counts as valid knowledge about vulnerability, who is authorized to produce that knowledge, and what interventions are considered reasonable responses. The remarkable consistency of discourse across diverse contexts indicates that these processes operate at a global scale, with powerful institutional actors including multilateral development banks, donor agencies, and scientific bodies shaping how vulnerability is understood and addressed.

The construction of climate vulnerability through adaptation discourse has material consequences for how resources are allocated and interventions designed. When vulnerability is primarily understood through economic frameworks, adaptation resources flow toward approaches that align with existing development paradigms rather than potentially transformative alternatives (Eriksen et al., 2021). This reinforces existing power relations and may exacerbate rather than reduce vulnerability in the most marginalized communities.

The high centralization of adaptation discourse around income-based patterns reveals how vulnerability is not simply an objective condition that adaptation responds to, but an actively constructed category that emerges through discourse and practice. This parallels Escobar (1995) argument that development discourse did not simply address pre-existing underdevelopment but actively produced "the Third World" as its necessary counterpart through particular knowledge practices, institutional arrangements, and power relations.

The finding that adaptation discourse clusters more strongly by income level than by geography suggests that vulnerability is conceptualized primarily in economic terms, with countries positioned similarly in the global economic system conceptualizing adaptation in similar ways despite facing different climate hazards. This economic framing of vulnerability aligns with mainstream development discourse that positions economic growth and market integration as universal solutions regardless of context (Ferguson, 1994).

The particularly high centralization (0.980) and low internal variation (0.018) among low-income countries suggests stronger constraints on their discursive autonomy in adaptation planning. This pattern indicates what Paprocki (2018) describes as "anticipatory ruination," where certain places are constructed as inherently vulnerable and therefore requiring particular kinds of interventions. The discourse of inevitable climate catastrophe in low-income countries creates conditions where almost any intervention can be justified as necessary adaptation, regardless of its actual effects on vulnerability.

These patterns of differential vulnerability construction reflect what Santos (2016) describes as "epistemicide"—the systematic exclusion of non-Western knowledge systems from legitimate discourse. The high centralization of adaptation discourse suggests limited space for alternative conceptualizations of vulnerability rooted in indigenous knowledge, local experience, or non-Western ontologies.

7.2 The anti-politics of adaptation

> Adaptation governance functions as an anti-politics machine that transforms fundamentally political questions about climate justice into technical problems, depoliticizing vulnerability while expanding bureaucratic power across governance scales.

The high centralization of adaptation discourse hints at what Ferguson (1994) termed the "anti-politics machine" operating in climate adaptation governance. The anti-politics machine transforms fundamentally political questions about power, justice, and distribution into technical problems amenable to expert solutions, depoliticizing vulnerability while simultaneously expanding bureaucratic power across multiple governance scales.

The dominance of particular topics across NAPs—vulnerability assessment, climate modeling, project management frameworks, monitoring and evaluation systems—reflects what Ferguson (1994) describes as "rendering technical," where complex political-economic realities are translated into technical problems requiring technocratic interventions. This technical rendering makes climate adaptation governable through particular institutional arrangements but simultaneously limits the scope of what counts as legitimate adaptation action.

The finding that income level explains more variance than geographical factors directly supports the argument that development interventions (including adaptation) often have less to do with their stated objectives, than with the form of intervention. The similarity of discourse across countries with different climate vulnerabilities but similar income levels suggests that adaptation planning may be shaped more by institutional imperatives and funding requirements than by context-specific needs.

Regional patterns in discourse centralization suggest that the anti-politics machine operates across multiple scales, with regional bodies mediating between global frameworks and national implementation. The finding that regional groupings explain substantial variance indicates that regional institutions play an important role in translating global adaptation frameworks into context-specific approaches. However, the still-high centralization within regions suggests that these institutions often reproduce rather than challenge the depoliticizing tendencies of global adaptation discourse.

The institutionalization of adaptation through NAPs themselves represents a form of anti-politics, creating standardized planning frameworks that privilege certain forms of knowledge and expertise while marginalizing others. The UNFCCC guidelines for NAP development, technical assistance from international organizations, and funding criteria all shape what counts as legitimate adaptation planning, potentially constraining the autonomy of national governments and communities in determining their own adaptation priorities (Mizuno & Okano, 2024).

However, the variation that does exist across the corpus suggests that the anti-politics of adaptation is neither absolute nor uncontested. The lower centralization in some regions and income groups indicates spaces where alternative framings and approaches might emerge, even within the constraints of global adaptation governance. These variations point to what Scott calls "weapons of the weak"—subtle forms of resistance that operate within dominant systems while creating space for alternative possibilities (Ferguson, 1994).

7.3 Toward Pluriversal Adaptation

> The empirical evidence of high discourse centralization calls for pluriversal approaches to adaptation governance that create space for diverse epistemologies while still enabling coordination necessary for effective climate action.

The findings on discourse centralization present both a challenge and an opportunity for reimagining adaptation governance. The challenge lies in the current homogeneity of adaptation discourse, which limits the range of approaches considered legitimate and marginalizes alternative knowledge systems that might offer valuable insights for addressing climate vulnerability. The opportunity lies in identifying pathways toward more epistemologically diverse approaches that Escobar (2018) describes as "pluriversal"—creating space for multiple ways of knowing and being while still enabling the coordination necessary for effective climate action.

The concept of a pluriversal approach to adaptation resonates with Santos (2016) call for an "ecology of knowledges" that recognizes the partial and situated nature of all knowledge systems and seeks productive dialogue between them. Rather than privileging scientific and technical knowledge as inherently superior, an ecology of knowledges would recognize the value of iother knowledge in understanding and addressing climate vulnerability. The finding that geographical factors explain relatively little variance in current adaptation discourse suggests significant untapped potential for approaches that more fully engage with place-based knowledge systems, amongst others.

The lower centralization in regions like East Asia and Pacific (0.924) and Latin America and Caribbean (0.941) suggests these regions may already be incorporating somewhat more diverse approaches than the global average. Examining the specific discursive practices and institutional arrangements in these contexts might offer insights into how greater epistemological diversity could be fostered within adaptation governance more broadly.

A pluriversal approach to adaptation would require fundamental changes in how adaptation is governed, financed, and implemented. Current institutional arrangements—including the NAP process itself—often incentivize standardization rather than diversity, with funding mechanisms and technical assistance structured around particular conceptions of what constitutes legitimate adaptation. Reforming these arrangements to create space for diverse epistemologies would involve rethinking how adaptation is defined, valued, and evaluated across governance scales (Ireland & McKinnon, 2013).

Indigenous and traditional knowledge systems offer particularly important resources for pluriversal adaptation, providing alternative conceptualizations of human-environment relationships and approaches to navigating environmental change. While these knowledge systems are increasingly acknowledged in adaptation discourse, they are typically treated as sources of data to be incorporated into dominant frameworks rather than as alternative epistemological systems that might fundamentally challenge those frameworks. A genuinely pluriversal approach would engage with indigenous knowledge on its own terms, recognizing its distinct ontological and epistemological foundations (Escobar, 2020).

Community-based adaptation represents another potential pathway toward greater epistemological diversity, creating space for local knowledge and priorities in adaptation planning and implementation. However, as Ireland & McKinnon (2013) argue, community-based approaches often remain constrained by broader institutional frameworks that determine what counts as legitimate adaptation. A pluriversal approach would require challenging these constraints to create genuine space for community-defined adaptation pathways.

Regional institutions could play a crucial role in fostering pluriversal adaptation, mediating between global frameworks and local implementation in ways that create space for context-specific approaches. The finding that regional groupings explain significant variance in discourse centralization suggests that regional bodies already influence how adaptation is conceptualized and implemented. Strengthening regional institutions that are more responsive to local contexts and knowledge systems could help create pathways toward greater epistemological diversity within adaptation governance.

Crucially, a pluriversal approach to adaptation does not mean abandoning coordination or coherence in climate action. Rather, it means reimagining how that coordination happens—moving from standardization that privileges particular knowledge systems toward dialogical approaches that enable conversation across different ways of knowing and being. This aligns with what Escobar (Escobar, 2018) describes as "autonomous design," where communities design their own transitions based on their specific contexts, histories, and aspirations, while still engaging with broader networks of knowledge and practice.

The high discourse centralization documented in this research represents not just a problem to be solved but an opportunity to reimagine adaptation governance in ways that better serve diverse communities facing climate impacts. By challenging the current homogeneity of adaptation discourse and creating space for epistemological diversity, pluriversal approaches to adaptation could enable more just and effective responses to climate vulnerability across contexts.

After all, the simplest way for the global north to avoid foreclosing futures in the global south, would be to reduce the carbon emissions and shifting the focus to climate mitigation pillar. Remembering the climate damage flowchart from earlier **?@fig-dmg_flow**, cutting off the emissions at the top by phasing out extraction of hydrocarbon and the burning of them, in line with their commitments.

```
```{r}
#| fig-cap: "Climate finance vs. fossil fuel finance"
#| label: fig-fuel_finance

# This is a placeholder for the actual visualization
# The actual implementation would take data from CPI and show
# the amount of fossil fuel finance still ongoing

```
```

And all this said, this is no reason to quit aid, but to view it is as one of many ways the global north and south interact.

8 Conclusion

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