# The Politics of Climate Change in the Developing World*

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**Abstract**

Climate change politics in the developing world remains understudied, despite the region's acute vulnerability and centrality to climate futures. This review synthesizes emerging research across three domains: public opinion and climate salience, the political effects of climate exposure, and the institutional production of climate risk. We highlight a central paradox: widespread public concern often exists alongside low climate literacy, suggesting that political salience stems from lived experience with environmental degradation rather than scientific attribution. Yet the literatures on climate and environmental politics have developed along separate tracks, limiting conceptual integration and obscuring how local environmental decline manifests as climate risk. Turning upstream, we examine how institutions shape climate exposure itself. Climate exposure, we argue, is not merely inherited, but politically produced and unequally distributed through institutions that govern carbon sinks, build adaptive capacity, and allocate political voice. We identify critical gaps around the distributive politics of adaptation, representation, and institutional sources of climate change exposure.

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# 1 Introduction

Climate change is widely recognized as one of the most formidable policy challenges of the 21st century. However, the development of the Political Science scholarship on the topic has long lagged behind that of other disciplines, particularly Economics, Geography, Demography, and the Natural Sciences. Research on the politics of climate change has been largely led by scholars from other disciplines and published primarily in specialized or interdisciplinary journals, such as Global Environmental Change and Nature Climate Change (Bernauer 2013). In recent years, this gap has narrowed (Grossman, Dinneen and Torreblanca 2026), but the literature remains heavily skewed toward developed countries. Much of the literature continues to focus on the politics of mitigation in high-income countries, including studies of international climate negotiations (Bechtel, Genovese and Scheve 2019), the design of emissions trading schemes (Green 2021), and mass attitudes in the U.S. and Europe (Egan and Mullin 2017). Since the 2015 Paris Agreement, domestic distributive politics has been viewed as central to climate policies and outcomes. However, this national turn remains concentrated in the developed world. This focus is not without justification: wealthy countries have contributed a disproportionate share of historical greenhouse gas emissions and arguably bear greater responsibility for addressing the climate crisis.[1] However, this emphasis overlooks a critical reality: the developing world is where climate change's impacts are most acute (Adom 2024), and where countries are also least equipped to address its effects.[2] The political dynamics of climate governance are most urgent and least understood in low- and middle-income countries (LMICs).

This review centers the developing world in the study of climate politics. We focus on three lines of inquiry. First, how politically salient is climate change in developing countries? Are citizens in developing regions aware of the phenomenon? To answer this question, in Section 2, we examine available public opinion data that measure levels of climate awareness, climate concern, and mass support for climate policies and survey the literature on mass public opinion across developing countries. In Section 3, we explore our second line of inquiry: whether and how

[1] High-income countries contribute about 37-40% of current annual Global CO2 emissions (as of 2022). By contrast, it is 10-12% for Lower-middle-income countries, and less than 1% for Low-income countries—estimates derived from World Bank data (2022), Global Carbon Project.

[2] According to recent estimates, income losses in low-income countries are 60% higher than for high-income countries (Adil et al. 2025)

exposure to climate-related shocks, such as floods, droughts, or heatwaves, influences political attitudes and electoral outcomes. Last, in Section 4, we reverse the causal chain, shifting the focus from the effects of climate exposure to examine key explanatory causes: political institutions.

We advance four core claims. First, we highlight a paradox: in much of the developing world, low levels of climate literacy coexist with high levels of concern about climate change. This paradox suggests that the political salience of climate change does not require a scientific understanding or attribution to anthropogenic causes. Instead, citizens often experience climate risks through local environmental disruptions, such as erratic rainfall, water scarcity, or crop failure, that are more immediate and observable than global climate patterns. These experiences, although not consistently recognized as "climate change," make the phenomenon politically salient.

This observation leads to our second core claim: the study of climate politics and that of environmental politics have evolved mainly along separate tracks. Within Comparative Politics, environmental politics has traditionally focused on local and national struggles over pollution, land use, biodiversity loss, water access, and conservation. By contrast, climate politics emerged in the 1990s and 2000s as a transnational, often technocratic area of study within International Relations (see Bernauer (2013)). This international focus tends to downplay the national and subnational politics of climate governance, especially in the developing world (Bernstein 2001; Dryzek 2022). Similarly, while environmental politics offers tools for understanding how weak enforcement, clientelism, and distributive conflict shape resource use, it rarely links these dynamics to the broader challenges posed by climate change. Case studies of environmental degradation in LMICs, such as deforestation, coral reef loss, or aquifer depletion, are often not framed as contributions to climate politics, even though they represent key mechanisms through which vulnerability is realized (Hochstetler 2003; Herrera 2024*b*; Alcañiz and Gutiérrez 2022). In developing regions, we argue, these domains are inseparable. Climate change often becomes politically salient through the politics of local environmental decline. Bridging these literatures is essential for tracing the causal chain from institutions to climate exposure to political response.

Third, we observe that exposure to climate shocks does not automatically translate into political action. We review and classify studies into two distinct channels: an "attitudinal channel," which links personal experience to increased concern or salience (Keller et al. 2022), and an "accountability channel," which examines whether voters reward or punish incumbents for climate-

related events (Cao, Kostka and Xu 2019; Cooperman 2022; Visconti 2022; Pianta and Rettl 2025). Each rests on different assumptions and exhibits distinct methodological challenges. However, both literatures face a deeper theoretical problem: climate change is not a discrete, observable event. Without prior knowledge or interpretive frames, climate exposure may fail to generate meaningful updates to beliefs or behavior. This helps explain the mixed empirical findings across studies, especially in the developing world, where media access, trust in government, and political efficacy vary widely.

Fourth, we argue that climate vulnerability is not exogenous but is, partially, politically produced. Governments and institutions at different levels of government shape climate vulnerability through carbon sink management (Hochstetler and Keck 2007; Buntaine, Hamilton and Millones 2015; Mangonnet, Kopas and Urpelainen 2022; Xu 2025; Calacino 2025), the distribution of adaptive capacity (Adger, Lorenzoni and O'Brien 2009; Eriksen et al. 2020), and decisions about inclusion in climate decision-making (Hochstetler 2020; Slough et al. 2021; Dolšak and Prakash 2022; Baragwanath, Bayi and Shinde 2023; Gulzar, Lal and Pasquale 2024). However, Political Science has only begun to document how institutions shape the geography of climate harm.

Last, we observe that the next frontier in climate politics lies in understanding the political economy of adaptation. The dominant framing of climate politics, especially in high-income countries, has centered around mitigation (Dolšak and Prakash 2022). However, for much of the developing world, this focus is misaligned with the lived realities and political imperatives on the ground. The existing literature on adaptation is heavily fragmented, with isolated case studies of particular interventions or anecdotal evidence about local initiatives, but lacks the kind of systematic, comparative analysis that would allow generalizable insights.[3] We observe that where investments in formal adaptation from the state are scarce or absent, households and communities resort to informal adaptation strategies (e.g., migration, private cooling technology, new labor arrangements) (Liu and Xu 2024), thereby dampening demands on the state and reducing the need for climate literacy and accountability. However, we know little about when these bottom-up adaptation responses can substitute or be co-produced with state-led programs.

Taken together, these claims point to a set of distinctive political dynamics that remain underexplored in the study of climate governance. In the developing world, climate politics is often

[3]Though, see Woodruff and Regan (2019), and Mizuno and Okano (2024).

made visible through local environmental decline, shaped by weak or uneven institutional capacity and mediated by patterns of exclusion from climate decision-making. By tracing the causal chain from climate exposure to political behavior—and reversing it to consider how institutions shape vulnerablity itself—this review integrates fragmented literatures and clarifies the mechanisms that underpin the reciprocal relationship between climate change and political outcomes.

## 2 Climate Change Attitudes in the Developing World

This section reviews public opinion research in the developing world on climate awareness, concern, and policy support. **Climate awareness** refers to an individual's recognition of climate change –its existence, causes, and impacts– as a global phenomenon partly driven by human activity. **Climate concern** refers to the extent to which individuals perceive climate change as a serious issue, encompassing both cognitive and emotional responses. **Climate policy support** denotes public endorsement of government actions to mitigate (e.g., carbon pricing, renewable energy investments) or adapt (e.g., early warning systems, climate-smart agriculture) to climate change.

Understanding mass climate attitudes in developing countries is a first-order concern. In democracies and hybrid regimes, in particular, governments are more likely to act on climate issues if citizens demands action. Individuals who do not perceive climate change as sufficiently urgent or doubt its anthropogenic drivers are less likely to support costly policies for mitigation (Gazmararian and Milner 2025) or collective adaptation efforts (Steg 2023). Without public concern, climate policies may lack salience, and more immediate development priorities will take precedence. Similarly, the ability of climate skeptics to block climate action depends on prevailing public beliefs.

Mapping attitudes in regions with high adaptation needs can help assess whether climate inaction stems from an awareness–action gap: the disconnect between growing knowledge of climate change and limited behavioral changes (Colombo et al. 2023). Without understanding climate attitudes, climate inaction is often explained simply as a lack of public demand. However, low demand may reflect a range of different underlying factors, such as insufficient concern, limited climate knowledge, misattributed causes, low expectations of communal cooperation, low

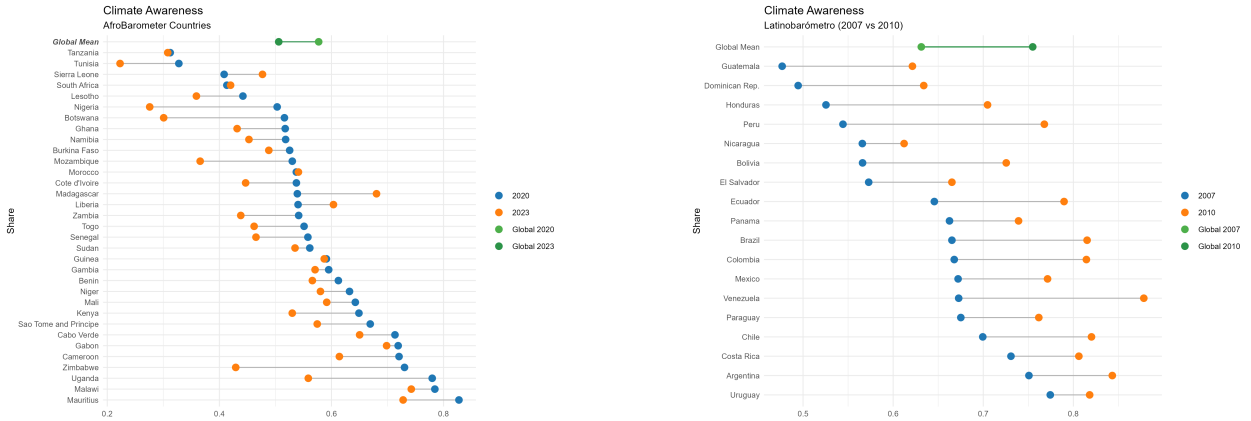
trust in government, low self-efficacy, and weak climate salience, that scholars rarely examine systematically.

Based on the growing body of work and our analysis, we report a set of striking and underappreciated patterns. While awareness of anthropogenic climate change remains uneven, particularly in Sub-Saharan Africa, concern about climate impacts is high across the developing world –often exceeding climate change awareness and, in some cases, levels observed in wealthier countries. This concern appears to emerge less from formal knowledge of climate science than from the lived experience of local environmental changes. In addition, support for climate mitigation policies in developing countries is not lower than in high-income countries and, in many cases, is higher. These findings challenge assumptions that low awareness implies low demand, suggesting the main barriers to climate action in many developing countries may lie not in public attitudes but in government responsiveness.

### 2.1 Awareness and Anthropogenic causes

Climate change awareness remains low in many parts of the developing world, especially Sub-Saharan Africa and South and Southeast Asia. We draw on survey data from Afrobarometer and AmericasBarometer to explore climate awareness across countries within these regions (see Figure 1). In 2008, fewer than 40% of respondents in Sub-Saharan Africa self-reported knowledge of climate change, with some countries reporting as low as 25–30%. As Figure 1 shows, by 2023, mean climate awareness in Africa rose but was still only 51%. Comparatively, climate awareness is significantly higher in Latin America, at approximately 75% in 2010 and over 80% in recent surveys. However, these levels still lag behind those reported for North America, Europe, and Japan, which report a mean climate awareness of over 90% (Lee et al. 2015).

Figure 1: Climate change awareness




(a) Climate Awareness: Africa

(b) Climate Awareness: Latin America

Note: This Figure plots national (weighted) means of climate awareness. The wording of the Latinobarometer survey question is: "How much have you heard or read about global warming or climate change?"" We recoded responses such that "none" and "a little" have the value of zero, and "some" and "a lot" have the value of one. The Afrobarometer question is binary: "Have you heard about climate change, or haven't you had the chance to hear about this yet?".

Figure 1 reveals that climate awareness increased considerably in all Latin American countries between 2007 and 2010. In contrast, awareness declined in most African countries between 2020 and 2023. The study of attitudinal change over time remains a significant gap in the literature. Widespread data sparsity and inconsistencies in survey design—in particular, the lack of repeated questions across waves—make it challenging to study temporal trends in most developing countries. Overall, the knowledge, attitudes, and predictors of climate change in developing countries remain poorly understood.

Low awareness does not reflect a lack of perceived environmental change. Many populations, especially farmers, in low- and middle-income countries report rising temperatures, soil toxicity, erratic rainfall, and water scarcity (Kabir et al. 2017). However, experiencing local environmental changes does not necessarily mean individuals can attribute these changes to an anthropogenic, global phenomenon. Consistent with this, in 2020, only 41% of Afrobarometer respondents in Africa identified human activity as the primary cause of climate change (Simon 2023).

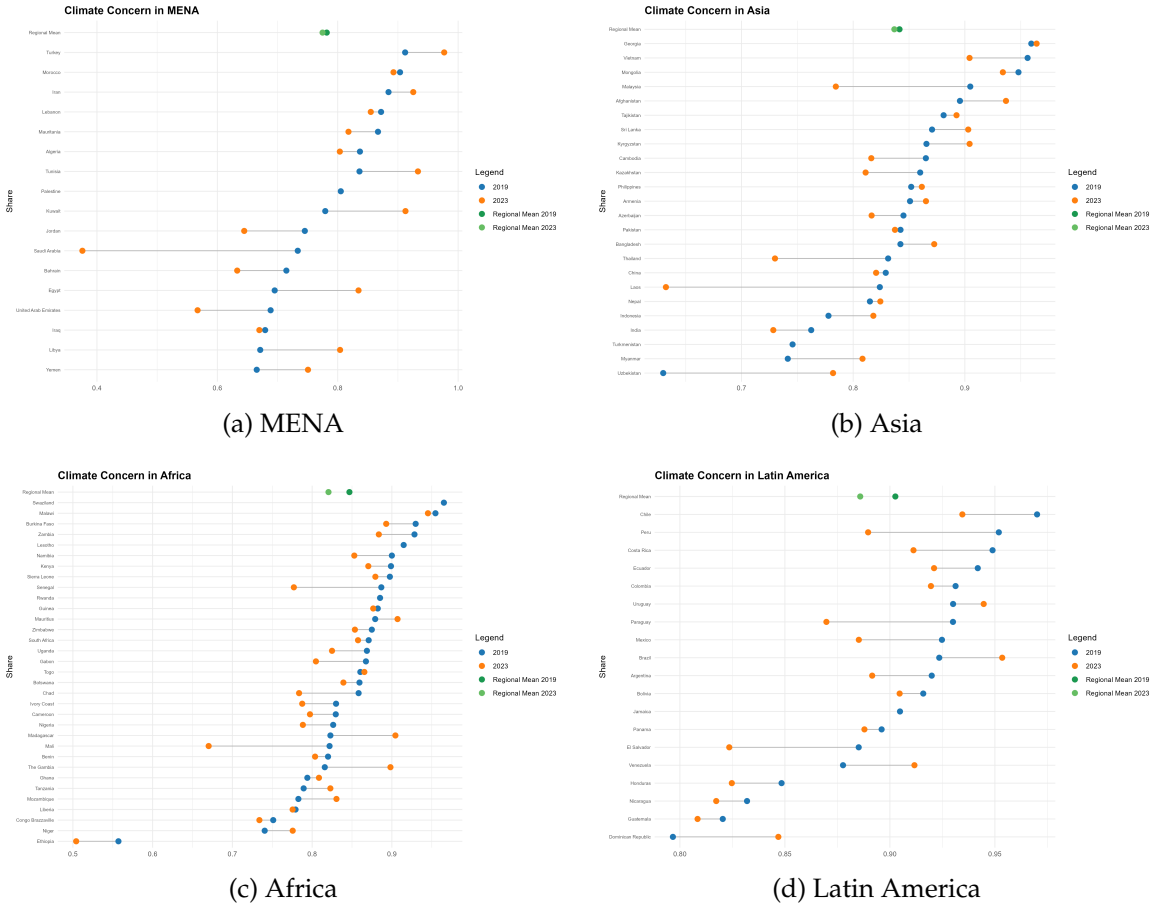
Aligning with information-deficit models, access to climate information via education systems and the media is a central barrier to improved climate awareness in developing countries.

Secondary schooling is strongly correlated with climate knowledge across most developing countries, including those in Africa (Simpson et al. 2021) and Latin America (Aklin et al. 2013; Spektor, Fasolin and Camargo 2023). Media access also drives climate awareness and shapes climate views (González and Sánchez 2022), especially in low-education contexts. Social media plays a growing but uneven role: Platforms like YouTube and Instagram (but not Facebook) correlate positively with climate change awareness (Gómez-Casillas and Gómez Márquez 2023). However, low media literacy can make social media users vulnerable to misinformation and climate change skepticism (Strudwicke and Grant 2020). The influence of digital information access on climate attitudes in developing countries deserves further study.

### 2.2 Climate Concern

We draw on survey data measuring climate concern levels in 2019 and 2023 from the Lloyd's Register Foundation's World Risk Poll for countries in all developing regions. As Figure 2 shows, two patterns stand out. First, concern is high across the developing world, with rates of approximately 90% in Latin America, 83% in Africa and Asia, and 78% in the MENA region—often matching or exceeding levels in high-income countries. Second, concern generally outpaces awareness in low-income countries. Contrary to some claims (e.g., Van der Linden 2015), being concerned about a changing climate does not require high climate awareness. Instead, local environmental changes, rather than abstract climate knowledge, are often the key drivers of concern.

Figure 2: Climate change concern (2019 to 2023)




(a) MENA

(b) Asia

(c) Africa

(d) Latin America

Note: This Figure plots national (weighted) means of climate concerns in 2019 (blue) and 2023 (orange) using the World Risk Poll (121 countries). The wording of the survey question is: "To what extent do you think climate change is a threat to your country in the next 20 years?" We recoded responses such that "Not a threat at all,' and "Don't know,' have the value of zero, and "Somewhat serious threat' and "Very serious threat' have the value of one.

### 2.3 Policy Support

Even when climate concern is high, addressing climate change through mitigation and adaptation policies does not directly become a top priority for the population. In the developing world, there is often the immediacy of other, more pressing issues. Measuring support for climate policies in developing countries is hindered by data scarcity and the sensitivity of responses to question wording. However, despite data limitations, existing evidence suggests relatively strong support for climate policies, even in the face of low awareness and limited state capacity.

The Gallup World Poll (2022–2023, 125 countries) includes an indirect measure of policy support: willingness to contribute 1% of household income monthly to combat global warming. In low-income countries, 60–70% of respondents expressed willingness (Andre et al. 2024). The Trust in Science and Science-Related Populism (TISP) Survey (2022–2023), covering 68 countries, directly measures support for five climate policies. Analysis shows broad support in developing countries, particularly for expanding renewable energy and conservation measures, such as protecting forests (Cologna et al. 2025).

Support for different climate policies is not universal. Instead, support tends to increase when policies are framed in terms of environmental conservation, pollution, or agriculture. For instance, in China, climate-related topics rarely trend on social media platforms like Weibo, although air pollution once drove online backlash in the 2010s (Liu and Wallace 2023). Recent evidence shows that public complaints about environmental violations, when amplified through social media, can significantly reduce pollution by increasing the political salience of government enforcement (Buntaine et al. 2024).[4]

Support for mitigation policies (e.g., carbon taxes or green infrastructure) increases when individuals perceive these policies to be fair (Dechezleprêtre et al. 2025). Recent work finds that mass support for international climate transfers increases when mitigation policies are framed around compensation (Gaikwad, Genovese and Tingley 2022). Thus, an emerging strand of policy discourse repackages mitigation around "co-benefits," such as green jobs, technological innovation, and improved public health. However, a two-country survey experiment shows that these frames fail to attract more public support than the traditional focus on climate-risk reduction (Bernauer

[4]Yet, research from India shows that partisanship and sensitivity to personal costs can blunt public accountability, even for issues like air pollution whose health risks are widely recognized by citizens (Singh and Thachil 2023).

and McGrath 2016). Variation in climate policy support is also a function of trust in government: it is higher when people view their governments as sufficiently competent (Meckling and Benkler 2024; Fesenfeld 2025). Conversely, low political trust, especially in contexts of perceived corruption or unresponsiveness, can dampen support even among those with high climate concern (Andrews et al. 2025)

Community attributes, such as (perceived) social norms and second-order beliefs, also explain variation in support. Where climate action is rare or stigmatized, people may hide their concerns and policy preferences; where it is normalized among peers, concerns and support for climate action rise (Todorova et al. 2025; Cologna et al. 2025). Climate attitudes spread through social signaling and cues. For instance, peers, including those on social media, shape one's perception of whether floods are "natural hazards" or attributable to climate change. Very few studies leverage these network dynamics, making this focus a promising avenue for future research.

Individual-level factors also shape climate policy support. People often oppose mitigation policies when they perceive personal costs to their "way of life," and this perception increases with economic development and for men more than for women (Bush and Clayton 2023). In contrast, those most vulnerable to climate impacts, including residents of coastal areas, small islands, or agricultural regions, are more likely to support climate action.[5] Again, vulnerability, not climate knowledge, is the primary driver of support. Unlike in high-income countries, partisan identity and ideology play a more minor role in developing countries. However, ideological proxies, such as individualism (Spektor, Fasolin and Camargo 2023) and belief in interventionist deities (González and Sánchez 2022), can reduce support for climate policy. These patterns align with political psychology theories (e.g., motivated reasoning), although such frameworks remain underused in this context.

To summarize, limited public investment in climate mitigation and adaptation in developing countries does not appear to reflect low public concern or widespread resistance to costly policies. One explanation is that climate policy lacks salience among voters; other issue areas take precedence in the developing world, though this possibility remains untested. In support of this view,

[5]Vulnerability itself becomes an identity that is more salient than ethnicity or class in mobilizing support (Eisenstadt and West 2019). However, Mildenberger et al. (2025) find that even among those most climate-vulnerable in the 55 small island states, there is wide variation in perceived climate risks and responsibility over who will resolve climatic threats.

Wappenhans et al. (2024) find that even after extreme weather events, increased public concern does not translate into greater political attention to climate issues (i.e., measured using political parties' public communication). Another possibility is that there is weaker government responsiveness and accountability in developing countries. For instance, Calacino et al. (2025) find that even when climate shocks prompt formal policy adoption, they do not necessarily lead to implementation, highlighting a persistent gap between symbolic policy adoption and actual change in energy outcomes. Their study attributes this implementation gap to weak state capacity, elite capture, and limited accountability. Overall, these studies observe a disconnect between climate impacts and political responsiveness, a key area for future research.

### 2.4 Way forward

Public opinion research on climate attitudes in developing countries faces several limitations. First, despite a growing number of studies on the determinants of climate attitudes, the literature remains highly fragmented and under-theorized. The modal study regresses a measure of climate attitudes (e.g., climate awareness, belief in human causation, climate concern, or policy support) on numerous independent variables, before reporting which have the greatest predictive power (e.g., González and Sánchez 2022; Todorova et al. 2025). Such designs allow scholars to make progress in mapping the correlates of climate attitudes; however, a theory-driven portrait of the most important predictors across different types of climate attitudes remains elusive.

Second, data sparsity further limits public opinion research in developing countries. Standardized governance-focused national surveys often lack comprehensive questions related to climate change, reflecting low donor priorities for addressing climate issues. The AsiaBarometer contains none; the Afrobarometer and Latinobarómetro ask about climate change awareness in some rounds but omit questions on concern or policy support. Their temporal coverage is also low, hindering analysis of long-term trends in most developing countries. Inconsistent inclusion of climate questions across survey rounds further complicates efforts to track opinion over time. Limited topical depth further constrains efforts to link attitudes to behavior. Major climate opinion datasets (e.g., YPCCC, World Risk Poll) offer better topical coverage but are limited in geographic scope. Furthermore, they are often designed by scholars residing in high-income countries, with

less attention to locally salient framings, such as agricultural seasons.

Another important avenue for future work is testing different messaging, tools, and interventions to increase climate literacy (see Atkins et al. (2024). While this is an active research agenda in the Global North (e.g., Bergquist, Mildenberger and Stokes 2020), there is a notable dearth of work on these topics in developing countries, particularly research sensitive to local conditions, concerns, prevailing narratives, and frames. From a policy perspective, research should focus on the conditions under which individuals and communities may prioritize climate-related investments over other priorities, such as social protection, education, healthcare, and infrastructure, and the impact of climate literacy on supporting these investments.

## 3 Effects of Climate Change Exposure

The previous section examined the determinants of climate attitudes in developing countries. A parallel, growing but largely disconnected literature investigates how exposure to extreme weather events, such as floods, droughts and wildfires, shapes climate attitudes and behavior. We classify these studies into two strands that developed separately, rarely citing each other and relying on distinct theoretical frameworks. Figure 3 illustrates the pathways linking climate exposure to citizen demand for more effective or responsive climate action. Most existing research isolates a single step in this causal chain (i.e., typically the effect of exposure on behavior, such as voting) without tracing the different intermediary legs of the chain. Our goal is to map the entire causal chain: identifying where the literature skips steps and where key gaps remain.

### 3.1 Attitudinal Channel

Researchers working within the attitudinal channel argue that climate inaction arises from the perceived psychological distance of its impacts –measured temporally or geographically (Keller et al. 2022)– and the uncertainty surrounding this distance (Sisco 2021). Direct, personal experience with climate risks is thought to reduce this distance and uncertainty, increasing emotional and cognitive engagement, climate concern, issue salience, and ultimately support for individual or collective climate action (Leiserowitz 2006). This effect may be especially pronounced in low-education contexts, where personal experience often resonates more than abstract informa-

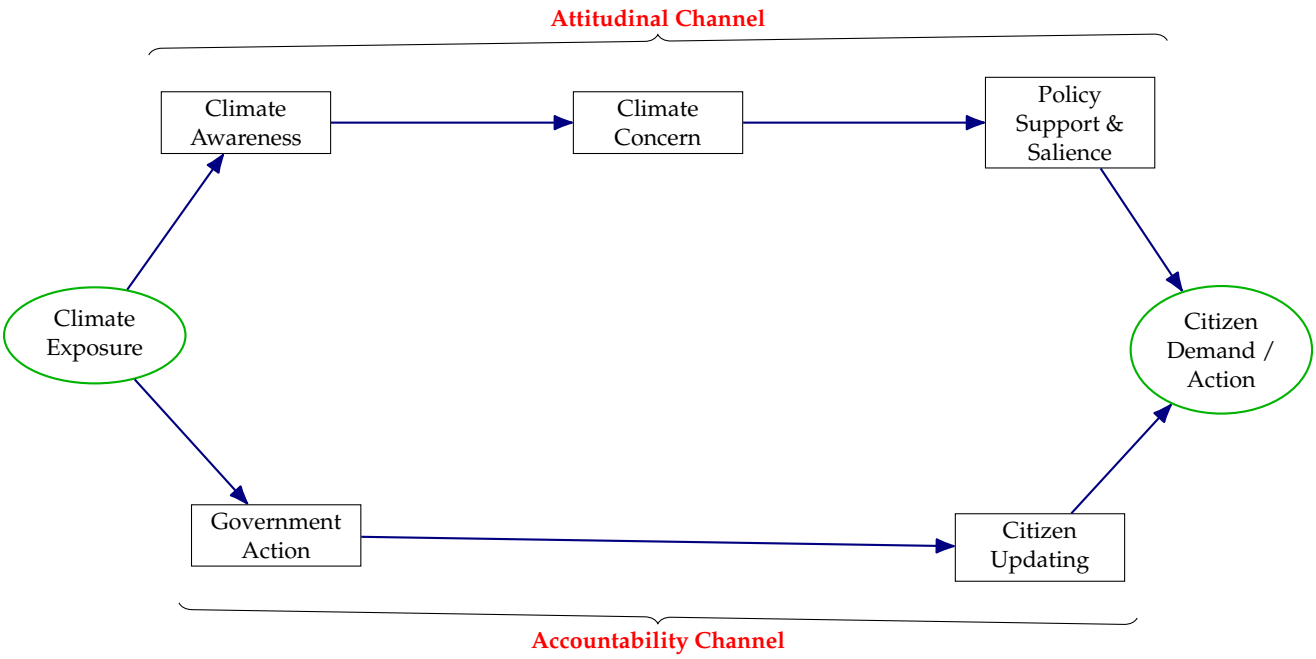



Figure 3: Flow from climate exposure through attitudes to citizen demand/action.

tion (González and Sánchez 2022). The effect may also be amplified when people face salient (i.e., flooding) as opposed to subtle shocks (i.e., contamination of irrigation water with salinity due to rising sea-levels) (Patel 2025).

A central debate in this literature concerns how to conceptualize "experiencing the consequences of climate change." Political scientists typically equate direct experience with objective exposure, measured through gridded climatic datasets. This approach risks ecological fallacies, especially with highly aggregated survey data and allows considerable researcher discretion in constructing exposure measures (Howe et al. 2019). Its advantage lies in treating exposure as exogenous to prior beliefs. Social psychologists, by contrast, emphasize subjective experience: for an event to shape attitudes, it must be perceived as unusual, personally relevant, and memorable. This perspective aligns more closely with theories of risk perception but introduces endogeneity, as those already concerned about climate change are more likely to interpret events as such. Unsurprisingly, self-reported exposure consistently predicts higher climate concern and policy support (Cologna et al. 2025; Dablander 2025; González and Sánchez 2022; Spektor, Fasolin and Camargo 2023), whereas objective exposure measures typically do not (Cologna et al. 2025; Lee et al. 2015; Simpson et al. 2021; Xia et al. 2022). Few studies, however, examine when—or

whether—such updating in climate awareness, concern, or policy support translates into political outcomes, leaving a critical gap for future research.

### 3.2 Accountability Channel

In parallel to the *Attitudinal Channel* literature where climate "exposed" individuals supposedly support climate action after updating on climate risk, a different body of work explores the effect of (objective) climate exposure on electoral outcomes. In this literature, exposed individuals use both a climatic event and the government's response to it (i.e., both its actions and inaction) to update their beliefs about the government: in particular, its capacity (Birch and i Coma 2023; Cole, Healy and Werker 2012), responsiveness (Cooperman 2022; Lazarev et al. 2014), effectiveness in mobilizing resources (Blankenship et al. 2021), and trustworthiness (Ahmad and Younas 2021; Ahlerup et al. 2024). In some studies, individuals also update their capacity for collective action (e.g., Liu and Xu 2024; Balcazar and Kennard 2025). There is evidence that exposure to a climatic event can effectuate programmatic shifts towards left-wing and green party candidates who support redistribution and reconstruction (Visconti 2022; Pianta and Rettl 2025). Theoretically, updating is also a function of how the hazard is framed as part of political processes: by the press, opposition parties, friends, local leaders, or social media. However, we are not aware of a paper that rigorously explores the mediating factor of such narratives.

Accountability theories, particularly retrospective voting, primarily shape the link between climate hazards and voting behavior (Rubin 2018). Citizens use both the hazard's impacts and the government's responses to those impacts as a heuristic. If the government uses the event to signal responsiveness, it benefits electorally (e.g., Lazarev et al. 2014; Gallego 2018), but if it fails to respond adequately, it suffers electoral losses (Katz and Levin 2016). Government response is a function of various factors, such as electoral cycles (Cao, Kostka and Xu 2019; Cooperman 2022), incentives for promotion among local officials (Wu and Cao 2021), the scale of the climatic event (Birch and i Coma 2023), the alignment between local and national governments (Blankenship et al. 2021), and the logic of clientelistic exchange (Querubín and Labonne 2024).

Beyond voting, a nascent literature examines whether hazard exposure can directly influence government behavior and the structure of politics and institutions. Evidence is mixed regarding

whether extreme weather events increase attention to environmental and climate issues among politicians and parties (Wappenhans et al. 2024). However, natural disasters shape who enters politics. In Brazil, floods decrease the average age and educational attainment of candidates, displacing rent-seeking individuals in favor of professionals with outside career options (Fasolin and Valentim 2024). In India, extreme temperature shocks before elections increase support for agriculture-oriented candidates campaigning on environmental issues (Amirapu, Clots-Figueras and Rud 2023). More fundamentally, disasters can also alter the institutional architecture of the state. Recent cross-national evidence suggests that natural disasters lead to increased fiscal and administrative centralization, particularly when events occur far from the capital or are geographically dispersed (Han, Tang and Yu 2025). Disasters may encourage re-centralization by highlighting the need for national coordination. These findings highlight that climate hazards may not only affect electoral behavior but also reshape the underlying distribution of authority within states. A vast literature also links climate shocks to conflict (see Koubi (2019) for a review).

Notably, in most studies, there is not anything unique about climate change per se. Scholars treat extreme climatic events just as any other exogenous shock (e.g., economic shock) that is sufficiently salient to voters to affect electoral outcomes. This raises a central conceptual question: what, if anything, distinguishes climate shocks from broader economic shocks featured in the extensive literature on retrospective voting? In addition, another key puzzle also remains: climate exposure influences voting even when it does not affect climate attitudes or salience, a tension the literature has yet to resolve.

### 3.3 Thorny methodological problems

Both ”attitudinal” and ”accountability” studies fall short in providing theoretical clarity on the degree of exposure or prior climate awareness required to influence climate attitudes. What level or type of exposure shifts attitudes? Which hazards are most likely to shift attitudes: those most clearly attributable to climate change (e.g., heatwaves), those most salient to the senses (e.g., floods), or those most destructive and thus most memorable (e.g., hurricanes and cyclones)? And is attitudinal change necessary for political or behavioral responses? These questions remain largely unresolved. These divergent conceptualizations of ”experience” and ”hazards” –in ad-

dition to the researcher's own degrees of freedom in how those are measured– create definitional and methodological tensions across studies (Keller et al. 2022).

The weak theoretical foundations of the political science literature on extreme weather exposure, climate attitudes, and behavior are also reflected in the literature's methodological inconsistencies. Researchers make arbitrary decisions about exposure metrics, relevant time scales (i.e., when the hazard event took place relative to the time of the survey or elections), and units of analysis (e.g., the grid, ADM2, ADM1, constituency, country) without clear theoretical justification (Howe et al. 2019). As discussed, both literatures also tend to focus on the reduced form with little attempt to unpack the different legs of the entire causal chain.

## 4 Effects of Institutions on Climate Management

The preceding sections examined how citizens in developing countries perceive and respond to climate change. These analyses implicitly presuppose a political context in which public opinion matters and the populace can hold leaders accountable. However, across much of the developing world, political regimes more varied, with many countries characterized by authoritarian or hybrid systems and limited electoral accountability. In these settings, public attitudes, while important, cannot fully explain climate outcomes. Political institutions operate differently in developing countries, and the pathways from citizen preferences to policy are often more indirect and complex.

This divergence foregrounds an important observation: before examining how climate exposure generates political responses, we should step back to explore how institutions shape exposure in the first place. Climate change disproportionately affects developing countries; however, within the developing world, variations in effects are substantial. These differences in exposure are not simply a function of geography or poverty, but rather are deeply rooted in national, subnational, and local institutions that structure both the individual and collective responses. Institutional structures help explain why some governments protect carbon sinks while others allow their destruction, and why some communities develop resilience to climate shocks while others remain vulnerable. Climate vulnerability is not only inherited; it is politically produced.

In this section, we examine how institutions structure the incidence, severity, and salience of

climate exposure.[6] We extend the causal chain introduced earlier by identifying a precursor leg as shown in Figure 4

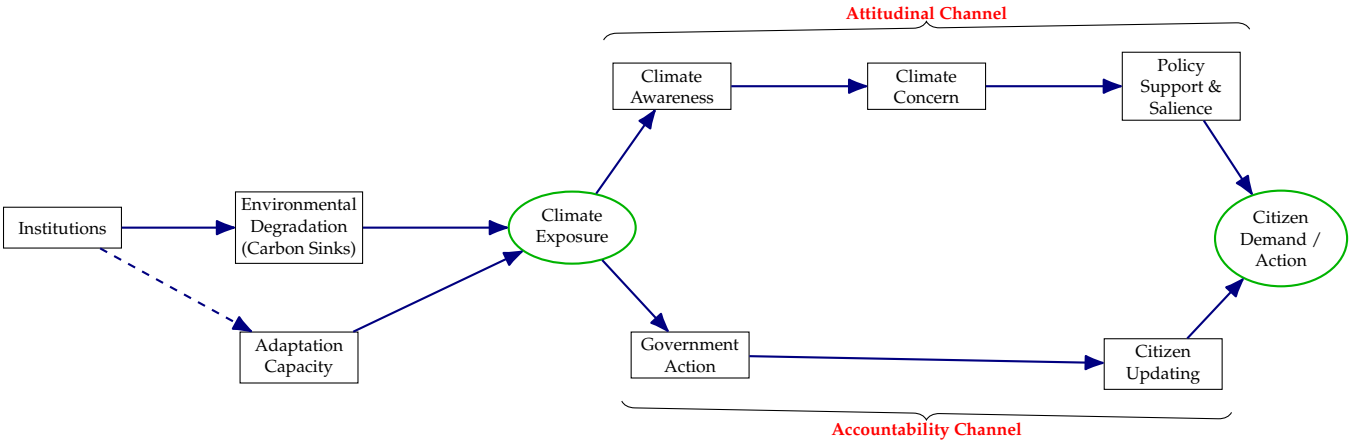



Figure 4

We treat climate exposure not as exogenous, but as an outcome of political and institutional forces. Specifically, we analyze how political institutions at the national and subnational levels produce variation in climate vulnerability through three mechanisms: (1) governing the protection or destruction of carbon sinks, (2) shaping differential adaptive capacity, and (3) determining whose voice and authority matter over these decisions. These institutions are not merely background conditions that mediate climate effects, but rather they are also political causes of climate exposure. We advance four core claims.

First, political institutions and sociopolitical attributes shape climate exposure and vulnerability. They precede it in the causal chain. Climate impacts do not simply "happen" to countries and communities; they are politically produced. Differences in regime type, state capacity, and governance norms help explain why some jurisdictions raze carbon-rich forests or site factories in floodplains, while others shield those assets (Hochstetler 2020). We lack systematic evidence on how institutions operate both as causal variables in generating differential vulnerability and as mediators conditioning the welfare effects of exposure to similar climate hazards. Cross-national datasets that link institutional design to granular exposure or impact data are rare.

Second, because institutions sit upstream of climate vulnerability, they also shape the downstream political pathways reviewed in Sections 2 and 3. In settings with weak state capacity,

[6] We refer to climate exposure to capture both climate exposure and climate vulnerability (see also technical definitions in IPCC AR6).

households and communities often rely on informal adaptation measures (e.g., migration, land repurposing, changing agricultural practices, livelihood diversification, water conservation, private cooling, or labor reorganization) to cope with climate change. These bottom-up responses may complement, substitute, or crowd out state action, muting the attitudinal and accountability pathways emphasized earlier. When informal strategies substitute for public provision, they can reduce pressure on governments and diminish demand for climate responsiveness. However, we know little about who adapts informally, when states step in to complement these responses, and how institutional incentives structure that balance.

Third, bridging the long-divided literatures on environmental and climate politics is essential for tracing causal chains. What was once framed as "environmental" politics—i.e., politics behind pollution control, deforestation, and land-use—is often central to global climate governance. Environmental degradation is often the entry point through which individuals first experience climate change, making these "local" struggles central to any account of carbon production and climate awareness.

Finally, we highlight a paradox of representation: those with the most granular knowledge of environmental change (e.g., Indigenous Peoples, forest-dependent communities, and informal urban dwellers) are frequently excluded from arenas where adaptation policy and finance are negotiated. Although political science increasingly acknowledges this gap, systematic analysis of how political voice is allocated and its consequences for adaptation and resource distribution remain scarce (Gulzar, Lal and Pasquale 2024; Clayton et al. 2025). The subsections that follow explore four key themes—carbon-sink governance, adaptive capacity, political voice, and distributive justice—to demonstrate how institutions affect the response to climate change as well as its spatial and temporal dimensions.

### 4.1 Carbon sinks

One of the most consequential ways political institutions shape climate change vulnerability is through the governance of carbon-absorbing ecosystems. This is especially critical in developing countries, which contain most of the world's remaining carbon sinks and biodiversity reserves: tropical forests, peatlands, and wetlands. These ecosystems serve as natural buffers against cli-

mate change, yet the literature often treats deforestation, pollution, contamination, and degradation as local environmental issues, obscuring their centrality to global climate dynamics. Reframing environmental degradation, especially deforestation, as the loss of carbon sinks reveals the shared terrain across the environmental and climate politics literatures. Yet few studies examine how such degradation translates into uneven and "slow" climate harms across space and communities.[7]

Regime type is an important dimension for understanding how governments manage ecosystems and balance economic development with environmental protection. Early work suggests that democracies perform better because of improved accountability and responsiveness (Midlarsky 1998; Li and Reuveny 2006). However, evidence from the developing world complicates this view. In their review of this literature in this volume, Baragwanath and Gulzar (2026) find that the correlation between democratic governance and environmental outcomes is, in fact, weak and inconsistent across contexts. Democratic competition can incentivize short-term resource extraction, particularly where state capacity is weak. In the Brazilian Amazon, for instance, Xu (2025) finds that competitive elections induce deforestation by incentivizing local politicians to weaken the bureaucratic capacity of environmental monitoring agencies. Sanford (2023) finds that democratic transitions correspond to an additional 0.8 percentage point loss in forest cover, as politicians trade forest concessions for electoral support.[8] Political competition can also entrench existing energy trajectories, reinforcing path-dependent reliance on fossil fuels unless green alternatives are already institutionalized (Aklin and Urpelainen 2013). In contrast, features of autocratic governments can allow for longer-term environmental planning by avoiding veto players and electoral volatility (Beeson 2010; Bayer, Urpelainen and Xu 2016; Clark, Zucker and Urpelainen 2019; Beiser-McGrath, Bernauer and Prakash 2023).

Decentralization introduces another layer of institutional variation in carbon sink governance. Land-use and environmental regulation delegated to local governments can enable policy innovation but also create opportunities for elite capture. In Argentina, governors weakened forest protections to avoid conflict with agribusiness (Milmanda and Garay 2019). Again, in Argentina, subnational bureaucratic capacity explains differences in conservation outcomes (Alcañiz

[7] For an exception, see Herrera (2024*b*).

[8] Calacino (2025) shows that the effects of electoral competition also hinge on the visibility of environmental harms to voters.

and Gutierrez 2020).[9] Political alignment with the federal government also increases the likelihood of Protected Area designation (Mangonnet, Kopas and Urpelainen 2022), and the role of NGOs and activists cannot be understated (Hochstetler and Keck 2007; Anderson et al. 2019; Buntaine, Zhang and Hunnicutt 2021; Barham, Bayi and Murillo 2024).

At the local level, literature mainly outside political science documents indigenous and local knowledge on carbon sink management and community-driven responses. Indigenous Peoples, comprising only around 6.2% of the global population, manage over 25% of Earth's land surface and 40% of all terrestrial protected areas and ecologically intact landscapes (Garnett et al. 2018; Organization 2019). Their customary institutions play a critical role in mitigation and adaptation. In Southeast Asia, communities use local rules (e.g., logging bans, riverbank vegetation requirements, and elevated storage) to manage flood risks (Hiwasaki et al. 2015). Despite this capacity, there is a more limited literature in Political Science on how states can support Indigenous Peoples with climate adaptation and mitigation without undermining their autonomy.

A rich literature examines Indigenous movements in Latin America, their demands for collective rights, and subsequent state recognition of land and self-governance (Yashar 2005; Van Cott 2010; Eisenstadt 2011). Recent work explores how collective recognition affects individual identity and decision-making within communities (Albertus 2025). Although not rooted in climate or environmental politics, this research illuminates how Indigenous rights shape the governance of land and natural resources that function as carbon sinks. With few exceptions (e.g., Gulzar, Lal and Pasquale 2024; Martínez-Álvarez 2022; Baragwanath, Bayi and Shinde 2023), studies rarely address legal recognition or co-governance models that protect rights while scaling successful practices. Strengthening Indigenous Peoples' and Local Communities' negotiating capacity offers another path to reform. In Liberia, which lost 15% of its tree cover between 2002 and 2024, communities often lease forests without fair compensation. Christensen et al. (Forthcoming) show that training these communities in interest-based negotiation both reduces deforestation and improves agreement value.

Payment for Ecosystem Services (PES) programs provide another pathway to incentivize conservation by compensating communities for their efforts. These programs aim to reduce prac-

[9] Although not about managing carbon sinks, Dipoppa and Gulzar (2024) similarly find that bureaucratic incentives and capacity have strong effects on patterns of air pollution from crop burning in South Asia.

tices like logging and crop burning while also promoting poverty alleviation (Jayachandran 2023). However, the effectiveness of PES programs on deforestation, poverty, and other outcomes are mixed. In Uganda, Jayachandran (2023) shows that payments reduced deforestation. In India, Jack et al. (2025) find that unconditional upfront payments increased compliance with crop residue burning. Yet, a 2014 meta-analysis by Samii et al. (2014) concludes that PES programs have limited impacts. We refrain from reviewing in-depth the vast literature on PES across other disciplines, a literature that tends to be technical in focus and rarely appears in mainstream political science outlets.[10] We note, however, that the political dynamics behind PES adoption and implementation are comparatively understudied. Large-scale rollout is challenging, as it requires integrating data on livelihoods, income, and land rights with institutional frameworks for payment delivery, particularly in remote, unbanked areas.[11] Future research could further investigate the political incentives and institutions, such as property rights, that shape the design and implementation of PES and whether similar models can be applied to marine and coastal conservation.

### 4.2 Adaptation to Climate Change

Political institutions further shape climate vulnerability by structuring adaptive capacity. Studies exploring differential vulnerability and voice in climate governance tend to build on the Environmental Justice (EJ) framework. Developed initially around struggles over toxic waste siting, EJ scholarship traces how environmental harms and how access to public protections map onto race, class, gender, and other social divides (Walker 2012). Climate scholarship extends these insights, showing that sea-level rise, drought, and heat waves disproportionately impact lower-income countries and marginalized communities (Dolšak and Prakash 2022). We treat EJ as encompassing both "environmental" and "climate" justice and emphasize the institutional forces that shape these inequalities.

The emerging literature on adaptation politics sheds light on how sociopolitical dynamics structure both top-down and bottom-up responses. A growing body of work documents how migration (Draper 2022; Arias and Blair 2022) and labor formalization (Liu and Xu 2024) are strate-

[10] This review article does not address the literature which falls mostly outside of political science on Reducing Emissions from Deforestation and forest Degradation in developing countries (REDD+). Under this framework, developing countries can receive results-based payments for emission reductions when they reduce deforestation.

[11] See Mahanty, Suich and Tacconi (2013) for an assessment of the impact of different PES schemes on livelihoods in contexts with varying land tenure arrangements.

gies for climate adaptation.[12] Dependence on migration (Vinke et al. 2020) and informal community adaptation strategies can absolve governments of responsibility for long-term in situ adaptive planning. Recent work demonstrates that while such private investments can cushion heat and income losses, they exacerbate existing inequalities (Carleton et al. 2024). Because these bottom-up strategies often substitute for drainage upgrades, social protection, or early warning systems, they can blunt pressure for state-led programs, weakening the attitudinal and accountability channels outlined in Sections 2 and 3. However, we lack systematic, comparative understanding of the institutions and political structures that determine this substitution logic—when and why bottom-up adaptation crowds out, complements, or catalyzes government action.

Emerging research underscores the unintended consequences of informal, bottom-up adaptation efforts. Designed to reduce vulnerability, such initiatives can backfire when poorly planned or politically captured—a process known as maladaptation (Dolšak and Prakash 2018). Adaptation programs should therefore be evaluated not only for technical efficacy, but also for their distributional effects (Eriksen et al. 2020). Far from politically neutral, adaptation is shaped by power relations that can reinforce existing inequalities. Once implemented, it also carries political implications. Studying a water-scarcity program in Mexico, Calacino and Martinez-Álvarez (2025) find that voters reward politicians for adaptation efforts, suggesting these may be less contentious than mitigation.[13]

Formal programs, too, often fail when they ignore local realities or political dynamics. Climate aid frequently follows donor priorities rather than local needs (Gaikwad, Genovese and Tingley 2025). Protective infrastructure and relocation schemes may displace the poor (Sovacool and Linnér 2016), and conservation programs sometimes exacerbate environmental degradation. In Aceh, Indonesia, a youth ranger program improved economic outcomes and modestly decreased illegal logging, but was associated with increased small-scale mining (Paler et al. 2015). These examples highlight that adaptation and mitigation programs must be both technically sound and locally grounded to avoid unintended harm.

Despite these challenges, national and subnational governments are increasingly investing in

[12] This review refrains from surveying the vast literature on climate and migration. We limit the focus here to noting migration as form of adaptation.

[13] This may reflect that many adaptation initiatives, such as irrigation in rain-fed regions or clean cookstove programs, are welfare-enhancing development projects.

top-down climate adaptation programs that integrate national policy with local implementation. Indonesia's ProKlim program supports village-level mitigation and adaptation; Brazil's *AdaptaCidades* integrates resilience planning across 11 states. Kenya's County Climate Change Funds empower local communities to manage climate finance (Crick et al. 2019), and Nepal and the Philippines have institutionalized local adaptation priorities through national frameworks (Woodruff and Regan 2019). Social insurance programs can buffer climate-induced income loss, yet the institutional conditions shaping these programs' effectiveness remain poorly understood.

Successful adaptation depends not only on program design but also on the integration of local knowledge. Indigenous Peoples and Local Communities, though socioeconomically marginalized, often possess deep insight into environmental variability (Ramos-Castillo, Castellanos and Galloway McLean 2017). A global review of 119 studies identified 1,851 locally led adaptation responses (Schlingmann et al. 2021). A recent RCT in Indonesia finds that combining tailored climate information with deliberative processes increased support for local climate projects (Erbaugh et al. 2025). These findings highlight the importance of participatory institutions that incorporate community-specific knowledge.

However, significant knowledge gaps remain. Case studies abound, but cross-contextual analysis of local adaptation strategies—by states, communities, or households—is rare, mainly due to data limitations. Similarly, public opinion research has largely overlooked demand for adaptation policies in developing country contexts. While public support for mitigation is increasingly studied, we know little about how individuals evaluate adaptation policies, which groups demand them, and how they prioritize them relative to other urgent needs under fiscal constraints. This is, in part, a result of how climate adaptation is not as well defined as mitigation. Existing research often conflates climate impacts with general policy salience, without distinguishing between support for adaptation and mitigation (Hornsey and Pearson 2024; Andre et al. 2024). Much of the existing adaptation literature focuses on household or firm-level behavior and is grounded primarily in economics (see Carleton et al. (2024) for a review), with less attention to community-level dynamics or the political economy factors (e.g., social networks, local institutions, and governance arrangements) that shape either top-down government investments or bottom-up collective adaptation.

Where comparative work exists, it tends to focus on the role of institutions in shaping climate

aid distribution (see work by Michaelowa and Michaelowa (2012); Falzon (2023)). International green aid often favors countries with institutional credibility or geopolitical alignment over those with the greatest need (Gaikwad, Genovese and Tingley 2025). Subnational capacity is also consequential: some local agencies enact protective policies, while others, constrained by limited resources and discretion, see climate shocks deepen existing vulnerabilities. These gaps are not just technical. They are political choices about investment, voice, and inclusion.

### 4.3 Climate Politics as Distributive Politics

Political institutions further shape climate vulnerability by structuring who participates in environmental management and climate governance. Inclusion determines whether conservation or adaptation policies succeed, how to distribute benefits and burdens, and how these distributions might exacerbate existing inequalities. Early international relations scholarship framed climate change as a global commons problem—a "tragedy of the commons" requiring sovereign cooperation (e.g., Barrett 2003). This logic remains central to research on emissions reduction and international cooperation. However, as climate impacts become more visible and spatially uneven, they are increasingly understood as distributive conflicts—over costs, risks, and political representation (Aklin and Mildenberger 2020; Alcañiz and Gutiérrez 2022; Roberts and Parks 2006; Colgan, Green and Hale 2021). In a recent review article, Ross (2025) extends this view by tracing how distributive conflicts over climate policy play out across sectors, social groups, and levels of governance, emphasizing the concentrated veto power of reform losers.

This distributive turn reframes both mitigation and adaptation. Decarbonization generates global public goods but imposes localized costs. For example, in fossil fuel-dependent communities, achieving equitable green transitions is a political necessity. The literature on "just transitions" policies illustrates these distributive tensions. Decarbonization policies often generate backlash from workers and communities whose livelihoods depend on fossil fuel industries, creating political challenges that many governments struggle to manage effectively. Comparing Brazil and South Africa, Hochstetler (2020) shows that energy transitions are shaped not only by international pressure or environmental need, but also by the political coalitions, institutions, and development models that structure state–market relations. A global analysis of 32 fossil fuel reforms,

such as raising gasoline taxes and reducing fuel subsidies, reveals that most are reversed within five years (Martinez-Alvarez et al. 2022). Similarly, Mahdavi, Martinez-Alvarez and Ross (2022) demonstrate that between 2003 and 2015, net fossil fuel taxes and subsidies remained essentially unchanged, with policy stasis driven more by fiscal constraints than political opposition. In response to these challenges, governments are experimenting with compensatory policies designed to support affected populations through job retraining programs, infrastructure investment, green economic development, and redistribution of carbon tax revenues (Gaikwad, Genovese and Tingley 2022). However, although politically necessary, compensation rarely occurs at the scale or credibility needed to sustain reforms (Ross 2025). The credibility of these promises is central, as communities often fear policy reversal or neglect (Gazmararian and Tingley 2023). Evaluating the effectiveness of such compensatory programs represents a promising avenue for future research. Inclusive, well-designed transitions can be practical and electorally rewarding.

Adaptation, too, is fundamentally distributive: it involves allocating public goods and infrastructure in the face of unequal vulnerability. Adaptation is not just a technocratic necessity but a political struggle over resources and representation. The existing literature identifies several institutions that support adaptation and the management of "carbon sinks" by marginalized communities. Programs that enhance land tenure and local authority, especially among Indigenous Peoples, have been linked to reduced deforestation (Gulzar, Lal and Pasquale 2024; Martínez-Álvarez 2022; Baragwanath, Bayi and Shinde 2023). Participatory mechanisms can further enhance targeting and legitimacy, particularly when supported by robust enforcement capacity and adequate funding. Community monitoring can strengthen compliance with deforestation limits (Slough et al. 2021) and wetland management (Herrera 2024*a*). By contrast, participation without institutional support often fails to achieve its goals. In Ecuador, land titling and participatory reforms had little effect on deforestation in the absence of state backing (Buntaine, Hamilton and Millones 2015). Inclusion alone is insufficient; effective policy must link participation to power and adequate resources.

Institutional design also mediates how social and ethnic cleavages shape climate outcomes. Ruling coalitions may shield co-ethnics from environmental risks (Dawson et al. 2025), and support for climate policy varies by identity and proximity to political power (Zucker 2022). Intergroup contact can increase support for inclusive climate action (Gaikwad and Zucker 2024), but

institutional channels are necessary for those preferences to translate into sustainable policy.

In summary, across the developing world, political institutions significantly influence the implementation and inclusivity of climate policy, the preservation of carbon sinks, the scope of adaptation efforts, and the equity and legitimacy of policies. These foundations are crucial for understanding the political roots of climate exposure and designing effective climate governance. Three cross-cutting insights emerge. First, treating pollution, deforestation, or land use as "environmental" rather than "climate" politics obscures their role in managing the planet's carbon sinks. Bridging these literatures reveals that classic political science concerns—such as state capacity, clientelism, power inequality, and regulatory capture—remain central to climate outcomes. Second, adaptation is not a technocratic add-on; it is a distributive arena shaped by institutional gaps. Bottom-up responses may cushion shocks but can also have negative unintended consequences, and they may substitute for state provision, thereby dampening demand for public action. Third, those with the most place-based knowledge—Indigenous Peoples and Local Communities, forest dwellers, and informal residents—are often excluded from the arenas where climate finance and rules are made, perpetuating a deep representation gap.

Despite a growing literature, major blind spots remain:

1. **Institutional drivers of exposure**. We still lack systematic evidence on how regime type, decentralization, customary law, and property rights shape exposure and mediate climate impacts. Cross-national datasets linking institutional design to fine-grained hazard and outcome data are rare.
2. **The politics of adaptation**. Research has only begun to explain when informal strategies crowd out, complement, or catalyze public programs—and how fiscal or electoral incentives shape that balance. Comparative studies on institutional conditions and public preferences for adaptation are urgently needed.
3. **Representation and justice**. We know little about how institutions include or exclude Indigenous Peoples and Local Communities and vulnerable groups from climate decisions, or how that exclusion affects exposure and legitimacy. Political voice should be treated not only as a normative good, but also as a variable shaping exposure and resilience.

Addressing these gaps requires theory-driven measures of institutional design and better

data on local adaptation and finance flows. The challenge now is not only to document exposure, but to explain—and ultimately redress—the political processes that produce it.

## 5 Conclusion: New Directions for a Changing Climate

Climate change disproportionately affects the developing world and is projected to push between 32 and 132 million people in these regions into extreme poverty by 2030 (Jafino et al. 2020). In recent years, we have made important progress in understanding the politics of mitigation, especially in high-income democracies. Despite growing attention to climate governance, its institutional and distributive dimensions in the developing world remain critically understudied.

The current literature on climate change remains fragmented, often focusing on isolated outcomes or assuming reduced-form relationships without addressing underlying mechanisms. This review calls for deeper political science engagement with climate challenges in developing regions. We also emphasize the need to understand climate change through a comprehensive causal chain, from environmental shocks to individual awareness, policy preferences, issue salience, and ultimately, political and social behavior —and in reverse: how politics shape risk exposure in the first place. Several core insights emerge from our review. First, contrary to assumptions, concerns about climate change are often higher in developing countries, despite lower levels of formal climate knowledge. Second, climate exposure does not consistently translate into shifts in political behavior. Its effects depend on prior beliefs, local context, and whether institutional channels enable interpretation and response. Third, we emphasize the role of institutions in structuring the distribution of climate risk and highlight the importance of integrating local knowledge and participatory mechanisms into climate governance.

These findings point to a research agenda that treats climate vulnerability as a political outcome and climate adaptation as also a deeply political process—shaped by exclusion, inequality, and struggles over representation in climate decision-making. Future work should investigate how institutions shape exposure and response, how individuals understand and act on risk, and how distributive conflict plays out through adaptation. As climate finance expands, bridging these knowledge gaps is urgent—not only to inform policy but to ensure that the most vulnerable communities are empowered to shape and benefit from climate solutions.

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