# Eradicating barriers: Ensuring an equitable climate change adaptation process for vulnerable communities

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Adaptive responses to climate change are important with increasing uncertainties surrounding climate trends. There is an increasing focus on the equitability of adaptation policies due to the growing number of cases in which vulnerable groups have been disproportionately affected. Most published research assesses equitability from the outcome of policies; our paper intends to assess equitability from a process-driven perspective in order to improve operational practices. Therefore, 23 case studies were synthesized to identify key problems within various stages of the adaptation processes, with a focus on how the cultural contexts, i.e., institutional and social structures, have shaped the problem. In our discussions, these issues were framed in the form of structural barriers, namely a) institutional power structures, b) institutional norms and political legacies, and c) a lack of cultural understanding between formal and informal organizations. This framing establishes similarities in recurring problems, yet describes how differing cultural context influences the problem. Following, we recommend future research to further progress towards operationalizing these findings through establishing tools and best practices. Our findings also create awareness and a foundation for government and stakeholders to discuss means to overcome these structural barriers.

**Keywords:** Climate change adaptation; Vulnerability and equity; Environmental management

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## 1. Introduction

Climate adaptation is the act of adjusting to the effects of climate change in order to manage its potential harm or even take advantage of them. With increasing climate risks and uncertainties, countries are shifting from mitigation measures (resist change) to adaptation strategies to manage unexpected climate shocks (Dessai & Hulme, 2004).

However, there is an increasing number of cases of maladaptation in which institutions fail to effectively account for the range of vulnerabilities and inequalities of climate-related risks (Stock et al., 2020), (Yazar & York 2022). These vulnerabilities are caused by the unequal nature of climate risks - communities with greater proximity to and dependence on ecosystems will be affected disproportionately (Dulal et al., 2009). Vulnerabilities also arise from structural and social disparities i.e. power, resources and accessibility, in which groups have unequal capabilities to adapt to climate change (Holler, 2014).

Governments must ensure that people have access to fair treatment and opportunities. There is a need for more conscientious effort to integrate equity in climate change policies, especially as climate change effects are increasingly frequent and of greater magnitude.

Existing research on the topic of inclusive adaptation is largely outcome-oriented, which focuses on assessments based on measurable outcomes (Malloy & Ashcraft, 2020). Hence, as the motivation of this paper lies in the implementation, it will take a more process-focused approach in its analysis.

The paper looks into the existing body of literature and the policy-making process is scrutinized to identify key problems at each stage that would influence the equitability of policies. These key problems are further explored through a cultural lens, to understand if specific institutional and social structures unique to the countries and cultural contexts can explain the problems. This leads to the research question: What are common cultural-sensitive problems along each stage of the policy-making process that hinder an equitable climate change adaptation?

To answer this, a culturally diverse literature research was performed. First, the search methodology and parameters will be described. An overview of the existing literature is then presented and synthesized to determine what is known about this topic.

## 2. Research Methodology

The literature review utilizes the databases from TU Delft Library databases, Scopus and Google Scholar. The search only considered literature written in English. Specific search terms include (“climate adaptation” OR “climate-adaptive pathways” OR “climate change adaptation”) AND (“equitable” OR “inclusive” OR ”justice” OR “marginal” OR “vulnerable”).

This study focuses on case studies about environmental governance and management as it provides a richer depiction of the adaptation process which is core to our research question. We scoped it down further to papers from the last decade to ensure comparability of case studies based on more up-to-date concepts of adaptation.

| | Coastal | Mountain/ Highland | Agricultural | Urban |
|---|---|---|---|---|
| Africa | - | - | 4 | 1 |
| Asia | 1 | 2 | 3 | 1 |
| Europe | - | - | 1 | - |
| North America | 1 | - | - | 3 |
| South America | 1 | 2 | 1 | 1 |
| Oceania | 1 | - | - | - |

*Table 1: Table on paper counts by the geography of case studies - continent against community types. Note: Figure created by the author.*

Searches were diversified in order to acknowledge the plurality in perspectives and contexts. As illustrated in Table 1, out of the 23 case studies reviewed, there was at least one paper studying contexts in each continent and they had a diverse mix of vulnerable community types i.e., Coastal, Mountain/ Highlands, Agricultural, and Urban. This includes papers in Further Readings (Appendix A). However, case studies are generally dominated by papers from Asia, South America and Africa, likely because of dependencies on ecosystem services and existing inequalities.

## 3. Results

In assessing the policymaking process of the different case studies, we utilized a general 4-stage adaptation policy framework structure (as illustrated in Figure 1) shared between multiple governments to allow for effective comparisons (Rubio-Martin et al., 2021; Becker, 2013; Coulter, 2019; Adaptationcommunity.net, n.d.; Town of Winsdor, 2022; Southern California Climate Adaptation Planning Guide, 2020). We proceed to analyze the various stages identified to be the source of failure in achieving equitable climate adaptation and analyze the reasons described in the papers.

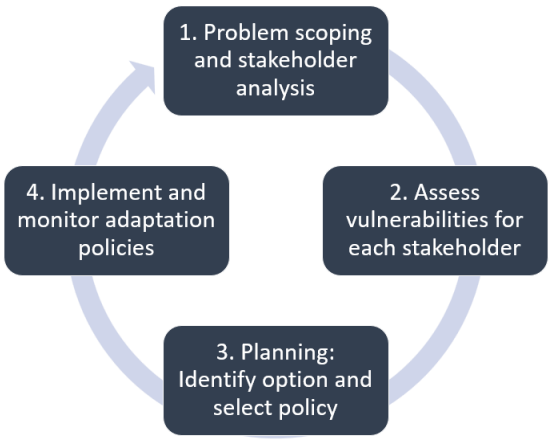


*Figure 1: Typical 4-stage adaptation framework adapted from government sources*

### 3.1. Problem scoping and stakeholder analysis

Typically, the first stage of policymaking includes problem demarcation and stakeholder analysis. The formulation of the problem is dependent on the stakeholders, where narratives have to be brought to the attention of policymakers. Hence, in designing inclusive climate adaptation

policies, a diverse range of actors must be identified and involved from the beginning.

In many of these case studies, a common issue lies in communicating where structural barriers are hindering local communities from escalating their problem to the governing bodies (McNeeley, 2016; Nost, 2019). Likewise, the governing bodies are unable to account for vulnerable groups sufficiently through stakeholder analyses. Hence, narratives about the effects of climate change often do not emerge and locals are left with no help in managing climate change.

However, case studies differ in reasons for the lack of a communication channel. Nurhidayah & McIlgor (2019) takes the pessimistic stance that the problem boils down to the historical marginalization of vulnerable groups. This could influence institutional norms and could also hinder the ability to assess the vulnerabilities of marginalized communities. Jurjonas et al. (2020) support this and describe the ethnocentrism entrenched in information transfer which causes poor alignment between policymakers and the respective community's concerns and perceptions.

Other authors focus more on understanding the contextual reasons behind the structural barriers. McDowell et al. (2020) claim that the source of failure lies in how formal institutions lack a sufficient understanding of the different problem narratives due to the geographical separation between policymakers and locals, hence, rendering a weak participatory involvement. Makuwira (2022) showed how possible events and trends could result in difficulties in accessing peripheral voices. In his case study, he claims that the massive influx from rural-urban settlements causes administrative difficulties in accounting and managing different groups of people.

### 3.2. Assess vulnerabilities for stakeholders

Apart from identifying stakeholders, assessing the vulnerabilities of these groups is needed to prescribe an appropriate policy. Vulnerability assessments have to acknowledge the extent of climate risks and existing capabilities and capacities.

The general issue at this stage would be the omission of indicators that play an important role in determining the vulnerabilities experienced by groups. Jesus-Bretschneider (2019) and Heath (2020) show how the insufficient assessment of socioeconomic indicators, such as information access and financial inequalities, can result in policies which miss out on crucial resources when implementing policies to build climate adaptive capacities.

These cases also further discuss possible reasons for misapprehending vulnerabilities. Garcia et al. (2021), Hughes (2020) and Bee (2013) claim that internal power dynamics tend to be overlooked in assessing vulnerabilities - hence even though communities were identified as vulnerable groups, certain subgroups (and the indicators to identify them) were neglected. This is commonly seen in the context surrounding gender inequalities, where women are burdened with a different set of climate issues to tackle.

### 3.3. Planning: Identify options and select policy

In this stage, policymakers assess the range of options and select policies based on their effectiveness in reaching climate adaptation goals. This would typically involve accounting for alternatives and understanding the costs and benefits with respect to the problem formulated. The main failure in this stage lies in policymakers'

inability to consider the flaws and unintended impacts of their adaptation plans. This decreases the feasibility of proposed policies or even worsens the circumstance of vulnerable communities.

The cases describe different contexts in which failure occurs. Garcia et al. (2021) describe issues in which policymakers do not account for the existing cultural norms present in the communities (especially so in rural and tribal contexts) - which eventually results in a loss of innovation in adaptation measures as they impose and interfere with existing practices. In other cases, policies could be completely oblivious to the lack of capacities and capabilities of communities that are essential for adaptation plans (Clay & King, 2019; Puupponen et al, 2022). There are also failures to account for detrimental effects and long-term implications - Shinn (2016) describes how due to strict regulations in climate adaptation policies, farmers are pressured to adopt rigid agriculture practices that ironically result in lower adaptive capacities.

### 3.4. Implement and monitor adaptation policies

Preceding the previous stage of formulating a plan, the final stage focuses on executing the identified policy. In some cases, the policy can be relatively sound but issues arise during implementation. As a result, the policy tends to pale in effectiveness, or in some cases, even exacerbate existing inequalities.

Different cases illustrate various implementation challenges due to structural barriers. Makuwira (2022) describes a context in which, upon initiation, legislative frameworks fail to be utilized because citizens lack awareness of these legislations. This becomes worse with contradicting frameworks at different levels of governance - e.g. City and District - due to power struggles and the resulting lack of coordination. McDowell et al. (2020) discuss how bureaucracy can additionally hinder vulnerable communities from building the capacities needed. In such cases, the state often intervenes in allocating resources to such communities.

No literature to our knowledge critically assesses the monitoring of implemented adaptation policies.

## 4. Discussions and Conclusion

In this paper, the key problems of inclusive climate adaptation policies were identified at each stage of the policymaking process. The identified problems can be generalized to a lack of proper stakeholder involvement within the policy-making process. Consequently, most policies appear to be already mismanaged at the first stage of problem definition - where key narratives of the vulnerable communities fail to emerge. Especially in organizations that carry heavy power imbalances and information asymmetries, trends of marginalization, coordination, and bureaucracy seem to inevitably hinder progress on equitable climate change adaptation. Once again, this reinforces the necessity of participatory climate policy design in which the stakeholder is engaged and considered at every stage of the process (Finlayson & Neilson, 2021).

However, it is observed that the root causes for these problems vary greatly between cases due to the different social and institutional cultures of the case context. We further attempt to synthesize these problems into structural barriers which describe how certain cultural characteristics impede policymakers' ability to understand and

tackle systemic inequalities within climate risks:

First, institutional power structures shall be mentioned. Such power structures seem to manifest themselves depending on the national context. In more hierarchically structured countries, the transmission of knowledge and assistance seems to be more challenging, due to an abundance of layers of bureaucracy. Successful stakeholder engagement in the context of climate policies presumes that information transfer from the smallest entities - which affected local communities oftentimes are - to the state and federal government and vice versa, is generally achievable.

In developing countries, we identified a challenge in conflicting interests between multiple decision-makers across federal levels. Politicians are committed to a multitude of - sometimes conflicting - goals such as short-term economic growth for their respective electorates. This influences the problem definition as narratives of vulnerable communities to get overshadowed. Furthermore, complex organizational structures as well as competing interests among representatives serving their respective electorates, often render the required planning and implementation of policies impossible.

Secondly, structural barriers are more present in the form of institutional norms and political legacies in developed countries that inherit less inclusive policy paradigms. Such paradigms lead to non-inclusive policies and legacies being still in place. A typical example is the absence of communication channels that reach marginalized communities. Another example can be observed in decision-makers' inability to see the causal connection between climate vulnerability and socio-economic standing. A sufficient vulnerability assessment thus becomes impossible.

Lastly, the lack of cultural understanding between formal and grassroots organizations causes inclusive adaptation policies to fail. We observe this structural barrier in cases of either distrust or significant geographical separation between institutions. Communication channels are lacking due to cultural differences, or distrust. Especially in cases in which large, technocratic organizations such as UN branches interact with highly remote communities, an understanding of the affected communities' cultural practices must be recognized in the planning stage. It is recommended to work with and build on existing adaptive policies rather than to compete with them.

## 5. Recommendations

In our paper, we have identified key problems within the policy-making process and characterized them in the form of structural barriers to generalize how similar social and institutional traits could impede equitable climate change adaptation.

Our findings are a first step to establishing a common set of challenges for researchers to be aware of and learn from. However, the literature review has primarily focused on problem identification; there is still a gap in implementing actionable plans and practices to improve the policy-making process. We recommend that future research continues from here and focuses on generalizable solutions, tools and best practices in order to successfully overcome structural barriers present in their problem contexts.

Moreover, our research has uncovered a knowledge gap in the context of

the implementation framework, presented in Figure 1. We recommend that future research focuses also on the process of monitoring the outcome of already implemented adaptation policies.

Additionally, governments and stakeholders can benefit from our findings. Although problems may be largely systemic, governments and stakeholder actors can still overcome structural barriers by identifying key power relations to capitalize on to ensure that assistance and knowledge can be better transmitted at every stage of the process. This is in hope that incrementally, there will be more flexibility and flatter working structures in the adaptation process to foster the collaboration necessary for adaptation policies.

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## Appendix A: Further reading


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