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Framework for Implementing Socially Just Climate Adaptation (Post-Print)

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1 **A Framework for Implementing Socially Just Climate Adaptation**

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10
11 The previous two decades of scholarship devoted to the role of social justice in climate change adaptation has
12 established an important theoretical basis to evaluate the concept of just adaptation, or, in other words, how the
13 implementation of climate adaptation policy affects socially vulnerable groups. This paper synthesizes insights from
14 relevant literature on urban climate change governance, climate adaptation, urban planning, social justice theory, and
15 policy implementation to develop three propositions concerning the conditions that must occur to implement just
16 adaptation. First, just adaptation requires the inclusion of socially vulnerable as full participants with agency to shape
17 the decisions that affect them. Second, just adaptation requires that adaptation framings explicitly recognize the causes
18 of systemic injustice. Third, just adaptation requires a focus on incremental evaluations of implementation to avoid
19 timeframes inconsistent with advancing justice. We then integrate the Advocacy Coalition Framework (ACF) with
20 the just adaptation literature to develop a framework to evaluate the implementation of climate adaptation. We present
21 two novel modifications to the ACF aimed at fostering policy analysis of the previously presented three propositions
22 for implementation of just adaptation.

23
24 Key words: Climate adaptation; Social justice; Policy implementation; Climate governance, Urban Planning
25
26

1 **1.0 Introduction:**

2
3 Adapting to climate change presents an immediate challenge that is, at its core, an issue of justice. As the effects of
4 climate change manifest throughout the 21st century, the people who contributed least to the problem are, in many
5 cases, positioned to suffer the most (Shi et al. 2016; Roberts 2009). If climate adaptation efforts fail to make justice a
6 central tenet of climate change governance, such efforts risk perpetuating patterns of human development that favor
7 individuals or groups already positioned to succeed (Adger et al. 2005). Failure to account for justice considerations
8 in climate adaptation planning often leads to questions and conflicts over the legitimacy of these efforts, limits the
9 overall success and sustainability of climate adaption efforts (Adger 2016; Schlosberg et al. 2017, Schlosberg 2012;
10 Agyeman 2013), and reinforces existing vulnerabilities among already marginalized populations (Anguelovski et al.
11 2016; Shi et al. 2016). Only relatively recently are scholars focusing on the disproportionate impacts of climate change
12 on vulnerable populations (e.g. Shi et al. 2016; Roberts 2009) and emphasizing the role of social justice and equity as
13 central to the intersection of climate adaptation planning and implementation, human well-being, and political systems
14 at all levels (e.g. Klinsky et al. 2016). This recent body of scholarship contributes to establishing climate change
15 adaptation as a transformative social institution that contributes to more just and sustainable political, social, and
16 economic systems.

17
18 This review aims to (1) present a critical analysis of the literature on the role of social justice in climate change
19 adaptation, and (2) present a framework for addressing gaps in approaches to just climate adaptation. We identify
20 three core themes critical for advancing climate adaptation practice and research: political capabilities, adaptation
21 framing, and incremental implementation. Our critique of the literature finds that adaptation scholarship has focused
22 on outcomes to the detriment of process and agency, framings of adaptation process lack a substantive connection to
23 the sources of systemic injustice, and there is a need to evaluate implementation processes incrementally. We then
24 present a research framework that modifies a framework commonly used to understand policy implementation, the
25 Advocacy Coalition Framework (ACF), to incorporate our findings about the three core themes to develop an approach
26 to analyze whether just adaptation is being achieved.

27
28 The design of this review reflects a snowball approach of recent literature on the relationship between climate
29 adaptation and social justice and equity from the fields of justice theory, public policy, public administration, and
30 urban climate change governance and planning. For example, an initial Web of Science search for “climate
31 adaptation”, was refined using “justice” and “equity”. The focus on urban governance and planning reflects the
32 significance of cities to adaptation efforts due to their populations vulnerable to the effects of climate change,
33 contribution to climate change, and capacity to develop effective climate mitigation and adaptation solutions (Bulkeley
34 2013). The review then considered each publication’s cited references, focusing on theoretical underpinnings, such as
35 justice scholarship (e.g. Fraser 2014; Nussbaum 2011; Young 2011; Sen 2009; Rawls 1971), as well as papers citing
36 the publication. Our intent was not to be exhaustive, but instead aimed to focus on literature identifying mechanisms
37 of inequality in the implementation of climate adaptation policy. Table 1 provides a sample of representative
38 publications, organized by date of publication. The table illustrates the analytic methodology, which identified key
39 justice, key arguments, and theoretical underpinnings. We find that there to be a coherent body of scholarship within
40 the fields of urban planning and climate change governance that draws from the same theoretical underpinnings. This
41 body of literature includes literature from both positivist (e.g. Anguelovski 2016) and critical (e.g. Fraser 2014)
42 epistemologies. From this body of literature, we are able to develop robust, theoretically based propositions
43 appropriate for the dynamic nature of applied policy subsystem analysis and implementation research.

44
45 Table 1 – Conceptualizations of injustice in climate adaptation.

46

Representative Publication(s)	Key Justice Criteria	Key Arguments	Theoretical Underpinnings
(Holland 2017)	Political Capabilities; Transformation	Adaptation is an ongoing process of transformation where socially vulnerable populations gain the political power to shape adaptation decisions.	(Bulkeley et al. 2013) (Fraser 2014) (Nussbaum 2011) (Pelling 2011) (Shi et al. 2016) (Young 2011)

(Adger 2016)	Procedural and Distributive Justice	Transformational adaptation requires commitments to address issues of solidarity, place, well-being, fairness, and trust; must emphasize the importance of addressing cultural or symbolic value of what is being affected.	(Fraser 2014) (Rawls 1971) (Adger & Paavola 2006) (Young 2011)
(Anguelovski et al. 2016)	Procedural Justice, Recognition	Acts of omission and commission often result from procedural processes that fail to recognize and account for the desired needs and wants of traditionally marginalized groups.	(Bullard 1990) (Rawls 1971) (Young 2011)
(Shi et al. 2016)	Procedural Justice, Recognition, Capabilities Framework	There are opportunities to improve procedural justice by reconceiving the process as more than consultation with affected communities by framing adaptation as a social justice issue.	(Bulkeley et al. 2013) (Nussbaum 2011) (Schlosberg 2012) (Rawls 1971)
(Bulkeley et al. 2013)	Recognition and Substantive Justice	There is a lack of effort to substantively address the structural conditions that produce participatory inequality such as poverty, exclusion, or the role of culture in determining who benefits from adaptation efforts.	(Fraser 2014) (Sen 2009) (Schlosberg 2007) (Young 2011)
(Hughes 2013)	Inclusive, Prioritization, and Distributive Justice	Just adaptation requires representation of vulnerable groups, priority setting and framing that recognize adaptation needs of vulnerable populations, and outcomes that enhance freedoms and assets of vulnerable groups.	(Rawls 1971) (Nussbaum 2003) (Sen 2009)
(Schlosberg 2012)	Recognition and Capabilities	Recognition is a central feature of adaptation justice; developing capabilities is a constitutional right, necessary for human functioning, and subject to negotiation and citizen deliberation.	(Fraser 2014) (Nussbaum 2011) (Sen 2009) (Young 2011)

1
2 The following three sections organize our review of the literature according to three core themes: political capabilities,
3 framing of adaptation, and implementation. Each section synthesizes the most relevant scholarship, articulates a
4 proposition that follows from the analysis, and identifies areas for future research. The fifth section presents a
5 framework for addressing gaps in the research approach to just adaptation.
6
7

8 **2.0 Political Capabilities as Process and Agency**

9
10 Adaptation efforts are typically implemented through established governance processes, which reinforce existing
11 vulnerabilities. Scholarship devoted to injustice in adaptation planning draws on justice literature to recommend a
12 capabilities approach to climate adaptation efforts. The capabilities approach brings new focus to the processes that
13 recognize the needs of vulnerable populations and foster agency within vulnerable populations to shape adaptation
14 decisions.
15

16 *2.1 Embedded governance practices reinforce systemic injustice*

17
18 Climate adaptation policy is typically implemented through mainstreamed processes, which tend to favor elite
19 interests, exacerbate power inequalities in decision-making, be resistant to change and reinforce systemic injustice
20 (Anguelovski et al. 2016). For example, cost-benefit analysis, scenario planning, and vulnerability assessments are
21 important aspects of adaptation planning and implementation that address scientific uncertainty. However, they
22 require specific technical expertise (Smit & Wandel 2006). As a result, most climate adaptation efforts are
23 implemented through expert-led, top-down, “mainstreamed” processes, which are inaccessible to traditionally
24 marginalized populations (Kelly & Adger 2000; Chu 2017; Shi et al. 2016). Mainstreaming of adaptation efforts refers
25 to implementation through established governance practices, such as existing planning processes and regulatory
26 mechanisms (Chu 2017; Smit & Wandel 2006). For example Anguelovski et al.’s (2016) analysis of eight cities from
27 the global North and South identified as the most common adaptation approach strengthening and expanding

1 protective infrastructure. Poor populations bore the burden of relocation, yet planning processes neglected to consider
2 impacts on inequality. Similarly, land use regulations were selectively enforced with negative impacts on poor
3 populations. Inclusion in decision-making processes exacerbated power imbalances between stakeholders. And, the
4 lack of public funding for adaptation efforts led to private sector funding, which framed adaptation as a private, rather
5 than a public, good. The cumulative impact of adaptation efforts was to protect and prioritize the interests of elite
6 groups within adaptation strategies that disproportionately affect, exclude, or displace disadvantaged groups.

7 8 2.2 *A political capabilities approach to climate adaptation* 9

10 Capabilities refer to the resources, opportunities, freedoms, and institutions necessary for individuals and groups to
11 exist as full members in a given society. Capabilities theory incorporates a broad range of justice-related concerns,
12 including distributional equity, social recognition, and public participation. It seeks to answer the question, What is
13 each person able to do and be? and focuses on the set of opportunities or substantial freedoms people may or may not
14 exercise (Nussbaum 2011; Sen 2011). A capabilities-based approach to climate adaptation seeks to establish the
15 conditions for socially just climate adaptation by calling attention to the political, cultural, and social conditions that
16 create and sustain vulnerability (Schlosberg 2012). A capabilities approach is therefore a direct challenge to embedded
17 governance practices that reinforce systemic injustice.

18
19 In developing a framework to apply capabilities theory to just adaptation, Schlosberg (2012) argues just adaptation is
20 achieved when people have the political opportunity to determine for themselves which capabilities are needed to live
21 flourishing lives and these capabilities are protected by adaptation efforts. Recognition is the pathway to making
22 people politically capable. Recognition refers to the inclusion of groups, especially socially vulnerable populations
23 who are typically not recognized or mis-recognized, as full participants in decision processes (Schlosberg 2012; Young
24 2011; Fraser 2014). Justice, then, requires a focus not only on outcomes, i.e. the just distribution of material goods,
25 services, or social position (Rawls 1971), but also a focus on processes that reinforce institutionalized political,
26 economic, social, cultural, and symbolic subordination (Young 2011; Fraser 2014).

27
28 Strategic urbanism is one adaptation approach to achieve recognition and build political capabilities (Chu 2017).
29 Strategic urbanism focuses on intense interactions between municipal government representatives and community
30 participants. Through these interactions, a political capabilities approach aims to establish community knowledge as
31 the basis for defining how the municipality frames and implements adaptation projects on the ground. Recognition
32 therefore advances procedural justice by giving people, rather than bureaucrats, experts, or elites, the power to
33 determine the range of capabilities necessary to enhance individual and community functions and values in climate
34 adaptation.

35
36 So far, most just adaptation research and practice has focused on specifying processes that establish conditions for
37 affected communities to participate in planning, but only rarely considers how affected communities are given power
38 over the adaptation decisions that affect them. While procedurally inclusive adaptation processes are important, they
39 rarely produce the procedurally just outcomes, such as, legitimacy, sustainability, or social justice, necessary to
40 produce substantive justice (Young 2011; Paavola & Adger 2006; Fung 2006; Rowe & Frewer 2000). Institutional
41 interactions that promote political capabilities may advance just adaptation through processes that give decision-
42 making power to socially vulnerable populations, rather than a symbolic “seat at the table”. In this view, procedural
43 inclusion fails to meet the conditions of procedural justice when vulnerable populations achieve recognition but fail
44 to exert political control (i.e. power) over the adaptation decisions that directly affect their vulnerability to climate
45 change (Holland 2017). Whether climate adaptation outcomes reflect the interests of socially vulnerable populations
46 is contingent upon the interactions between those seeking agency and the institutions that shape actors’ agency (Adger
47 2016; Adger et al. 2005; Bulkeley et al. 2013; Chu 2017; Few et al. 2007). Achieving just adaptation therefore requires
48 a transition away from procedurally inclusive adaptation to procedurally just processes that give vulnerable citizens
49 agency and the political power to shape adaptation decisions based on what they consider to be the root cause of their
50 vulnerability (Holland 2017; Moser 2013).

51 52 2.3 *Proposition 1. Just adaptation requires the inclusion of socially vulnerable as full participants with agency* 53 *to shape the decisions that affect them.* 54

55 Proposition 1 highlights the need for adaptation scholarship and practice to focus on process and agency in order to
56 better understand climate adaptation governance. Potentially fruitful research questions include, What do political

1 capabilities actually look like in practice?, How are power relationships determined?, Under what conditions does
2 adaptation promote the political capabilities of socially vulnerable populations?, and, Which mechanisms reinforce
3 systemic injustice or promote justice and equity in practice (Morison et al. 2019; Bulkeley et al. 2013; Tschakert et al.
4 2013; Nussbaum 2011).

6 **3.0 Framing Adaptation**

8 Climate adaptation initiatives traditionally focus on the concept of vulnerability, but rarely frame problems and
9 solutions in terms of the underlying causes of vulnerability (Tschakert et al. 2013; Paavola 2008; Paavola & Adger
10 2006; Smit & Wandel 2006; Rowe & Frewer 2000). Framing is the process of shaping, focusing, organizing,
11 constructing, and representing interpretations of the world. Framing is an important concept for understanding
12 environmental issues, which are characterized by uncertainty and trade-offs. Framing provides information about how
13 participants view environmental hazards, responsibility for inaction or taking action, and possible solutions. And,
14 reframing through dialogue can create opportunities to resolve environmental disputes (Putnam and Wondollek 2013;
15 Lewicki et al. 2015; Gray 2003). Framing is related to just adaptation because of its role in shaping who participates
16 in climate adaptation efforts, how affected groups perceive adaptation actions, and whether efforts reinforce systemic
17 injustice (Schlosberg 2012). For example, explicit framings of equity or justice in climate adaptation can emphasize
18 the cultural or symbolic value of what is being affected, and promote commitments to address issues of solidarity,
19 place, well-being, fairness, and trust (Adger 2016; Hoffman 2015). Or, adaptation framings that lack a substantive
20 connection to the causes of vulnerability can perpetuate injustice. Evaluating framings of adaptation is therefore one
21 approach to understanding why adaptation promotes or inhibits justice for socially vulnerable populations. Three
22 common framings of climate adaptation are resilience, equity, and transformation.

24 *3.1 Framing Adaptation as Resilience*

26 Building resilience is a common framing of climate adaptation goals in literature and in practice. The
27 Intergovernmental Panel on Climate Change defines resilience as, “The ability of a social or ecological system to
28 absorb disturbances while retaining the same basic structure and ways of functioning, the capacity for self-
29 organization, and the capacity to adapt to stress and change” (IPCC 2014). This definition aligns closely with Pelling’s
30 (2011) typology, which draws upon the influence of social-ecological systems theory (SES) (Folke 2006; Holling
31 1973) and characterizes resilience according to a system’s capacity for functional persistence, social learning, and
32 self-organization.

34 Framing the objective of adaptation as building resilience and functional persistence leads to technocratic solutions,
35 such as building more resilient infrastructure, without a focus on building political capabilities. In response, scholars
36 have criticized the “resilience trap” through which climate adaptation efforts are seen to favor short-term solutions
37 and promote unsustainable or socially unjust practices, instead of reducing the causes of vulnerability and building
38 adaptive capacity (Schlosberg 2012; Kythreotis 2017). Without explicit framings of justice, initiatives framed as
39 promoting resilience may systematically reproduce urban spatial inequalities and injustice that have persisted in r
40 cities for the last century (Agyeman 2013). A growing group of scholars call for a critical assessment of whether
41 adaptation planning projects that purport to be resilient – and therefore implicitly sustainable and beneficial for all –
42 fall into the same trap of privileging or protecting elite groups at the expense of disadvantaged groups (Anguelovski
43 2016; Fainstein 2015). Scholarship on resilience has therefore expanded to focus more on the procedures for decision-
44 making, for example through negotiated resilience (Harris et al. 2017), and on the distribution of burdens and benefits
45 (Davoudi 2012).

47 *3.2 Framing Adaptation as Equity*

49 Equity is a central feature of other climate adaptation practice and research (Klinsky et al. 2016; Adger 2005). Framing
50 the goals of adaptation as equity focuses on the distribution of resources, income, wealth, or social positions to favor
51 the most vulnerable within society (Rawls 1971). Equity is an important component of climate adaptation because of
52 the fundamental “unfair” intergenerational nature of climate change (Adger et al. 2005), the trade-offs associated with
53 fair and equitable distribution of resources in response to the effects of climate change (Klinsky et al. 2016), and the
54 context specific circumstances based on competing values and interests (Adger et al. 2005) that occur in adaptation
55 practice. Recent adaptation initiatives in U.S. cities, such as New York, Boston, Pittsburgh, Providence, and Portland,
56 frame adaptation in terms of equity. These equitable adaptation efforts aim to prioritize the needs of socially vulnerable

1 communities, build capacity, anticipate and buffer against the effects of climate change, and promote redistribution of
2 resources to benefit socially vulnerable populations (Tschakert & Dietrich 2010; Adger et al. 2005).

3
4 However, empirical evidence indicates the construction of vulnerability in framings of adaptation as equity conceals
5 the substantive sources of inequity, allows vulnerability to persist under the guise of socially just climate adaptation,
6 and distracts from building adaptive capacities (Bulkeley 2014; Tschakert et al. 2013; Agyeman 2013). For example,
7 Anguelovski et al. (2016) finds that worldwide urban adaptation initiatives framed as equity rely on embedded
8 governance practices and, as a result, ultimately fail to recognize and account for the desired needs and wants of
9 traditionally marginalized groups. A separate review of worldwide urban climate efforts also finds that, despite using
10 the language of justice and a focus on distribution of rights, adaptation efforts rarely explicitly focus on justice. When
11 adaptation efforts do focus on justice, the focus is on procedural justice with little effort to substantively address the
12 structural conditions that produce participatory inequality, such as poverty, exclusion, or the role of culture, in
13 determining who benefits from adaptation efforts (Bulkeley et al. 2014). This experience of framing adaptation as
14 equity is consistent with common critiques of the Rawlsian approach to justice for ignoring the social structure, or
15 institutional context, that helps to determine distributional patterns of injustice (Young, 2011). Reactive adaptation,
16 which occurs as part of post-disaster recovery efforts, such as the rebuilding of infrastructure within vulnerable
17 locations, suffers from the same shortcomings (Adger et al. 2005). A similar critique explains why ideas of justice are
18 translated so poorly across scholarship and environmental justice movements (Barkan & Pulido 2017). For example,
19 environmental justice efforts do not strive to redistribute the burden of pollution from one group to another but, instead,
20 aim to clean up the environment and empower environmental justice communities. To address these limitations, recent
21 scholarship calls for a framing of adaptation that explicitly addresses substantive injustice.

22 23 3.3 *Framing Adaptation as Transformation*

24
25 Framing adaptation as transformation aims to disrupt existing institutionalized forms of inequality and emphasize the
26 relational aspects of adaptation, such as interdependencies and co-benefits (Eriksen et al. 2015). For example,
27 adaptation as transformation shifts attention from assessing vulnerability to identifying the less visible causes of social
28 vulnerability within political, social, or economic institutional processes (Tschakert et al. 2013; Paavola 2008; Paavola
29 & Adger 2006; Smit & Wandel 2006; Pelling 2011; Rowe & Frewer 2000). Framing adaptation as transformation
30 expands the concept of vulnerability to include a broader set of people, such as pregnant women, children, elderly,
31 disabled, or linguistically isolated people (Bulkeley et al. 2014). Explicit acknowledgement of social group differences
32 may be used to undermine systemic causes of injustice (Young, 2011) and to create value in decision-making and
33 implementation processes (Mnookin et al. 2004). Possible solutions also expand from a focus on top-down
34 technocratic approaches to include fostering political capabilities by giving socially vulnerable people power and
35 agency within adaptation initiatives (Patterson et al. 2018; Holland 2017; Pelling et al. 2015; Pelling 2011; Eriksen,
36 2015).

37 38 3.4 *Proposition 2. Just adaptation requires that adaptation framings explicitly recognize the causes of systemic* 39 *injustice.*

40
41 Proposition 2 highlights the need for adaptation scholarship and practice to focus on how adaptation is framed to provide
42 insight into whether adaptation efforts maintain a focus on justice. Research questions that follow are, In what ways
43 does explicit recognition of the causes of injustice manifest in adaptation planning documents? and, How does framing
44 adaptation as justice change throughout adaptation policy development and implementation?

45 46 4.0 **Incremental Implementation**

47
48 Policy process theory fails to provide explicit guidance for researching implementation (Hupe 2014). This limitation
49 is notable considering the significant efforts made by policy process theorists over the past three decades to include
50 implementation analysis as a distinct feature of policy process research. This section discusses the traditional manner
51 by which implementation is evaluated and is then followed by a presentation of the Advocacy Coalition Framework
52 (ACF) as a mechanism to reconcile the long timeframes typically associated with policy implantation research.

53 54 4.1 *Top-Down and Bottom-Up Evaluations of Implementation*

1 Early research into implementation efforts focused on rational, top-down theories in which a central policy decision
 2 is evaluated on the basis of whether stated policy objectives were achieved or failed (Pressman and Wildavsky 1973;
 3 Sabatier and Mazmanian 1979). This approach delineates a clear separation of policy formulation from policy
 4 implementation and seeks to measure explicit policy objectives against measurable policy outcomes in order to
 5 develop policy implementation recommendations for decision-makers. Analysis therefore focuses on central policy
 6 decision-makers and hierarchical approaches to decision-making. This approach is critiqued for neglecting important
 7 actors in the policy implementation process and therefore providing an incomplete picture of the sources of injustice
 8 that affect the most vulnerable (Sabatier 1986).
 9

10 The timeframe for top-down evaluation of implementation also focuses on long time-periods, typically a decade or
 11 longer (Sabatier 1986; Sabatier & Mazmanian 1979). Long evaluation timeframes miss the shorter-term, incremental
 12 processes during which recognition of socially vulnerable groups either carries through or drops out of the policy
 13 implementation process. Long evaluation timeframes are therefore inconsistent with the goal of advancing justice in
 14 the context of climate adaptation, where the effects of climate change are already disproportionately affecting the most
 15 vulnerable.
 16

17 In response, bottom-up theories to policy implementation were developed. Bottom-up theories focus on the significant
 18 role of street level bureaucrats (Lipsky 1980), the full range of stakeholders involved in policy implementation, and
 19 the continuous formulation of policy throughout the implementation process (Hjern 1982). The implementation
 20 process itself is redefined to begin with the formulation of policy and planning and continuing through decisions
 21 through decisions about institutional rules. The focus is therefore more incremental, in comparison to the top-down
 22 approach of comparing policy goals and outcomes. As a result, the analysis shifts to identification and description of
 23 the implementation structure, to the strategic interactions between actors and their agency within a policy subsystem,
 24 and to how a policy is defined, shaped, and possibly redefined throughout the implementation process (Hjern et al.
 25 1981; Lindblom 1968). Using the network structure as a starting point, this approach aims to highlight unintended
 26 consequences of implementation programs. Table 2 provides a comparison of rational, top-down approaches versus
 27 bottom-up, incremental approaches to implementation. When comparing these distinct approaches to implementation,
 28 it's easy to recognize how rational, top-down approaches provides advantage to stakeholders with power, resources
 29 or technical expertise, while the incremental bottom-up approaches to implementation shifts power dynamics to
 30 individuals or groups with its focus agency and process.
 31

32 Table 2 - Rational Versus Incremental Implementation of Climate Adaptation Policy
 33 (adapted from (Shafritz et al. 2016)
 34

Rational, Top-Down Implementation	Incremental, Bottom-Up Implementation
Evaluates central policy decisions and outcomes against measurable stated policy goals.	Evaluates the strategies pursued by actors and the strategic interactions among these groups.
Dependent upon technocratic (scenario, modeling, cost-benefit) solutions to address uncertainty.	Reliance on technocratic solutions is secondary to agency-based approaches to address uncertainty.
Dependent upon established power relations and structured evaluations in decision-making processes.	Reliance on established power relations is secondary to negotiated settlements that are participatory, inclusive, and just in decision-making processes.
Reliance on a collective evaluation of system interdependencies with proposed solutions.	Decentralized approach to evaluation of system interdependencies and proposed solutions.
Major changes can be made on a regular basis	Changes are made gradually over time
Decisions tend to be made proactively	Decisions tend to be made reactively
Promotes theory development and policy recommendations for decision-makers	Promotes empirical descriptions and explanations of decisions made within the policy implementation process.

35 Both top-down and bottom-up approaches to evaluating policy implementation face two unresolved analytic
 36 challenges (Hupe 2014). The first is the *too many variables problem* often illustrated by Pressman and Wildavsky's
 37 (1973) chain metaphor. The chain metaphor describes policy implementation as a series of linked decisions, each
 38 introducing new variables that ultimately influence the outcome of stated policy goals. As new actors, decisions, or
 39 processes are introduced into the policy implementation process, the potential increases that policy will deviate from
 40

1 its originally stated goals. The number of variables obscures the influence of any one variable on the behavior of
2 actors (Pressman and Wildasky 1973). The second challenge is the *multi-layer problem*, which results from
3 complexity across governance structures operating at different spatial scales, as seen for example with climate
4 adaptation (Bulkeley & Betsill 2005; Adger et al. 2005).

6 4.2 *The Advocacy Coalition Framework to Evaluate Incremental Policy Implementation*

8 The Advocacy Coalition Framework (ACF) was developed to address methodological challenges in implementation
9 research and is commonly used to understand policy processes (Sabatier 1986; Jenkins-Smith et al. 2017). The ACF
10 analyzes the policy subsystem, focusing on incremental policy formation and implementation by stakeholders. When
11 governmental authorities make decisions regarding institutional rules, resource allocations, and appointments
12 pertaining to a government policy or program, implementation occurs as a result of coordinated efforts among coalition
13 stakeholders (Sewell 2005). These decisions result in a set of policy outputs, including intended and unintended
14 outcomes. When viewed through the lens of the ACF, policy implementation is a function of the political dynamics
15 that occur among overlapping policy subsystems. Central to the ACF is the idea that government programs and
16 policies, which arise from each policy subsystem, reflect the beliefs of the coalition of actors that dominates the
17 subsystem. A three-tiered belief system, made up of deep core, policy core, and secondary core beliefs, guides the
18 coalition's behavior. The coalition's ability to dominate the policy subsystem and redistribute political resources is
19 determined by the resources it possess and its ability to overcome political constraints. Coalition resources may include
20 finances, leadership, authority, and scientific or technical information (Sewell 2005; Sabatier & Jenkins-Smith 1993).
21 Sources of power include power by design, pragmatic power, and framing power (Morrison et al. 2019).

23 As the implementation process proceeds over time, subsystem coalitions revise belief systems and alter their strategies
24 according to their perception of impacts, the adequacy of the decision-making process, new information arising from
25 various research efforts, and events and changes external to the subsystem. Because belief systems are resistant to
26 change, this learning process produces only modest changes in policy over the long-term, typically over a decade or
27 more. As a result, long time frames are typically required to assess policy change. More substantial and rapid change
28 tends to occur when various events external to the subsystem alter the power structure within the subsystem by
29 changing the political resources and constraints of subsystem actors (Sewell 2005; Sabatier & Jenkins-Smith 1993).
30 Calls for refinement of the ACF's three-tiered belief system model support the use of new guiding belief systems
31 models that draw inspiration from other theories (Jenkins-Smith et al. 2017).

33 4.3 *Proposition 3: Just adaptation requires that implementation is evaluated incrementally.*

35 Proposition 3 highlights the need for shorter timeframes to understand climate adaptation implementation in order to
36 improve responses. The effects of climate change on vulnerable populations require urgent action from research and
37 practice. Long research time frames are simply inconsistent with advancing just adaptation. Research questions that
38 follow are, How do different sources of power determine the dominance of coalitions within a policy subsystem?
39 (Morrison et al. 2019) and, Under what conditions do policy subsystem coalitions overcome constraints that limit their
40 agency? (Sewell 2005).

42 5.0 **An Advocacy Coalition Framework Approach to Just Adaptation Research**

44 5.1 *Modifications to the ACF to Advance Just Adaptation*

46 The ACF lens focuses attention on the implementation processes by looking at policy subsystems, implementation
47 process, advocacy coalitions and how they utilize resources to promote political capabilities. Applying the ACF to
48 climate adaptation therefore responds to the need to focus on process and agency, reflected in proposition 1. We
49 propose modifying the ACF to improve evaluation of climate adaptation implementation based on conceptualizations
50 of justice and mechanisms of injustice. First, we propose replacing the ACF's existing three-tiered belief system with
51 policy belief categories derived from the framings of adaptation: resilience, equity, and transformation. Reflecting the
52 need expressed in proposition 2, adaptation framings can then be used to analyze policy processes and coalition
53 dynamics, for example to characterize the shared goals of advocacy coalitions and assess whether they recognize the
54 causes of systemic injustice in the way problems and solutions are defined.

Second, we propose modifying the ACF to assess a group of snapshots of policy subsystems and advocacy coalitions, which can then be evaluated collectively over longer timeframes. This modification reflects the need for incremental implementation expressed in proposition 3. Evaluating implementation over brief snapshots in time, such as timeframes shorter than three years, will advance understanding of whether and how justice carries through climate adaptation implementation processes, for example through dominant power dynamics, relationships among policy actors, and strategic framings of adaptation. This modification also responds to challenges for implementation analysis by focusing on defining spatial and temporal boundaries within the policy subsystem, which restricts the number of variables and scales, while at the same highlighting interconnections within the scope of analysis. Change across incremental snapshots of implementation can then be compared to one another to evaluate longer term, cumulative changes. Table 3 compares the traditional and modified ACF we propose for evaluating just adaptation.

Table 3 – Comparison of Traditional and Modified ACF for Evaluating Just Adaptation

Feature	Traditional Application of ACF	Modified ACF
Unit of Analysis	Policy Subsystem	Policy Subsystem
Coalition Belief System	Deep Core, Policy Core, Secondary Core	Resilience, Equity, Transformation
Evaluation Criteria	Policy Change, Change in Coalition Belief System, Change due to External Influences on Actor Constraints and Resources	Coalition Organization, Framings of Justice and Adaptation, Power and Agency
Evaluation Timeframe	Approximately 10 years	0-3 years

5.2 Application of the Modified ACF in Practice

This section provides an example of how the modified ACF can be applied to analyze a case, drawing on the authors ongoing research into climate adaptation policy implementation in Boston, U.S.A. Boston, like many other coastal cities worldwide, is facing climate hazards related to sea-level rise in conjunction with development pressures related to increasing urban populations and land value. Since 2012, Boston has responded to these challenges through an ongoing and robust climate adaptation effort, which includes a commitment to address justice and equity as a central feature. To advance its adaptation planning efforts, Boston more recently finalized a city-wide vulnerability assessment and planning documents (e.g. Climate Ready Boston, Imagine Boston 2030, and Resilient Boston), as well as neighborhood-specific implementation plans.

Applying the modified ACF, a content analysis of the city-wide plans and of neighborhood implementation plans can aim to identify adaptation framings and whether adaptation efforts demonstrate a focus on justice through recognition of the interests of socially vulnerable populations and recognition of sources of injustice. The results can then be compared to determine whether adaptation efforts sustain a focus on justice across incremental policy developments and, if not, identify at which point justice considerations are omitted from adaptation framings. In-depth interviews can be conducted to inform a stakeholder analysis, including analysis of how key actor coalitions frame adaptation, how they use resources (e.g. finances, leadership, or access to scientific information) to promote political capabilities and influence adaption policy implementation. This approach therefore reflects a focus on power and agency, adaptation framings and recognition of injustice, and incremental timeframes for evaluation.

6.0 Conclusion

We highlight an emerging research agenda that aims to respond to the urgent need for improved implementation of just climate adaptation efforts. This research area draws on literature from the fields of urban planning, climate change governance, climate adaptation, just adaptation and policy implementation. Our analysis identifies two focal challenges for climate adaptation scholarship and presents a framework for responding to these challenges. First, current approaches to policy implementation research that focus on policy outcomes persists to the detriment of process and agency. Second, research is needed to analyze how adaptation framings recognize systemic causes of injustice throughout the implementation of climate adaptation policy.

1 Based on the analysis of the literature, we develop three propositions to advance understanding of how just adaptation
2 may occur in practice and build upon existing just adaptation theory. Proposition 1 states that just adaptation requires
3 the inclusion of socially vulnerable populations as full participants with agency to shape the decisions that affect them.
4 This proposition highlights the need for adaptation scholarship and practice to focus on process and agency in order
5 to better understand climate adaptation governance. Proposition 2 argues that just adaptation requires that adaptation
6 framings explicitly recognize the causes of systemic injustice. And finally, Proposition 3 contends that just adaptation
7 requires evaluation focus on incremental timeframes of implementation. This research framework aims to position
8 justice at the center of climate adaptation implementation and to better understand how vulnerable populations develop
9 and exert agency over climate adaptation decisions.

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