

Article

The Politics of Maladaptation

Leigh Glover¹ and Mikael Granberg^{1,2,3,*} 

- ¹ The Centre for Societal Risk Research and political science, Karlstad University, 651 88 Karlstad, Sweden; leighfglover@gmail.com
² The Centre for Natural Hazards and Disaster Science, Uppsala University, 752 36 Uppsala, Sweden
³ The Centre for Urban Research, RMIT University, Melbourne VIC 3000, Australia
* Correspondence: mikael.granberg@kau.se

Abstract: An emerging component of the adaptation discourse, embracing theory, practice and review, is that of the negative assessment of adaptation, namely, maladaptation. Political theories and concepts have been applied as one of these assessment tools, giving rise to a political critique of maladaptation. Such a critique contrasts with the more conventional scientific and technical assessments of adaptation policies, programs and practices. Key political themes in studies of maladaptation include resource management and allocations, decision making processes, equity and fairness, gender, power and influence, and Nature and ecology. Within the scholarship on the politics of maladaptation, overlapping frameworks can be identified. Critiques of adaptation have been applied to the preconditions of adaptation, adaptation decision making processes and institutions, and to adaptation outcomes. There are a number of conceptual challenges in undertaking political analyses of adaptation. In this article, we outline the origins of the adaptation and maladaptation concepts, we describe the key political issues, we identify the application of politics in the maladaptation discourse and identify the major political perspectives. Finally, we draw conclusions on the state of the maladaptation discourse.

Keywords: adaptation; environmental justice; institutional reform; maladaptation; politics; political ecology; political economy



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1. Introduction

Any understanding of climate change maladaptation (hereafter ‘maladaptation’) begins with understanding climate change adaptation (hereafter ‘adaptation’). Maladaptation is typically taken as the counter-narrative of what adaptation ought to have achieved [1]. Maladaptation is customarily described as adaptation that, in one way or another, worsens existing and/or future conditions for individuals/civil society/corporations/governments and/or environmental values [2], (p. 214). Hence, maladaptation is usually understood as a failure in adaptation. It might, however, also be argued that the idea and potential occurrence of maladaptation can inform and help define successful adaptation. For this article, ‘adaptation’ and ‘maladaptation’ refer only to social responses to climate change (and embracing socio-ecological systems), unless explicitly stated otherwise.

In this article, we understand maladaptation as adaptation actions, plans, policies and processes intended to avoid or mitigate vulnerability to climate change that has, or is predicted to have, negative impacts on individuals, communities and/or systems (cf., [3,4]). Additionally, we argue that the maladaptation is not necessarily black or white as there are a number of differences in assessment criteria, framings, nuances, subtleties, valuings and other factors suggesting that maladaptation is a complex, contested and difficult phenomenon and concept [3,5]. This means that maladaptation cannot be assumed and conceptualised as completely failed adaptation but may need to be understood as laying somewhere along a continuum from success to failure and acknowledging that some aspects of a specific adaptation can be successful while other aspects can fail [2].

From this more nuanced perspective, maladaptation prompts questions such as: What did adaptation achieve? What were the results of adaptation, including its unintended consequences? How do we evaluate these outcomes? We see adaptation as an expression of politics and identify two preconditions connected such an understanding that can support answering questions like the ones posed above [1,6,7]. Firstly, the politics of maladaptation consider what the adaptation activity formally sought and also what might be expected, interpreted and perceived of these activities from a political perspective. Secondly, it is not necessarily always the case that a normative perspective is concerned with ethical matters; it may be that other prescriptive goals are in play, such as aesthetic, economic, legal and social aspirations.

Here, we are primarily concerned with adaptation activities rooted in government activity (i.e., the realm of public policy), as distinct from corporate or civil society undertakings. We rationalise this focus on the grounds that the majority of deliberate and contemporary adaptation involves public policy, as a primary goal of adaptation is to secure public goods and provide public benefits [8]. Furthermore, much adaptation by nongovernment actors and entities is influenced by public policy. Rationalizations for government interventions generally highlight the need to overcome market failures, the unique capacities of governments to address macro-scale issues and the behavioral limits faced by nongovernment agents [9,10].

This article seeks to contribute to the understanding of the politics of maladaptation. It does this through the following aims: (1) to give a brief outline of the background of the adaptation and maladaptation concepts and discourse (see Section 2); (2) to describe the key political issues in maladaptation (see Section 3); (3) to identify the meaning, understanding and application of politics in the maladaptation discourse through an examination of major themes (see Section 4); (4) to identify the major political perspectives in maladaptation scholarship through political perspectives utilized in studies of environmental politics (see Section 5) and (5) to draw conclusions on the state of the maladaptation discourse by addressing three broad research questions (see Section 6):

- How can we understand the political identity of maladaptive adaptations to climate change?
- What are the problems in trying to understand maladaptation as a political phenomenon?
- What are the implications and significance of the politics of maladaptation?

There is a sizable body of scholarship and research within the field of adaptation and maladaptation. In a bibliometric study of climate change articles published in research journals from 1980–2012, Haunschild et al. [11] identified around 7000 papers on adaptation and another almost 6000 on vulnerability; a contemporary reckoning would be considerably higher. In a study covering the period 1991–2019 Einecker and Kirby [12] (table 3) found 27 318 articles that addressed climate change adaptation and 10 311 climate resilience in the Web of Science. It is only possible, therefore, to engage with a relatively small fraction of the published research output. Within this rapidly expanding field there is also an emerging body of scholarship, most of it relatively recent, dealing with political aspects of adaptation and maladaptation [4,9,13]. We have focused on, and chosen our sources from, the growing scholarship dealing with the political dimensions of adaptation and maladaptation focusing on issues such as equity, institutions, justice and power. We do not claim, however, to have undertaken a comprehensive review of all the relevant literature (for a more thorough review of this literature, see, [1]). It is timely to review these developments and to consider their contribution to our understanding of maladaptation.

2. Adaptation

2.1. Adaptation in the Climate Change Discourse

Adaptation has been described as difficult to define [1,14–16]. Imprecise language is a central problem; adaptation is an umbrella term covering adaptation goals, processes and outcomes as expressed in policies, plans and practices aimed at mitigating climate impacts. One implication of this condition is the difficulty to assess, evaluate and compare

the outcomes of adaptation activities. Adaptation is bound up with vulnerability and the relationship between the concepts is a complex one [16,17]. Vulnerability is understood and defined in a wide variety of ways, and adaptation is similarly the subject of many differing definitions as many notions of adaptation are invariably drawn from those of vulnerability. Adaptation involves looking forward and also looking back; present-tense adaptation is a response to earlier perceptions of vulnerability (and accumulated experience) and preparatory adaptation reflects an anticipated, forecast or modelled vulnerability.

Dupuis and Biesbroek [14] provided greater clarity by systemically differentiating between different forms of adaptation policy, such as concrete, contributive, contiguous and symbolic policies. *Concrete policies* are those designed to address adaptation through intentional design. *Contributive policies* are not intended to address adaptation but contribute significantly to adaptation. *Contiguous policies* are generally pre-existing policies that assist adaptations but without directly addressing adaptation. Lastly, there are *symbolic policies* that are designed to address adaptation that are without concrete effects but may be used to create political opinion, satisfy political goals and meet reporting requirements. Given the extent to which maladaptation is understood dialectally through its relationship with adaptation, the ambiguities over adaptation policy necessarily influence the understanding, identification and responses to maladaptation.

Over the duration of the climate change discourse, the adaptation discourse has undergone a significant transition (see the different contribution in, [18,19]). Four critical aspects define this change (see, [1]):

- a broadening of perspectives of what constitutes adaptation and how it is to be understood, including that of political inquiry and critique, thereby opening the maladaptation discourse,
- closer engagement with the disaster risk reduction discourse,
- closer engagement with the sustainable development discourse and,
- a critical debate over whether adaptation should be ‘transformative’ or perpetuate the socio-economic and socio-ecological status quo.

Maladaptation is, therefore, at the tail-end of cascading and multiplying definitional differences [5]. This extends beyond the definitional to include the methodological, with many contrasting approaches, and also includes differing concepts and frameworks. Arguably, maladaptation is more difficult to define than adaptation as it depends on a prerequisite assessment and evaluation of adaptation.

2.2. Judging Policy Success and Failure

Public policy researchers have recognised the need for specificity in diagnosing the locus of success and failure in public policy in efforts to derive causal explanations for their (or others’) assessments. Wolman [20], amongst others, in considering public program success and failure, usefully distinguishes between *program formulation* and *program implementation*. Program formulation covers the activities of problem conceptualization, theory evaluation and selection, objectives specification, program design and program structure. Program implementation covers resource adequacy, management and control, rules and regulations, political effectiveness and feedback/evaluation. Formulation and/or implementation are potential source of failures.

Yet, theorising these failures is comparatively weakly developed, leading McConnell to observe: “Surprisingly, there is a relative paucity of writings on policy failure” [21] (p. 223). Accordingly, the identity of policy success and policy failure can be seen as a ‘grey area’ consisting of, besides obvious success, resilient success, conflicted success, precarious success and failure [22]. Primarily, the criteria applied here are the rationalist’s use of goal satisfaction, so that assessing success and failure is therefore relatively straightforward in this model. *Resilient success* is characterized by basic but less-than-ideal success, marked by an absence of policy failure but with greater political opposition than the proponents expected. *Conflicted success* has policy goals achieved in part, but with on-going changes and problems, such as cost overruns, major delays and the like. There is substantial political

opposition and public controversy. With *Precarious success*, the prospect of failure is close at hand; goals are only partially achieved, outcomes are far less than expected and levels of opposition exceed those of support. Indeed, precarious success may be temporary and give way to eventual failure.

Political considerations evoke critiques of rationalist explanations through an appreciation of social differences within the polity of an administrative jurisdiction. This evokes the spectre of subjectivity that features in arguments that success and failure in policy are not "... inherent attributes of policy, but labels applied by stakeholders and observers" [23] (p. 654). These authors distinguish between the programmatic and political elements of evaluation and offer a set of ideal type outcomes that enable positive and negative mixes of these elements. Such an approach can distinguish, therefore, between program success without public approval ('tragedy') and program failure met by public indifference ('farce'). They note that other fields of scholarship into public policy have regularly found such tragic and farcical outcomes where reputation and performance are unaligned.

Three lessons may be drawn for studies of adaptation public policy failures from a political perspective. Firstly, public policy can be viewed as failing in the administrative and/or in wider political realms. Therefore, the causes of policy failure may be in formulation and/or implementation. Secondly, that policy failure is a blanket term that can overwhelm recognition of successful outcomes when policies mix elements of failure and success. Thirdly, subjectivity can present a major problem for identifying and analysing policy failure from a political perspective. Recognising and analysing social differences and their associated interests, perspectives and values, however, also provides important opportunities for recognising public policy failure and resulting maladaptations (especially where minority interests or environmental values are concerned).

2.3. Maladaptation in the Climate Change Discourse

There have been distinct shifts in the use of maladaptation and Dupuis and Knoepfel [24] identify a transition in the climate change discourse in the framing of adaptation. These transitions can be detected in the outputs of the United Nation's (UN) Intergovernmental Panel on Climate Change (IPCC) working groups in their assessment report (AR) series for advising the UN climate agreement negotiators of the state of climate change scholarship and research [25–29] and in the special report covering adaptation [30].

Firstly, there is the *climate change adaptation* framing, where the goal of adaptation is to adapt to the specific impacts of anthropogenic climate change [25]. Secondly, there is the *climate variability adaptation* framing wherein adaptation is understood as risk-recovery strategies and weather insurance [27]. Vulnerability, in other words, is determined by exposure to current and anticipated climate and climate-related phenomena, not just to climatic change. Thirdly, there is the *vulnerability-centred adaptation* framing characterised by its goal of reducing vulnerability to climate impacts by addressing structural factors; i.e., it embraces causal factors of vulnerability [28].

In 2012, the IPCC [30] published its special report *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation* that contained frequent use of 'maladaptation,' although it is neither defined in the glossary nor appears in the index. For the most part, the term is used in a generic manner, with frequent statements of the risks of maladaptation and the need to avoid its occurrence.

Maladaptation is not a mainstream element in scholarship and research until the mid-1990s or so, although there is general recognition that adaptation measures could produce deleterious outcomes. In the latter 1990s and into the 2000s, maladaptation emerges as an issue of interest and it assumes a specific identity in the research literature (see, e.g., [31]). Maladaptation is identified and defined in AR3 [27]. It is, however, only raised a handful of times in this IPCC review, usually incidentally, and is not the subject of any dedicated research on the topic.

In the latter 2000s, and continuing to the present, there has been considerable research interest into adaptation limits and barriers (see, e.g., [32–34]). For AR5, maladaptation

is a major theme with extensive coverage and frequent identification and is defined as “Actions that may lead to increased risk of adverse climate-related outcomes, increased vulnerability to climate change, or diminished welfare, now or in the future” [29] (p. 1769). Exemplifying this new perspective were concerns over adaptation using engineered infrastructure “Engineered defenses such as dams, sea walls, and levees adversely affect biodiversity, potentially resulting in maladaptation due to damage to ecosystem regulating services . . . ” [29] (p. 101). Much of the IPCC’s perspective on adaptation lies in the tradition of the natural sciences, with uncertainties over the role of the social sciences and the treatment of political factors.

As this overview shows, maladaptation has evolved so as to have several distinct applications/meanings, covering adaptations that:

- fail to achieve their intended effects,
- produce counter-productive effects that increase vulnerabilities or the scale/scope of actual/potential impacts that they were intended to address,
- generate direct negative consequences and
- cause indirect negative consequences in other systems, locations, in other sectors and in other realms.

To this list might be added adaptations that are undesirable in light of demands outside the immediate realm of climate change impacts, most notably adaptations that reinforce the status quo and fail to achieve transformative outcomes [35–37]. As described below, there have been a number of important studies on the politics of maladaptation.

3. Political Issues in Maladaptation

3.1. *Establishing the Political Character of Maladaptation*

From a political perspective, political factors will determine, in part, the social, economic and environmental outcomes of adaptation, as well as the circumstances in which it occurs and the processes by which such decisions are made. For example, politics is central to inquiries as to whether adaptation is reducing vulnerability or just redistributing it [7]? Edvardsson Björnberg and Hansson [38] identify five areas of value judgement in local adaptation responses which engage with common political inquiries in adaptation: 1) Evaluating consequences, 2) Timing of adaptive actions, 3) Allocating the costs and benefits of adaptations, 4) Deciding over involvement in decision-making and 5) Resolving conflicting goals.

Given that adaptation has a political dimension, then maladaptation must share the same attribute. Barnett and O’Neill describe maladaptation as: “ . . . action taken . . . that impacts adversely on, or increases the vulnerability of other systems, sectors or social groups” [3] (p. 211). Similarly exemplifying the incorporation of wider discourses are Juhola et al. [39], who recognise three maladaptation outcome types: 1) Rebounding vulnerability, 2) Shifting vulnerability and 3) Eroding sustainable development. Macintosh [40] describes maladaptation in coastal planning responses as occurring along two axes, that of increasing costs and vulnerability and of producing socially inequitable outcomes. Maladaptation must therefore be related to the social context and its existing power asymmetries and vulnerabilities, by rebounding, shifting or creating new vulnerabilities (cf., [2,41,42]). These research outcomes implicate political elements into the understanding of maladaptation implicitly and in widely differing ways, raising the challenge of making the identity and political character of maladaptation explicit.

This highlights two conceptual challenges in understanding the politics of maladaptation, namely identifying the primary constitutive elements of the political and those of maladaptation. Politics intersects with the problem of maladaptation in the socio-economic circumstances in which adaptations occur, in the system or phenomena being examined, in actor engagement, legitimation and participation, in the social values that are in play, in the shaping of criteria for evaluating adaptation, in the processes of adaptation, and in the adaptation outcomes [1].

Maladaptation presents a number of problems, many stemming from the conceptual challenges evoked by considering maladaptation from a political perspective. These pertain to attribution (i.e., How and to whom should maladaptation be attributed?), contingency (i.e., What are legitimate causes of maladaptation?), ideation (i.e., How is maladaptation understood?) and the identity of maladaptation (What is maladaptation?), (see Table 1). These problems are examined below and illustrate some of the complexities of these issues.

Table 1. Key Conceptual Challenges in Maladaptation.

	Conceptual Challenge	Exemplars of Key Question(s)
Attribution		Who is responsible for maladaptation?
	Causal Type: Natural and Social Causation	How to treat natural disaster causes and socio-technical causes of maladaptation?
Contingency		Where are the causes of maladaptation located and do these lie outside the realm of the adaptation? Are maladaptation consequences restricted to the location/site of the adaptation or should off-site effects be considered?
	Outcome Predictability	Could maladaptive outcomes be reasonably expected or foreseen?
	Temporal Causal Chain	How long into the future is it reasonable to adjudge adaptations as having become maladaptive; i.e., What distinguishes the short- and long-term?
Ideation	Core ideas	What constitutes maladaptation?
	Moral Purpose	What are the moral and/or ethical reasonings underpinning the identification of maladaptation? How do these relate to those of the maladapted adaptation measure?
	Primary Directive of Adaptation Regarding Natural Systems	What is adaptation seeking to achieve in natural systems? By implication, what is the baseline of natural conditions used for assessing adaptation measures and the subsequent identification of maladaptation?
	Relationship to Adaptation	What differentiates maladaptation from failed/unsatisfactory adaptation?
	Epistemology	Can maladaptation be established objectively, or does it only depend on the perspective of the observer? How is subjectivity to be addressed in maladaptation assessments?
Identity	Ontology and Classification	What defines maladaptation and can different forms/types be identified?
	Scale of Phenomena	What extent of adaptation failure counts as maladaptation?
	Singular or Multifaced Phenomena?	Are adaptations maladaptive as a whole or in part? Can maladaptation occur alongside adaptation successes?

3.2. Is Maladaptation Identical to Failed Adaptation?

The literature, as already discussed, often denotes maladaptation as failed (in some respect(s)) adaptation. Taking the discussion on public policy failures as a guide, however, there would be little agreement with the proposition that public policy is either an absolute success or absolute failure [20,21,23]. Yet the use of maladaptation in the climate change discourse commonly employs this bipolar assessment, placing it at odds with the common view of public policy performance [2]. Schaer [43], is an exception, who examines the issue of the adaptation responses of poor and informal settlers to perennial flooding risks, finding a range of responses for coping and adapting, but with many deemed maladaptive, thereby contributing to the debate over whether coping is a ‘stepping stone’ to adaptation or leading to maladaptation.

Dupuis and Knoepfel address the problem of the implementation deficit in adaptation policy, an outcome they describe as: “Public adaptation policies have often consisted of

enunciating general objectives, formulating guidelines, and funding climate impact research programs; however, concrete actions seem to lag behind ... " [24] (p. 1). Public policy, argue the authors, can be seen as "... a multi-stage and multi-layered process", so that policy has a programmatic phase and an implementation phase. They define the implementation deficit "... as the outputs of a policy failing to contribute more than symbolically to problem solving" [24] (p. 1–2). Such lack of implementation success satisfies the condition of policy failure but would not constitute maladaptation as generally understood in the climate change discourse. A more rigorous understanding of maladaptation requires differentiating between the lost opportunities caused by policy failures and recognized negative adaptation outcomes [2].

Three difficulties with binary declarations for assessing climate change adaptations are evident. Firstly, they leave no room for degrees of success and failure. Such information is important for comparisons between competing options. Secondly, there may have been deliberate trade-offs between desirable and undesirable effects; when benefit and cost are inextricably linked, the 'price' of an adaptation benefit is the accompanying maladaptive outcome. Thirdly, most policies are recognized as being imperfect in design, execution and outcome to some degree; applying the idea of maladaptation strictly would theoretically find all adaptation policies to be maladaptive.

4. Political Themes in Maladaptation

4.1. Political Themes of Climate Adaptation in Comparison with Maladaptation

Before considering maladaptation specifically, it may be useful to sketch out briefly the meaning of 'politics' in the context of adaptation and as applied across the scholarship on maladaptation politics. Just as adaptation was a latecomer to the climate change discourse, so too is politics a latecomer to the adaptation discourse [1]. For example, typologies of adaptation have usually omitted political elements, failing to acknowledge either political influences on adaptation (i.e., as inputs or context) wherein ideologies, institutions, political conditions and circumstances, stakeholder influences and worldviews are influential inputs to adaptation policies and decision making processes and influence adaptation outcomes (see, e.g., [44,45]).

Overall, the approach to politics in the adaptation (and maladaptation) literature explicitly addressing political matters is broad. While some studies are confined to narrow views of political science, there are many others with more expansive conceptualisations and applications, going beyond politics of formal democratic and parliamentary institutions and practices. Politics in the adaptation discourse embraces processes and practices of governance that include formal and informal political institutions and processes.

This article employs a broad understanding of 'politics'. Here, politics is perceived as consisting of activities involving power, conflicts and decision making but also the process and practice of governing taking place through formal and informal institutions shaping political (and other) behavior [1,46]; 'the political' refers to the relevant political system or context [47]. Our position is that politics and its implications are vital for interpreting the forms and features of climate change adaptation and its maladaptive outcomes. Institutions, in this sense are the norms, rules and routines defining, shaping and constraining behavior and action [48].

McConnell [22] places public policies for assessment in three different realms, namely processes, programs and politics. With public policy adaptation *processes*, we are dealing with bureaucratic activities with an interest in decision making, covering the familiar cycle of policy formulation (issue identification, information gathering, option creation and so on); i.e., the institutional production of policy. Key aspects of these processes include administrative 'architecture', agency/intergovernmental coordination, budgeting, expertise, information gathering, leadership and management, organizational behaviour, personnel management and stakeholder engagement. Outcomes of this institutional policy activity take the form of *programs* and engage the necessary resources and capacities of government, covering such expressions as guidelines, regulations and laws; public expenditure and

responsibilities for program delivery (including through private/non-governmental organisations (NGOs)). Program assessments usually examine the performance and effectiveness of policy implementation. Considering politics in evaluating public policy success has sat uncomfortably within the public administration discourse where oftentimes politics is identified as a barrier or impediment to policy efficacy (itself a proposition with political implications). Over time, the dominance of the apolitical view of understanding public policy outcomes has faded, although tensions remain between opposing camps of apolitical and political approaches to public policy analysis.

Success and failure need not be universal across each realm; indeed, an adaptation measure might be successfully developed but fail politically after implementation. Such circumstances raise the issue of whether or not adaptation can be considered as always residing within the world of public policy and, more specifically, the extent to which insights from public policy can be extended to nongovernment spheres of activity. Clearly, with so much of the adaptation agenda being taken up in the disaster/risk, economic development and sustainable development discourses and institutions [1], there are a great number of communities, corporations, NGOs and others undertaking adaptation responses. We might, therefore, expand our application of public policy to the broader field of governance and deal with policy in settings outside that of government. Taking a more liberal view, we may find that many of the causal factors, characteristics, features and other elements of public policy maladaptation are shared with nongovernment actors.

Studies of adaptation and any failures concerned with governance reveal that public administration and public institutions tend not to employ the moniker of ‘maladaptation’ to describe failures. (In a broader context, this is unsurprising, as it is relatively rare for public institutions to publicly identify their own policy failures.) This serves as a reminder that public institutions are also political entities, embodying political values and exhibiting political behaviours. McConnell makes the point that political assessments of policy success tend to be ‘implicit’, meaning that behind the façade of policy success applying to meeting social or public interest objectives are political interests, ipso facto: “This conceptualisation calls attention to evaluating policies in terms of their ability to produce benefits for particular political actors or groups” [22] (p. 348).

4.2. Maladaptation and Knowledge

Maladaptation can be categorized by whether or not negative consequences were anticipated and who possessed such information (as could be applied to policies, plans and practices) [1,49,50]:

- *‘known knowns’*; outcomes known to the adaptation measure progenitors and known more widely; possible negative outcomes are known to all policy actors, but the adaptation measure is undertaken nevertheless,
- *‘blind spots’*; outcomes known to others but not known to the adaptation measure progenitors; possible negative outcomes are known to outside policy actors, drawn either from previous experiences, research or traditional knowledge/local experience, but not to those undertaking the adaptation measure,
- *‘unknown unknowns’*; outcomes not known by any of the actors involved and
- *deliberate obfuscation*; outcomes known to the progenitors but not known to others.

Adaptation practitioners have also considered temporal challenges from the outset, as the rationale for adaptive initiatives is anticipatory and preparatory (see, e.g., [30]). Political values and interests are expressed in the reasoning and subsequent decisions over such factors, such as debates over the valuation of future impacts and losses due to climate change, including that over insurance and its consequences [1]. Cases made for delaying adaptive actions are countered by the arguments that current uncertainties need not be diminished over time, that many conditions are likely to have worsened and such deleterious changes will reduce future response options and opportunities, diminishing future response activities [29].

Payo et al. [51] consider maladaptation and infrastructure lock-in as limits to adaptation, identifying the basic patterns of socio-technical system failure:

- escalating challenges exhaust adaptive capacities,
- systems are locally adaptive but globally maladaptive and
- persistent adaptive behaviour that fails to adapt to prevailing or future changed circumstances.

From a political perspective, these contextual aspects of knowledge play into political concepts of accountability, democracy, inequality, legitimacy, power, transparency and vested interests.

4.3. Maladaptation and Representation: Participation in Decision Making

Participation in adaptation decision making takes a variety of forms in adaptation scholarship. As a concept and practice, it is endorsed and promoted in foundational international instruments, including the *United Nation's Framework Convention on Climate Change* (UNFCCC) [52] (Arts. 3 and 4), the FCCC's 2010 *Cancun Adaptation Framework* that introduced the National Adaptation Plan process, the *Paris Agreement* ([53] Art. [7,54]) and is endorsed by a range of NGOs (see, e.g., [55]).

Conceptually, participation has many interpretations, but for the sake of simplicity it is taken here broadly to mean is either direct involvement in decision making processes or through representation so that citizens/stakeholders are 'present' (i.e., their opinions or perspectives) in decision making [56]. Arguments for participation are that participants' democratic skills and capacities are enhanced, social learning occurs, marginalized individuals and groups are empowered and emancipated, local knowledge and information can be harnessed, experimental and value-based knowledge may be utilized, the validity and robustness of information can be tested, decision making processes are legitimized and conflict identification and resolution can be enhanced (see, [57,58]).

Countering such benefits are arguments that participation is inherently conservative and that genuine social equity requires the co-production of knowledge for adaptation (see, [42,59]). Few et al. [60] point to the common critiques of participation practices in public policy. They highlight the absence of meaningful engagement, the risk for containment and co-option and the practical/conceptual difficulties of participation. They argue that engagement in reactive responses to climate change is easier than in anticipatory responses.

An up-to-date reckoning of the extent to which existing policies, plans and programs have promoted public participation is unavailable, but earlier studies seem to indicate that such practices are common and significant (see e.g., [61]). Considerable attention has been paid to this theme in adaptation scholarship, ranging from studies empirically addressing participation justifications, processes and outcomes to normative support of the principles of participation [62,63]. There appears to be no scholarship arguing against participation in adaptation per se, although there are studies describing its limitations and complications over its practice (see, e.g., [64]). A number of studies of maladaptation speculate that greater inclusion in decision making, especially from the communities involved, would or might have avoided or ameliorated maladaptive outcomes (see e.g., [60,65,66]).

5. A Political Typology of Maladaptation

Interest in the politics of adaptation is growing and this has expanded to include maladaptation (see, e.g., [1,59,67–69]). Political inquiries into adaptation undertaken to date can be categorized into four thematic perspectives: Institutional politics, Political economy, Environmental justice and Political ecology [1], as shown in Table 2. Whilst having overlapping elements, each perspective has distinctive attributes giving specific interpretations of maladaptation (see Table 2). These distinctions include the meaning, origins, expressions and implications of maladaptation. Each theme is explored below.

Table 2. Political Perspectives on Maladaptation.

Political Perspective	Political Realm of Interest	Dominant Maladaptation Concerns
Institutional politics	Public sector decision-making	Maladaptation as an outcome of institutional factors, including decision making processes
Political economy	Projects/actions through international agencies	Maladaptation as an outcome of political/economic power, vested interests, historic inequalities
Environmental justice	International/national policy; society in general; Nature	Social inequities/injustices arising directly/indirectly through the medium of the environment from adaptation measures
Political ecology	Nature/society interface	Loss or diminution of environmental values; some have resulting negative social outcomes

Source: After Glover and Granberg [1].

5.1. Maladaptation and Institutional Politics

In political science, ‘institution’ has multiple meanings (cf., [70–73]), covering the historical, rational choice, sociological (i.e., cultural) and discursive (or constructive) institutionalisms. Of central interest in institutional studies is the political character of institutions, with attention focusing on external political influences on institutions, the political identity and functioning of institutions, and political outcomes of institutions. Political power, access to (and participation in) decision making and socio-economic consequences are common themes of inquiry. Social studies of science have included institutional inquiries into their role in mediating and expressing the differentiated interests of stakeholders, notably their influence in scientific knowledge application and legitimation in public policy formulation (see, e.g., [74,75]), a highly relevant discipline given the scientific-technical orientation of adaptation public policy to date.

Given the roots of public policy responses to climate at the national/subnational spheres in the UNFCCC, institutions have been the focus of much scholarship into social responses to climate change. With climate change science central to these public policy responses, the science/policy interface, and the associated institutions, has been of particular interest since the inception of the climate change discourse (see e.g., [76,77]). These inquiries evoked the political science’s interest in institutions [48,73].

Potentially, institutionalism offers wide opportunities for investigating maladaptation, especially of public policy institutions and the science/policy interface, but institutional studies account for a relatively small proportion of adaptation scholarship. Edelenbos [78] conducted a study of Dutch adaptation institutions. Termeer, et al. [79] compares institutional responses in four European nations, identifying: (1) Institutional disregard of ‘learning and variety’, (2) Reliance on science experts, (3) Tension between top-down policy processes and bottom-up implementation, (4) Institutional mistrust of civil society’s capacities and (5) What the authors describe as the ‘wickedness’ of reserving funding for the long term. Such findings fit within the public policy failure models of public administration and take up what might be viewed as failures in rational decision-making processes.

An alternative approach places political values and ideologies at the centre of critiques of adaptation. Tangney and Howes [80] and Tangney [81] describe the UK’s process to assess the risks of climate change for adaptation and other purposes and find the politicization of the process, in which ‘linear-rationalist’ approaches facilitate the expression of political interests. *Politicization* appears to have two overlapping forms in these debates, that of civil servants having excessive influences over policy relative to elected political representatives and also that of the importing political values into public policy in the guise of scientific-rational knowledge by civil servants and/or elected politicians. Tangney [82] examines the role of political factors within public policy institutions producing adaptation policy, finding that specialized technical expertise became politicized when their advice was made to correspond with the political and economic values of the government in power. A second prominent theme is concern over *technocracy*, wherein technological

and scientific elites influence public policy decisions in which wider public or specific communities or subgroups are denied participation or are marginalized in some manner.

Several studies examine risk factors connected to institutional maladaptation, such as a proclivity for large infrastructure projects in favour of behaviour change policies, given that the former have a far higher likelihood of large-scale maladaptive outcomes (see e.g., [83]). Such characteristics reflect institutional behaviours, especially those reinforced by institutional path dependency; Tennekes, Driessen, van Rijswick and van Bree [64] describe the institutional influences in identifying 'legitimate' adaptation options in three Dutch case studies of drainage, flooding and urban heat stress. Barnett and O'Neill [3] and Magnan et al. [84] consider path dependency to be a factor in maladaptation. Less developed nations can depend on international agency support for adaptation and can be beholden to the methodologies, preferences, procedures and the like of these organisations in order to receive support; project priorities can be subject to coercive expressions of influence by these international NGOs and intergovernmental funding organisations. These instances highlight the 'embedded' character of politics in institutional forms and practices.

5.2. Maladaptation and Political Economy Politics

Political economy is usually concerned with the ways in which political and economic variables interact to produce social outcomes, with a particular interest in issues including political power and economic influence, the distribution and (re)production of socio-economic status, and the role and influence of economic agents and political institutions [85]. In adaptation studies, political economy has been applied in: 1) Considering vulnerability to climate change impacts as a socio-economic phenomenon, 2) Approaching adaptation policy formulation and implementation as a socio-economic process and 3) Evaluating the socio-economic outcomes of adaptation measures (cf., [69]).

Vulnerability tends to be inversely related to socio-economic status, but the relationship is a complex one (see e.g., [86–88]). Certainly, the populations at greatest risk are concentrated in poorer nations and in the lower socio-economic groups within communities [29,30,42,69]. Explanatory socio-economic factors in vulnerability include age, class, ethnicity, gender, health, land and resource ownership, net wealth and social cohesiveness/social capital.

Economic reasoning and rationales are often used in adaptation planning, policy and programs, influencing risk and vulnerability assessment, priority setting for programs and sequencing of project expenditure [89,90]. Storbjörk and Hjerpe [91] identify the high priority accorded to protecting high valued economic assets and activities often judged using cost-benefit analysis in public policy advice. Adaptation influences socio-economic outcomes through mediation of existing conditions and through the subsequent distribution of the costs and benefits of its effects. Adger et al. [92] selected criteria for evaluating adaptations and the issue of economic efficiency, describing the limitations imposed by the fluidity between public and private goods, the difficulty of valuing nonmarket benefits and costs and the implications of different timescales in evaluation.

Political economy has explored a wide variety of ways and circumstances in which climate change impacts and adaptation measures can be redistributive in the political and economic spheres. Sovacool and Linnér [69] make comprehensive use of political economy to critically evaluate adaptation, taking a broad interpretation of the concept. In Sovacool and Linnér [69], Sovacool et al. [93] and Sovacool [94], four processes describe the creation of inequity in adaptation:

- *enclosure*; captures and transfers resources or authority, including through privatization,
- *exclusion*; prevents or inhibits stakeholder engagement in political processes and decision making,
- *encroachment*; harms species, ecosystems, ecological processes and natural resources and
- *entrenchment*; increases social and economic inequality through disempowering the already disadvantaged, notably women and minorities.

Such outcomes represent maladaptation as resulting from inequities in allocating and using economic resources and in access to political power. Political economy has also highlights the extent to which maladaptation can be expressed beyond the original site of adaptation activity through time and space.

5.3. *Maladaptation and Environmental Justice Politics*

Environmental justice shares ideological and political values with progressive and left-wing political economy; its distinguishing features include the centrality of social justice and role of environment as an agent of mediation and a medium for expressing injustices. Principle interests have been the place of race and class in the distribution of environmental harms, hazards and risks; environmental justice focuses on environmental injustices [95–97]. Applied to climate change, environmental justice underpins the concept of ‘climate justice’ (see, e.g., [42,98,99]).

Paavola and Adger [62] establish a case for ‘fair adaptation’. Four principles are offered by the authors for pursuing fair adaptation: (1) Avoiding dangerous climate change, (2) Forward-looking responsibility, (3) Putting the most vulnerable first and (4) Equal participation for all [62]. Adaptation measures are applied over the landscape of environmental injustices; maladaptation is thereby evoked when adaptation measures fail to redress such conditions, worsen such conditions or create new injustices. Hughes [100] examines the case of Delhi, India, and the application of environmental justice principles to adaptation measures. Wilson et al. [101] measure the environmental, health and social impacts forecast for the US under a climate change scenario, generating ‘vulnerability scores’ for communities.

A number of studies identify injustices in adaptation measures, typically where existing disadvantages have been magnified by climate change that adaptation fails to address [102–104]. Douglas et al. [105] examine adaptation to future coastal flooding risks in Boston, USA in two communities with contrasting environmental justice conditions, finding that communities had been poorly informed of the climate change risks and residents held the view that they were excluded from planning processes. Torres et al. [106] review the Brazilian national adaptation plan from a climate justice perspective, and concluding that it did not ‘systematically’ include climate justice concerns. Thomas and Twyman [63] consider adaptation equity and justice issues using two case study areas from Southern Africa. Hardy, Milligan and Heynen [102], in a study of sea level rise adaptation planning in a coastal community in Georgia, USA, describe what they call ‘colorblind adaptation planning’ that fails to take into account the prevailing conditions of racial inequality and its influence on land ownership and participation in planning decision making.

These conceptions of climate justice and adaptation mostly represent the ‘distributive’ agenda of environmental justice, to which can be added the adjoining conception of justice, namely ‘procedural’ justice that takes up the issues of representation and participation in decision making and evokes the matter of legitimacy in governance procedures and outcomes [42,107,108]. As Thomas and Twyman [63] argue, equity and empowerment are linked, but that careful management is needed to avoid creating circumstances where the normative goals of both elements do not come into conflict when developing and implementing adaptation programs. Paavola and Adger [62] describe the barriers that inhibit equal participation in different spheres of decision making, from state participation in international decision making to that of national and subnational levels, pointing to a mix of political-economic factors, political cultures and institutional rules that have different influences at different scales.

5.4. *Maladaptation and Political Ecology Politics*

Political ecology is a broad category of environmental politics, including elements of the previously described political economy and environmental justice that has its intellectual roots in cultural ecology and critical development research (see, [109–111]). Watts [111] identifies two key themes in political ecology as: (1) Knowledge, power and practice and

(2) Governance, justice and politics. Applied to adaptation, political ecology has been interpreted widely, covering studies across a range of scales of inquiry, themes and topics, and subject matters and locales.

A major contribution is *The Political Ecology of Climate Change Adaptation* [112]. Taylor rejects the apolitical approach of earlier adaptation studies, criticising the assumptions that climatic disturbances are ‘outside’ a coherent society and arguing that this approach overlooks the influence of socio-ecological factors, such as political differences and technology change. Rather, Taylor uses political ecology to argue that society and climate are “... fundamentally intertwined, co-productive, constantly refashioned and changing” [112] (p. 5).

A common view here is that conventional approaches to adaptation employ apolitical approaches in order to secure existing power relationships and economic interests, whereby adaptation responses are delimited by institutional judgements of affordability, practicality and the like. Similarly, Goldman et al. [113] argue for a ‘critical political ecology’ to develop a critical approach examining discourse and language use, ‘depoliticized’ adaptation knowledge and the adaptation processes (and their ontologies). In effect, the authors are calling for inquiry that would necessarily add to the understanding of how maladaptation is produced.

Political ecology has served as a means to greatly expand the scope of adaptation inquiry and accompanying critique. For example, it was applied by Ajibade and McBean [114] to examine slum communities in Lagos, by Pelling [115] in urban flood hazard in Guyana, by Shearer [116] to study adaptation assistance and the issues of displacement and relocation of native communities in Alaska, USA, by Maguigad et al. [117] to consider island tourism planning and by Gonda [118] to examine the role in gender in adaptation policies and practices.

Political ecology has highlighted themes that conventional adaptation studies neglected, notably that of gender. Maladaptive responses can occur when extant gender prejudices and practices are exacerbated by, or created anew through adaptation measures [118]. Demetriades and Esplen [119] raise concerns that gender aspects of adaptation have been subject to ‘sweeping generalizations’, giving rise to misconceptions and restricted understanding of the intersection of gender, poverty and adaptation. Van Aelst and Holvoet [120], in a study of rural Tanzania, describe the influence of gender and marital status in determining access to adaptation strategies, finding that widows and divorced women are disadvantaged.

6. Conclusions

These conclusions are structured around the articles’ research questions.

6.1. How Can We Understand the Political Identity of Maladaptive Adaptations to Climate Change?

Unquestionably, climate change and its associated impacts will have profound political effects. Governments, corporations and civil society can seek to avoid, minimise or capitalise on these changes either proactively through anticipation and planning or reactively in responding to occurrences. As adaptation efforts increase in scale, scope and resourcing, the accumulation of the political aspects of these efforts will continue to increase. Consequently, this process produces a set of concepts, insights and revelations, laying the foundations of a political language of maladaptation.

This article has described a set of prominent political themes in adaptation scholarship directed at the problem and occurrence of maladaptation. Maladaptation embraces both processes (formal and informal) *and* outcomes and political explanation can be applied to both. In effect, there are three broad, temporal, ‘political layers’ to consider:

1. those of pre-existing conditions,
2. those of undertaking adaptation, and

3. those of the consequences of climate change impacts *and* the associated adaptation measures.

Many of the studies dealing with maladaptation politics discussed in this article deal with each of these layers to some extent. Greater awareness of the political factors in adaptation has arisen through recognising the political aspects of preparedness, risk, vulnerability and other aspects of adaptation. Concomitant with this awareness is the perception that political variables partly condition the social determinants of these factors. Many analyses of maladaptation have paid particular attention to political causal factors, including governance institutions. Expanding awareness of the political dimensions of maladaptation is correlated with greater engagement of the adaptation discourse with those of disaster risk and sustainable development in which political analysis has a more prominent position than in adaptation studies.

Within the climate change discourse, this scholarship is building a body of knowledge of maladaptive institutions, processes and outcomes that is infused with, and informed by, established ideological positions and belief-systems. Furthermore, this output applies a set of concepts, insights and revelations that lays the foundation of a political language of maladaptation. Within the maladaptation scholarship there are several distinct, albeit overlapping, political approaches to understanding these politics. Critically, this research output has located maladaptation in the environmental, social and socio-ecological realms. No doubt as interest in the maladaptation grows, other political approaches will emerge.

6.2. What Are the Problems in Trying to Understand Maladaptation as a Political Phenomenon?

In the earlier phase of the climate change discourse, adaptation was primarily approached and understood through the lens of scientific/technical rationality and assessing adaptation using a single criterion (or few criteria). Identifying maladaptation within this perspective was a reasonably straightforward matter. Maladaptation within the technical realm is the expression of failure where adaptation outcomes are contrary to that intended. An appreciation of the politics of maladaptation found these narrow technical appraisals of adaptation as being deficient, as technical assessment criteria could subsume or otherwise obscure inherent political values and ideological assumptions shaping the assessment.

Broadening the scope of assessment to include social criteria produces a wider array of maladaptation forms and types. Political inquiry may question the political purpose of the evaluation, the identity of those undertaking the evaluation and how knowledge is legitimated in the evaluation process. For example, technical and scientific assessments are conducted by technicians and specialists in the service of corporations and government agencies representing a narrow and select group of stakeholders and interests. Such assessments tend to ignore or neglect other forms of knowledge, such as indigenous and local experiences, and traditional/indigenous ecological knowledge. Moreover, the legitimacy of information and knowledge in technical assessments is determined by technical elites and specialists supporting corporate and public agency interests.

Political inquiry re-activated questions over the identity and purpose of adaptation. One aspect of this activity was that widening the scope of adaptation inquiries created overlaps and synergies with the fields of study and practice of sustainable development and disaster risk reduction, response and management. Themes and topics central to political inquiry that had been neglected in technical approaches to adaptation assessment, were employed in powerful critiques of adaptation, including those of culture, decision making, environmental values, equity and fairness, gender, institutions, and power and influence.

Scholarly contributions studied in this article reveal that there are a number of problems and barriers in understanding maladaptation as a political phenomenon. Many of these are common to more general political scholarship, such as:

- difficulties of assessment arising from temporal factors occurring when maladaptations have lengthy lead times and/or involve delayed effects,
- inadequate data/information on key variables and
- dynamic circumstances where continual developments occur in ongoing public policies.

Investigating institutional factors can face difficulties in complex and dynamic institutional settings, especially in cases of poor record-keeping, multiple agency involvement and social and economic disruption and the ‘veil of secrecy’ put up by corporations, governments and NGOs to avoid public scrutiny and assessment. This problem of complexity is exacerbated when adaptation measures are conflated with initiatives and programs in disaster risk and sustainable development, a factor that has its roots in uncertainties over the identity of adaptation itself.

6.3. *What Are the Implications and Significance of the Politics of Maladaptation?*

A contribution of politics has been to consider adaptation responses as having different dimensions, including: 1) Politics as an influence on extant political conditions (such as a component of vulnerability or exposure to climate-related risks), 2) Politics as embedded in adaptation actors, knowledge, institutions and responses and in the effects of adaptation in relieving the current or potential impacts of climate change, 3) Political factors as a cause of maladaptation and 4) Politics as a means to understand and interpret the implications of actions not taken, of low preferences and priorities, of lacking support to adaptation or low levels of investment for vulnerable groups and natural entities and processes.

There are many implications for identifying and analysing the politics of maladaptation for pragmatic and conceptual/theoretical reasons. In the pragmatic realm, politics provide insights into post hoc assessments of adaptation processes and outcomes and serves as a tool for predicting the political implications of adaptation processes and outcomes. An appreciation of the political causes and outcomes of maladaptation can, in theory, aid in their avoidance, thereby enhancing adaptation planning, practice and future monitoring of performance. Maladaptation politics also provide a social and environmental reckoning of adaptation. This highlights not only the allocation of the burdens and costs of maladaptation, but also identifies groups and entities benefitting from maladaptation, an often-overlooked dimension of maladaptation. Political analysis of maladaptation can also assist disaster risk and sustainable development scholarship and practice. It may be that the fields of adaptation, disaster risk and sustainable development are merging together and becoming synthesised.

Critically, maladaptation politics can:

- inform the debate over the progressive/transformational character and potential of adaptation,
- adjudge if adaptation maintains the status quo which may entail favouring vested interests and/or elites and those with influence in public policy processes
- reveal if the cause of a progressive economic/environmental/political/social agenda is being hampered and
- add a neglected dimension to the definition of maladaptation, both in terms of assessment and as entity of adaptation.

In closing, maladaptation is a subject which is considerably more complex and challenging than ‘adaptation gone wrong’. As this article shows, a political analysis of maladaptation provides insights into the meaning of the social context of adaptations, but also offers a deeper understanding of the implications and consequences of adaptation.

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