Politics and Governance
Open Access Journal | ISSN: 2183-2463
Volume 9, Issue 4 (2021)

Climate Change and Security

Editors

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COGITATIO

Politics and Governance, 2021, Volume 9, Issue 4
Climate Change and Security

Published by Cogitatio Press
Rua Fialho de Almeida 14, 2º Esq.,
1070-129 Lisbon
Portugal

Available online at: www.cogitatiopress.com/politicsandgovernance

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COGITATIO

Politics and Governance (ISSN: 2183–2463)
2021, Volume 9, Issue 4, Pages 1–4
https://doi.org/10.17645/pag.v9i4.4932

Editorial

Climate Change and Security: Filling Remaining Gaps

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Submitted: 7 October 2021 | Published: 22 October 2021

Abstract
As perception of climate change as a threat to humanity and to ecosystems grows, the rapidly growing literature increasingly refers to the notion of "climate change and security," for which there is as yet no single agreed definition. Despite the extent of literature already published, there are at least three remaining gaps: (1) Added theoretical value: How does "climate change and security" differ from similar notions such as "climate crisis" and "climate emergency"? What theoretical gains can be made by securing against climate change? (2) Role of non-state actors: The traditional concept of security is tightly bound to the notion of national security, but the climate change and security discourse opens the door to the participation of non-state actors such as the business sector, local government, and citizens. How do they take part in ensuring security? (3) Regional imbalance: Most of the literature on climate change and security published so far comes from Europe and North America. As other regions, such as Asia, are just as affected, more voices should be heard from those regions. This issue aims to address some of these gaps. The nine articles in this issue address the notion of "climate change and security" through empirical work while theoretically contributing to several themes relating to the climate change and security discourse.

Keywords
climate change; conflict; discourse; human security; management; risk; security

Issue
This editorial is part of the issue "Climate Change and Security" edited by Yasuko Kameyama (National Institute for Environmental Studies, Japan) and Yukari Takamura (University of Tokyo, Japan).

1. Introduction

As scientific understanding of climate change has gained wide acceptance, and as most people around the globe perceive it as a threat to humanity and to ecosystems, the rapidly growing literature on this subject increasingly refers to the concept of "climate change and security." However, there is no single agreed definition of this concept. Despite the extent of literature already published (Busby, 2019; Kameyama & Ono, 2021; McDonald, 2013), gaps remain.

First, what is the value added by using the term "climate change and security"? How does it differ from similar expressions such as "climate crisis," "climate emergency," "mitigation," "adaptation," and "disaster management"? From a theoretical viewpoint, securing against climate change—securitization—does not sit well with traditional notions of security. The traditional study of security is tightly attached to national security and national defence, although its scope can also be broadened (Buzan, 1983). What can we gain by securitization against climate change from the theoretical perspective?

Second, do non-state actors have a role? Broadening of security notions within the "climate change and security" discourse opens the door to roles for non-state actors such as the business sector, local government, and citizens. No matter how "climate change and security" is defined theoretically, all members of society need to take part in addressing climate change. Use of the

"climate change and security" notion could be an effective way to ensure the involvement of non-state actors in the climate change debate.

Third, there is a regional imbalance. Most of the literature published to date on climate change and security has been written by authors in Europe and North America and focuses mostly on cases in Africa, the Middle East, and the Americas. Although other regions, such as Asia, are also severely affected by climate change, experts from there are under-represented, and few case studies from there have been reported. Security is closely linked to countries' geopolitical and cultural contexts, so what constitutes "climate change and security" may differ from one region to another.

This thematic issue aims to address some of these gaps by inviting studies related to climate change and security from various parts of the world and accepting a wide scope of the notion of security. The nine articles in this issue address the issue of "climate change and security" through empirical work with theoretical contributions to several relevant themes.

2. Themes and Articles

2.1. Relationship Between Climate Change and Security

How "climate change and security" differs from other notions that are used to enhance a sense of urgency continues to be debated. How can securing against climate change be effective in arming the world against adverse impacts of climate change?

Some studies concentrate on the inter-relationship between "climate change" and "security" rather than the joint concept. Within this area of study, "security" takes the conventional definition, such as conflict and involuntary displacement.

Hardt (2021) and Jakobsson (2021) each analysed a case of organisations under the United Nations. Hardt investigated a statement jointly proposed by 10 member states of the United Nations Security Council in 2020 and asked whether the United Nations Security Council can effect transformative change in the face of the increasing recognition of climate change as a threat to security. Jakobsson investigated why climate-induced population migration took "a major agenda leap" at a specific point in time within the United Nations policy agenda. Their conclusions suggest that climate change is now widely acknowledged to be a major threat to humanity, to society, and to nation states.

Ministries of defence in many developed countries report increased dispatch of military teams to developing countries for humanitarian assistance in response to the increasing frequency of natural disasters, placing a burden on their defence sectors. Prabhakar et al. (2021) focused on the relationship between climate change and external emergency assistance to increase resilience in developing countries and to develop a new decision support system to determine the level of disaster risks, and concluded that it is important to share risk information among regional partners and to implement a mechanism to mitigate risks.

2.2. Role of Non-State Actors

As each individual faces risks posed by climate change, the notion of "climate change and security" must deal with securitization not only at the national level, but also at the local and community levels. Ide et al. (2021) concluded that gender roles and unequal gender structures are important context factors that shape climate-conflict risks in various regions, and that through intersection with other inequality structures, gender inequality can aggravate or change the impact of both climate change and conflict.

Two studies in this thematic issue (Koppenborg & Hanssen, 2021; Yamada, 2021) investigate how Japanese government ministries and the business sector express climate change in their respective use of terms. They found that security-related terms are used only by those who support mitigation policies, and that lack of use of such terms could explain why Japan has not been enthusiastic in reducing greenhouse gas emissions.

2.3. Regional Interpretation

We are delighted to receive contributions from some countries such as Finland and Japan that have been somewhat minority in the field of climate change and security studies. All of these articles from under-represented regions will enhance the development of climate change and security.

Three articles focused on Japan (Hasui & Komatsu, 2021; Koppenborg & Hanssen, 2021; Yamada, 2021). Their approaches are different, but they arrive at similar conclusions. The notion of climate change and security is not familiar in Japan. Policy makers, politicians, and the business sector all see climate change merely as an environmental problem, or energy- and economy-related problem. The increasing extreme weather events in recent years in Japan could be a stimulus for Japanese stakeholders to see climate change as a security issue and to become more supportive of emission reduction.

Two studies (Hasui & Komatsu, 2021; Räisänen et al., 2021) took up "comprehensive security" as another notion that could merge all types of threats, including various risks to individuals, and concluded that it could be an effective way to respond to cross-sectoral problems such as climate change.

The concept of nature-based solutions (NbS) supports the sustainable management of ecosystems in Europe, which can be seen as a way to respond to climate change from a security perspective. Morita and Matsumoto (2021) compared the implementation of NbS across Asia and concluded that Asian countries have developed NbS in their own contexts and already include it in their national strategies or plans.

These studies suggest that, at least from the implementation point of view, usage of "climate change and security" can be diverse and interpretation can differ from one country to another, incorporating the security aspect of climate change in each country's unique context.

3. Research Questions for Future Research

This thematic issue was challenging in the way that it aimed at making progress in debates related to "climate change and security" from the three aspects described above. We were successful in filling some gaps, but remaining gaps still exist.

First, many studies focus on the causal relationship between climate change and conflict, but we argue, as Prabhakar et al. (2021) touch on, that development of collaborative relationships—between countries and between people—should be recognized as the best and only way to prevent conflicts and to protect ourselves from various types of damage due to climate change. No matter how "climate change and security" is defined theoretically, the notion ought to be fully utilized as a means to promote collaboration, not conflict. This is somewhat related to the role of non-state actors. Non-state actors are important because they are the ones who must change their behaviour to reduce greenhouse gas emissions and who will be affected by climate change. Issues of equity and justice and disparities within society and between societies should be further investigated to accelerate mitigation and adaptation by non-state actors.

We did our best to invite submissions from other parts of the world, particularly from major greenhouse gas emitting countries such as China, India, and Russia, without success. Those countries are all influential in terms of traditional security agenda, such as military and defence, and are sensitive about use of the term "security.'' Their involvement in discourse on climate change and security is indispensable to a common understanding that climate change is a security issue. They have suffered much climate-related damage. Seeing that damage from a security perspective should be important not only for those countries, but also for the whole world, if we are to prevent the worst-case scenario.

Acknowledgments

The authors would like to sincerely thank the journal staff for their kind support in compiling this issue. The issue has been made possible partially as part of a research grant JPMEERF20212002 of the Environment Research and Technology Development Fund of the Environmental Restoration and Conservation Agency (ERCA) of Japan.

Conflict of Interests

The authors declare no conflict of interests.

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Politics and Governance (ISSN: 2183–2463)
2021, Volume 9, Issue 4, Pages 5–15
https://doi.org/10.17645/pag.v9i4.4573

Article

The United Nations Security Council at the Forefront of (Climate) Change? Confusion, Stalemate, Ignorance

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Submitted: 31 May 2021 | Accepted: 29 September 2021 | Published: 22 October 2021

Abstract
In the context of the United Nations Security Council (UNSC), the debate on whether climate change should be included and how has been ongoing since 2007. This article contributes to existing research on this problem by expounding a three-fold analysis. First, it assesses the conceptual approach to the climate-security nexus from the joint statement of 10 UNSC member states in 2020. Second, it critically exposes the confusion of different climate-security conceptions and uncovers shared assumptions of the UNSC-member states in 2020 by comparing their different positions, which makes a soon-to-come agreement likely. Third, it critically evaluates whether the proposal to include climate change into the UNSC will lead to a transformative change of the institution, of the meaning of security, and on how this would correspond to the existential threats outlined in the Anthropocene context. The theoretical framework of analysis draws on critical security studies. It takes as its empirical basis the primary sources of the UNSC debate of 2020 and is also informed by the secondary literature on climate and security and the Earth System Sciences descriptions of the state of the planet.

Keywords
Anthropocene; climate change; climate-security nexus; existential threat; United Nations Security Council

Issue
This article is part of the issue "Climate Change and Security" edited by Yasuko Kameyama (National Institute for Environmental Studies, Japan) and Yukari Takamura (University of Tokyo, Japan).

1. Introduction

As exemplified by this thematic issue, the links between climate change and security are controversially debated, being clearly defined neither in theory nor in practice. One of the reasons for this is that many existing interpretations of the climate-security nexus confuse different aspects and provide at most a non-transparent cocktail that can appear at times as a magic potion and at others as a poison with malign effects. In theory and practice, the climate-security nexus covers a broad range of interdependent issues, such as the question of how climate change is linked to or even produces phenomena ranging from vulnerability, instability, and poverty, to loss of statehood and national territory, violent conflict, global health effects, forced displacements, and the increased intensity and frequency of weather extremes, as well as to threats to the future of humanity itself (e.g., Security Council Report, 2021; United Nations General Assembly, 2009a, 2009b, 2009c; United Nations Security Council [UNSC], 2011). Several academic propositions exist that aim to re-define the traditional security concept of the nation-state (Mearsheimer, 2001) in order to address and deal with the new quality of threat posed by climate change, and to provide guidance for global governance actors. Examples include the strengthening of the environmental dimension of human security focusing on basic human needs (Barnett & Adger, 2007), the ecological security concept that focuses on earth system processes (McDonald, 2018), and cosmopolitan security that focuses on ethics (Burke et al., 2014). Most of this critical peace, conflict, and security research draws on Earth System Sciences descriptions, which locate the planet on a trajectory towards a "Hothouse Earth" climate (see Steffen et al., 2018). Moreover, those approaches frequently claim to offer a

paradigm shift, which is then also applied to the necessity of redefining the very meaning and politics of security (Dalby, 2020; Hardt, 2021; Harrington & Shearing, 2017; Lövbrand et al., 2021).

This article does not present a blueprint for how to re-define security in the new context of the Anthropocene. Instead of projecting future ideals, it takes stock of how security is understood in relation to climate change already today. For this, it takes the United Nations Security Council (UNSC) as a case study. The UNSC provides the perfect analytical object for the following reasons. First, the UNSC is the only organ with a mandate to maintain international peace and security and as such seems ideally positioned to address the enormous, multiple, and entangled threats that manifest in the climate-security nexus and the broader descriptions of "existential threat" (Lenton et al., 2019, p. 595) in the Anthropocene. Second, the fierce debate on whether and how the UNSC should or could conceive, prepare for, and handle the dramatic and varied implications of climate change has occupied the 15 UNSC (10 elected and five permanent) member states since 2007. An official recognition of the multiple connections between climate change and other larger socio-ecological phenomena, such as their links to security, is still lacking.

This article contributes to research on the UNSC case study within the climate and security literature. For this body of work, we can observe a change of tenor over the last years. In earlier research, a cautious approach to climate-security in the UNSC was called for (see e.g., Cousins, 2013; Scott, 2015) due to the possible negative consequences of militarization of environmental or climate politics and of a misuse of any environmental agenda for geopolitical interests (see e.g., Trombetta, 2008). More recently, literature has been underpinned by a growing claim that international governance actors and also the UNSC cannot continue to ignore climate change and its multiple effects and interconnections with security. Accordingly, a number of proposals for how to transform the UNSC have been put forward (Conca, 2019; Hardt & Viehoff, 2020; Scott & Ku, 2018). Another research focus explores ways in which climate change has already come to be included in the UNSC. Securitization (Scott & Ku, 2018) and climatization (Maertens, 2021; Maertens & Hardt, 2021) have served as important analytical tools that critically engage with the various UNSC debates, the informal and expert-focused Arria-Formula Meetings and the recognition of the adverse impacts of climate change on stability in several UNSC resolutions (see Security Council Report, 2021). In this development, 2020 marked an important moment in attempts to include climate change in the UNSC agenda.

This article focuses on the 2020 joint statement led by Germany, which brought together for the first time 10 UNSC member states in a Joint Initiative to Address Climate-Related Security Risks (Ten UNSC Member States, 2020). The short statement is important not only because it represents a peak in the securitization process but also because, according to several informal sources and media coverage (Dziadosz, 2020; Fillion, 2021), the German Permanent Mission (PM) had already been preparing a UNSC resolution before, but refrained from presenting it due to the announcement from the US under President Donald Trump to veto it. The 10 UNSC member states coalition statement therefore is likely to include the key points of this not publicly available draft resolution (see Security Council Report, 2021). In addition, this joint statement provides the opportunity, on the one hand, to assess how the proponents understand security in relation to climate change and, on the other, to display the effects of disentangling the climate-security cocktail. This article focuses less on process (as climatization and securitization analyses do) than on critically analyzing the conceptual approach of climate-security, which is the original and central contribution of this research because it enables a more differentiated criticism and analysis for policy makers and for scientists. The article furthermore investigates the questions of whether the UNSC stands at the forefront of including climate change and whether this would suppose a transformative change of the/for the UNSC and for security conceptions.

The analysis is based on the theoretical framework developed by critical security studies (see Bigo, 2010; Booth, 2005; Buzan et al., 1998), which share the assumption that security is a constructed concept inextricably linked to the actor itself, as well as to its historical and sociopolitical contexts, culture, and worldviews (Peoples & Vaughan-Williams, 2010). Therefore, security is not understood as a fixed but as an evolving and context-dependent concept. Accordingly, it is used as a research tool that explores the understandings and assumptions that underpin specific threat constructions and responses as a kind of "security prism" (see Hardt, 2018). On the basis of a qualitative analysis of the primary sources, I analyze and present the climate-security concept by assembling the explicitly used references into referent object (security for what/whom?), threat (security from what threats?), and response (security by what means?).

The research is furthermore informed by the dispersed literature on climate and security, which focuses on different issues, such as the interrelations between climate change and violent conflict, peace (see for an overview Swain & Öjendal, 2018) and security (see Trombetta, in press), and existential security threats (Sears, 2020). It also includes the Earth System Sciences literature and the emerging literature on international relations and security in the Anthropocene, which distinguishes between Holocene and Anthropocene thinking (Cudworth & Hobden, 2011). While Holocene thinking presupposes a clear distinction between humans and nature, Anthropocene thinking challenges the human-nature dualism and eventually implies a re-definition of the meaning of security in such a way as to overcome the

focus on conflict in favor of a re-assessment of the central values that need to be secured in new situations of survival and ethics (see Hardt, 2018, 2021; Harrington & Shearing, 2017).

The analysis unfolds in four sections. In the next section I assess the climate-security concept by the proponents to include climate change in the UNSC (10 UNSC member states coalition). In Section 3, this approach is juxtaposed to the descriptions of the matter submitted by the five remaining UNSC member states. I investigate whether adopting this proposal would result in a transformative change of the UNSC. The concluding section indicates some recommendations for future research, defends the assessment that a fundamental change is not in sight, and that, as a result, the security threats associated with the Anthropocene are ignored.

2. The 10 UNSC Members States' Climate-Security Concept

As described above, the climate-security nexus is interpreted in several different ways. Hardt and Viehoff (2020) showed that the foci and interpretations of the climate-security nexus varies enormously among UNSC member states and observed an important divergence between domestic and foreign politics in the UNSC context. A missing research focus so far consists in dissecting the unifying meaning/understanding of climate-security that the 10 UNSC member states coalition has in common.

In what follows, I assess this 10 UNSC member states coalition's underlying climate-security concept on the basis of two primary sources. The first is the Joint Declaration by Belgium, France, the Dominican Republic (hereafter DomRep), Estonia, Germany, Niger, Saint Vincent and the Grenadines (hereafter SVG), Tunisia, the United Kingdom (UK), and Vietnam (Ten UNSC Member States, 2020). The second is the 2020 UNSC debate "Maintenance of international peace and security: Climate and security" (UNSC, 2020). As the statements from Niger and Tunisia are missing in the official document, the Niger position is substituted by the presented brief from Niger, while the Tunisian statement is subsumed to the position of the Declaration (Ten UNSC Member States, 2020). The security prism research tool applied here enables a cross-cutting analysis of the different statements on the basis of literal quotes presented in Table 1. Though there are many differences, the aim here is to identify the, as it were, combined underlying concept that does not focus on contradictions but on grouping and making collective sense of the commonly shared descriptions. Important for this is, of course, the qualitative analysis of the empirical data and the classification into corresponding categories.

A further limitation is that this methodology neither captures the process nor future approaches but instead takes stock of how the existing underlying concept of security is influenced by and/or related to climate change. This is how I seek to analyze the cosmology/grammar that provides the background of the proponents' understanding of the climate-security concept. I also do not question whether the links between climate change and e.g., conflict exist or not, even though the academic discussion on the matter continues (see Dalby, 2020; Mach & Kraan, 2021). Instead, I intend to capture the logics of these links that are taken for granted and described by the UNSC member states as embodied/existent. This research is limited to discourse analysis, and as such is unable to distinguish this neatly from power politics, underlying interests, or other key phenomena—indispensable notions which require future research.

In what follows, I will present the research results for the categories of security objects and goals, threats, and responses as described in Table 1. I critically analyze how the climate-security concept that is operative in these data implies an understanding of security at variance with traditional notions. I also investigate the way in which human-nature relations are conceptualized so as to assess whether Anthropocene thinking is included in this renewed concept.

2.1. Security Objects

Applying the security prism as an analytical lens to these data, the detected security objects are international peace, security, and stability (Ten UNSC Member States, 2020) and "prosperity for our people and our planet" (UNSC, 2020, pp. 12 [Vietnam], 15 [UK]). Furthermore, the stability of states and societies (UNSC, 2020, pp. 5 [Niger], 14 [Estonia]) is at the center of attention. Confronting these security objects with the Anthropocene context and with the scientific descriptions of the current state of the world (Intergovernmental Panel on Climate Change [IPCC], 2021), it becomes clear that neither Life, the Earth System Boundaries, the "safe operating space" (Rockström et al., 2009), humans, children, nor future generations are included in this security understanding. Therefore, it should be emphasized that while the articulated statements on including climate change in the UNSC might at times appear to be informed by the findings of the latest climate sciences (see also other descriptions below) the referent objects of climate security remain limited to anthropocentric notions of states and societies with only the faintest emphasis on "planet" as a source of prosperity for "people."

2.2. Security Threats

According to traditional conceptions of security as expressed in the original UNSC mandate, the central threat to security is violent conflict. Climate change comes into the picture primarily because of its multiple adverse posited effects on conflict. In the documents, two different kinds of links between climate change and conflict appear, one indirect and one direct. Within

Table 1. Climate-security concept of the 10 UNSC member states coalition.

Security prism	Climate-Security Concept
Security objects and goals	• Global and international peace, security and stability of states and societies • Sustainable peace and prosperity
Security threats	• Climate change as a threat multiplier • Climate change intensifies drivers of conflict and fragility • Climate change as an existential threat
Security responses	*UNSC*
	1. Multilateral, preventive, and responsible state action 2. Improved assessments and conflict analysis • Information on climate change impacts on security • Local and context focused analysis of threats and responses, respecting sovereignty issues and mandates • Climate-related security risks inclusion into UNSC assessment and decision-making • Systematic reporting on climate-related security risks by the Secretary-General • Climate proofing of resolutions • Climate-security approach must be sensitive to inequalities and gender 3. Institutional support for the UNSC on climate-security • Special Envoy and/or Special Representative • Expert group
	Other
	• Climate Security Mechanism • Mainstreaming climate politics/proofing of the UN • United Nations Framework Convention on Climate Change

Sources: Ten UNSC Member States (2020); UNSC (2020).

the indirect and potential relations, climate change is described as affecting certain processes, such as water and food security, displacements and social tensions (Ten UNSC Member States, 2020), sea-level rise, economic shocks, scarce resources (UNSC, 2020, p. 15 [UK]), and competition over scarce resources (UNSC, 2020, p. 12 [Vietnam]). This then leads to "potentially exacerbate, prolong or contribute to the risk of future conflicts and instability" (Ten UNSC Member States, 2020). Similarly, climate change is seen as a threat multiplier, through which, in combination with e.g., poverty and low state capacity, climate change might potentially instigate, exacerbate, prolong, and drive conflict (UNSC, 2020, p. 12 [Vietnam]).

The direct relationship between climate and conflict is expressed in the statement that climate change "intensifies important drivers of conflict and fragility" (UNSC, 2020, p. 14 [Estonia]) and aggravates existing threats (Ten UNSC Member States, 2020), in the sense of already existing conflicts, such as the case of the farmers–herders conflict (UNSC, 2020, p. 6 [Niger]): "Climate change reinforces existing social, political, economic and environmental drivers of conflict" and the complexity of the effects of climate change is highlighted (UNSC, 2020, p. 10 [Belgium]). In addition, a vicious cycle between conflict and climate change is noted, given that the local and contextual situation inhibits adaptation measures to climate change and is therefore in turn more prone again to conflict (UNSC, 2020, pp. 5–6 [Niger]).

The impact of climate change is understood to affect all the populations across the globe (Ten UNSC Member States, 2020), but the areas of primary concern are vulnerable regions and existing situations of conflict, such as Haiti, Afghanistan, and the Sahel (UNSC, 2020, p. 25 [SVG]). In some cases, the UNSC member states highlight their own vulnerabilities to climate change, as e.g., Niger (the Sahel), Vietnam (the Mekong), and the island states (their territorial integrity in general). The DomRep and SVG refer to their territorial vulnerability resulting from natural catastrophes and the permanent loss of land as an "existential threat" (UNSC, 2020, pp. 19 [DomRep], 25 [SVG]). This is clearly linked to the traditional and territorial understanding of security but adds new dimensions. Aside from the Small Islands Developing States and conflict-prone regions, women and girls are described as being particularly vulnerable and exposed to threats.

Other references to climate change as "our most existential challenge" (UNSC, 2020, p. 10 [Belgium]) seem to transport an additional qualitative threat dimension with respect to future generations. A more specific investigation into the ways in which this challenge is explicitly described shows, however, that the notion of future generations is absent from the climate-security concept, although young people are (partly) given a voice in the

Belgian delegation—which aims to "not fail" their expectations (UNSC, 2020, pp. 10 [Belgium], 13 [Germany])—and the Nigerien statement expresses the aim to protect young people from the impact of future conflict (UNSC, 2020, p. 6 [Niger]). This remains ignorant of the scientific descriptions of the implications of climate change (IPCC, 2021; Lenton et al., 2019) and the overall analysis shows that an existential threat for humanity and for future generations is not spelled out and therefore not of fundamental concern.

Some statements might be interpreted as alluding to a certain recognition of nature and the Earth System, but they remain the exception. Thus, the SVG statement describes the need to "drastically change our planet's trajectory" (UNSC, 2020, p. 25 [SVG]), which can be interpreted as an allusion to research on the Hothouse Earth because of the term "trajectory" (see Steffen et al., 2018). Also, Germany describes the force of nature:

> As diplomats and politicians, we tend to think that everything is negotiable. This is also the underlying idea behind the Security Council: building international consensus. But we cannot negotiate with nature. The physical, chemical and geographical realities of global warming will not compromise with us….The fight against climate change should not divide us. We fight it to save ourselves, and we fight it for the people around the world who are already facing violence and displacement as a result of climate change. They cannot afford to wait. The time for diplomatic patience is therefore over. The Security Council cannot negotiate with the realities of nature. Action is all that counts. (UNSC, 2020, p. 13 [Germany])

As these quotations show, the broader context of natural forces is acknowledged to a certain degree as creating a need to act but the very notion of threat itself focuses on conflict and the stability of the state system. It is also noteworthy that the human–nature relation is perceived as separated and nature as a hostile enemy.

2.3. Security Responses

Looking at the category of security responses, key terms are the common responsibility (UNSC, 2020, pp. 6 [Niger], 14 [Estonia]) and multilateral action (UNSC, 2020, p. 12 [Vietnam]). Aside from these general principles, the concrete responses and activities deemed necessary are to be split up among different organizations, both within the UNSC and in other institutions outside of the UNSC. A central response within the UNSC consists in improving the conflict analysis with respect to the multifaceted impacts of the climate-security nexus (Ten UNSC Member States, 2020) and in strengthening "the capacities of the Secretariat in terms of climate expertise and coordination" (UNSC, 2020, p. 20 [France]). In order to adequately consider the perceived local and context-specific characteristic of the climate-security nexus, climate change should be included in the analysis at a local level and thereby enable to establish an "evidence-based approach to climate-security threats" and build specific "solutions to the fragile and conflict-affected States" (UNSC, 2020, p. 16 [UK]). The mainstreaming and "inclusion of climate-related security risks into the Security Council's overall assessment and decision-making" (Ten UNSC Member States, 2020), as well as the systematic reporting from the Secretary-General to the Security Council on climate-related security risks (UNSC, 2020, pp. 14 [Estonia], 16 [UK], 20 [DomRep]), are important additional responses. Furthermore, the UNSC resolutions require a general climate proofing for an effective implementation (UNSC, 2020, pp. 11 [Belgium], 16 [UK]). Meanwhile, it is emphasized that the "Council should continue with an integrated and comprehensive approach in addressing root causes of conflicts, such as poverty, injustice, militarism and disregard for international law," but adapt this list so as to also include climate change in relation to crisis and conflict (UNSC, 2020, p. 12 [Vietnam]). While a sensitive approach to inequalities and gender is claimed to be required (UNSC, 2020, pp. 5 [Niger], 15 [UK], 25 [SVG]), neither children nor future generations are explicitly mentioned, nor larger future-oriented conceptions of security or drivers of inequality. Instead, the focus lies on the local level and on the importance of respecting state sovereignty, national ownership, and mandates (UNSC, 2020, pp. 5 [Niger], 12 [Vietnam]) once decisions need to be taken on "how to build resilience" (UNSC, 2020, p. 15 [UK]). Additional measures within the UNSC consist in strengthening the institutional support for the UNSC in the form of a Special Envoy and/or Special Representative for climate-security (UNSC, 2020, pp. 13 [Germany], 14 [Estonia], 22 [France], 25 [SVG]), and in establishing an informal expert group (UNSC, 2020, pp. 10 [Belgium], 13 [Germany]).

Beyond the UNSC, a shared view of the coalition is that the UN Climate Security Mechanism (UNSC, 2020, p. 20 [France]) needs to be bolstered further. This entity was established by a joint initiative of the United Nations Department of Political Affairs, the United Nations Environment Programme, and the United Nations Development Programme to further dialogue and exchange on the linkage between climate change and security among UN institutions, situated at the UN headquarters in New York. The UN Climate Security Mechanism also works closely with the UN Group of Friends on Climate and Security, established in 2018 by Germany and Nauru and which today counts more than 50 members (UNSC, 2020, p. 43).

Additional responses are the mainstreaming of climate policies throughout the UN and the cooperation on the issue throughout all mandates and levels of the UN (UNSC, 2020, pp. 5 [Niger], 25 [SVG]). An important disclosure is that the United Nations Framework Convention on Climate Change (UNFCCC) remains the "primary body for addressing climate

change" (UNSC, 2020, p. 25 [SVG]), guiding "national and global responses based on mitigation, adaptation and resilience" and "contribut[ing] to the prevention of climate-induced conflicts and crises" (UNSC, 2020, p. 12 [Vietnam]).

2.4. Cross-Cutting Critical Observations of the Security Concept

Overall, the research results presented here correspond in several aspects to the well-known sets of traditional security, and also partly to human security, adding climate change as one of several causes of insecurity into locally specific accounts (see UNSC, 2020, p. 14 [Estonia]) and to a certain extent includes also the broader dimensions such as e.g., migration, etc. It is worth noting that the referent object and the threat description show that the major concern is conflict, while the response section shows a considerable change of position when it comes to the meaning and also the politics of security. Compared to the traditional security concept, the security responses are relatively surprising in that they do not match the above-described security object and threats. The non-militarized responses are furthermore non-extraordinary, permanent, and, as it were, preventive actions of e.g., including scientific expertise that could be interpreted as responding to the concern, frequently articulated, of a possible militarization of the issue and/or as a result of the trend of climate change riskification (see Corry, 2012; Estève, 2021). On these additional dimensions of incoherence, confusion, and the resulting tensions, more research is required. Overall, this shows that this climate security concept merges different and at times conflicting conceptual approaches and is not exhausted by existing literature.

3. Climate Change at the UNSC: At the Forefront of Confusion, Transformation, and Ignorance

This section extends the investigation to the remaining UNSC member states, and projects likely future developments of the UNSC with specific focus on the transformative potential resulting from a possible inclusion of climate change in the UNSC.

3.1. At the Edge of UNSC Confusion and Consensus

In what follows, I compare the 10 UNSC member states coalition's climate-security concept to the positions of the UNSC member states that did not sign the statement and that are portrayed as opponents/sceptics when it comes to attempts to include climate change into the UNSC, namely Russia, China, Indonesia, South Africa (hereafter S-Africa), and the US. The US is treated separately because of the special role that accrues to it due to its announcement to block the resolution and because of the relatively non-descript and non-transparent statement on the matter in the 2020 UNSC debate. The analysis assembles the statements of the actors from the UNSC debate document (2020) in addition to the Russian and the US statements gathered from their webpages, as these are excluded from the official document. On this basis, I categorize the concerns against including climate change within the UNSC into three main clusters and I then compare the general descriptions of the climate-security nexus climate-security concept of Table 1.

The assessment shows that, similar to the above-outlined climate-security concept, most of the remaining four states note that it is the UNFCCC that holds "the primary mandate and capabilities to galvanize that type of action by the international community" (UNSC, 2020, pp. 24 [Indonesia], 27 [S-Africa]). They argue that the different mandates, available resources, and expertise of the UNFCCC and the UNSC should not overlap (Permanent Mission of the Russian Federation to the UN [PM Russia], 2020; UNSC, 2020, pp. 17 [China], 27 [S-Africa]). Russia (PM Russia, 2020) also highlights that the UNFCCC and the Paris Agreement are the bodies in charge of climate change and that the main concern is that diverting the focus to the UNSC and pulling the "security card" will not lead to adequate responses but rather "be detrimental to those most vulnerable, in particular the least developed countries, landlocked developing countries and small island developing states." Also, Indonesia (2020, p. 24) states that "discussion and consideration regarding climate-related security risks can be beneficial only if they lead to eventual action in addressing climate change appropriately through robust mitigation and adaptation action" and thereby indirectly suggests the significance of climate policies of the UNFCCC for security. Multilateral responsible action of states is also highlighted. These descriptions are consonant with the above-described climate-security conception of the proponents.

Another shared concern, similar to the above-described climate-security conception, is the missing scientific evidence on the generalized links between climate change and conflict, given that "there is no conclusive, universally recognized and scientifically substantiated evidence that climate change has an impact on armed conflicts" (PM Russia, 2020). According to S-Africa (UNSC, 2020, p. 27):

> There is currently little scientific evidence to support the more generalized conclusions of a direct causality between climate change and threats to international peace and security. S-Africa therefore remains wary of introducing climate change into the Security Council as a thematic issue, or adopting generic decisions in this forum.

At the same time, S-Africa (UNSC, 2020, p. 27) states that:

> Instead, where climate change is thought to be a clear contributing factor to a threat to international peace and security, it is appropriate for the Security Council

> to comment on this issue, within the specific context of the countries that may be affected.

A third unifying concern shared by all four states is that "the linkage between climate change and security risks is highly context-specific" (UNSC, 2020, p. 23 [Indonesia]) and "country-specific," and therefore needs to be addressed "in line with the mandates of the relevant resolutions" (UNSC, 2020, p. 17 [China]). Indonesia (UNSC, 2020, p. 23) states that a UNSC-climate-security approach would obscure other political factors and causes of conflict. Russia (PM Russia, 2020) outlines the complexity of the issue and of harmful effects of such a depoliticized focus on root causes of conflict as follows:

> We agree that security and stability in individual countries and regions may be affected by adverse impacts of climate change as one of the multiple factors. But the root causes of conflicts are much more complex where climate change may be one of the factors, country or region specific. We strongly disagree that climate is a generic security issue. (PM Russia, 2020)

Another main concern regarding the inclusion of climate change into the UNSC is that it would "result in diverting time and resources from addressing the root causes of conflicts" and would put into doubt the different mandates of the institutions, and "dubious and vague interpretation of risk factors could only lead to false conclusions and, as a result, failure to provide effective solutions" (PM Russia, 2020). Put differently, the context-specificity and the effects of climate change on conflict are recognized in some cases but their concept of security excludes climate other than as a contingent and local factor.

The US position requires a special assessment. The US (Permanent Mission of the US to the UN [PM US], 2020) statement does not clearly oppose including climate change into the UNSC, even though it blocked the resolution on climate change by threatening to veto it (Dziadosz, 2020; Security Council Report, 2021). Furthermore, it should be noted that during the previous Arria-Formula Meeting in April 2020, the US statement indirectly linked climate change to security, listing it as one among other factors and challenges that affects security, instability and conflict (Barkin, 2020). This incoherence and the lack of clear opposition in the written statement indicate the limitations of this assessment. In the statement, no reference to the term "conflict" can be found, but what is highlighted is the required context-specific and local focus with reference to natural disasters: "It is this focus on work on the ground that will make a difference by continuing to enhance the resilience of our global partners to the impacts of climate change and natural disasters" (PM US, 2020). In other words, the statement does not deny potential links.

On the basis of this outline, I assemble the different descriptions and compare them to the climate-security concept of the 10 UNSC member states coalition and I find three key overlaps. The opponents do, to a certain extent, recognize several links between climate change and security. While slight variations exist between the positions of different states—the US being handled apart—an agreement can be noted on the fact that climate change in some cases is linked to conflict and the localized and contextualized approach of vulnerable and/or conflictive and/or instable local contexts and the island states impacted by climate change. The four analyzed states locate the responsibility to address the root causes in the UNFCCC and/or on the local and nation-state level, as well as stress the need for more research. The work of the UN Climate Security Mechanism is also recognized by S-Africa, and even highlighted as requiring support by Indonesia (UNSC, 2020, p. 23).

Comparing these concerns to the proposed climate-security concept, I conclude that the seemingly divergent and partly opposing positions of the 2020 UNSC member states do in fact passively share a certain climate-security conception. The first column of Table 2 presents the clusters of concern and in the second column shows how the re-formulation of these concerns intersects with the proponents' views on climate-security nexus.

Thus, a certain agreement on the climate-security concept exists within the UNSC 2020. This analysis showed the beneficial effects that the effort to disentangle the climate-security cocktail into more specific arguments has in terms of opening up possibilities for dialogue. These research results raise new questions concerning future developments, which I will outline in the following section.

3.2. Projections, Evaluations, and Implications: Rising to the Challenge of the Anthropocene?

The research findings of an existing overlap on the climate-security nexus concept among all 15 UNSC member states in 2020 suggest that (overriding possible underlying power politics, national interests, and value considerations), on the basis of dialogue and diplomatic efforts, an official adoption of climate change in the UNSC seems forthcoming. While it is important to note that the above-described intersections applied to the UNSC-member states of 2020 and that the UNSC member states constellation is different now, the climate-security nexus remains on the agenda also in 2021. Thus, another UNSC debate on the issue was initiated by the UK in February 2021, and the new US administration explicitly affirms that "the climate crisis is indisputably a Security Council issue" (PM US, 2021). Also, the recent creation of an Informal Expert Group on Climate and Security tolerated by Russia and China—both send observers to the meetings (Security Council Report, 2021)—further suggests an at least passive acknowledgement of the climate-security nexus.

The prospect of an adoption of climate change can be evaluated as a sign that the UNSC takes this issue

Table 2. Comparison of descriptions on climate-security nexus at the UNSC 2020.

Clusters of concerns of sceptics of including climate change in the UNSC	Overlaps between the proponents and sceptics on climate-security nexus
• UNFCCC and the Paris Agreement are the bodies in charge of climate change • Different mandates, available resources and expertise of the UNFCCC and the UNSC should not overlap	• UNFCCC is the primary mandate for handling climate politics • Duplications of mandates need to be avoided
• Scientific evidence on the generalized links between climate change and conflict is missing	• Additional scientific evidence on climate-security nexus is required and a de-politicized analysis to be avoided
• Conflict constellations and causes are country- or region-specific • Root causes of conflicts are complex, even if climate change might be one of the factors	• Climate change in certain regions affects security, via being linked to conflict and weather extremes and is therefore context-specific

Sources: PM Russia (2020); PM US (2020); UNSC (2020); and also Table 1.

seriously and as a symbolically important step that realizes a long-term goal both in practice (since the first debate in 2007) and in theory (see e.g., Scott & Ku, 2018). I do, however, evaluate this potential recognition as but a minor change in relation to the UNSC itself and to the meaning of security more generally. This is for the following reasons. First, the climate-security conceptions cover certain topics that are relatively congruent with the traditional security concept, in the sense of being limited to conflict, especially in specific and vulnerable regions. The underlying understanding of the object of security and of security (conflict and stability), as well as the UNSC mandate, remain untouched. Moreover, several recognitions of the climate-security nexus that are already in place, e.g., in the UNSC Resolutions (see e.g., UNSC, 2017, for Resolution 2349 on Niger; for various field mission mandates, see e.g., MINUSMA [Mali]; MINUSCA [Central-African Republic]; UNOWAS [Sahel]; UNAMID [Darfur]), refer to the relation between climate change and stability. In January 2021, two additional UNSC Resolutions that include climate change were agreed upon, which for the first time widen the geographical scope beyond the African continent to include Cyprus and Iraq (Security Council Report, 2021). It could therefore be argued that climate change has entered the UNSC through a back door, that it is already part of the central UNSC instruments (see Maertens, 2021), and that, as a result, an official recognition would have little effect beyond an a posteriori endorsement.

If compared to the scientific descriptions of existential threats in the Anthropocene, the effects of such a limited inclusion of the climate-security nexus in the UNSC would be relatively insignificant, in the sense that it ignores the most crucial concerns. As shown by Maertens and Hardt (2021, p. 53), "the term 'Anthropocene' does not appear in UN Security Council documents and debates." The new meanings and qualitative shifts for a security understanding of the human nature-entangled dynamic world of the Anthropocene is totally eclipsed. Even though the above-described statements from Germany and SVG (UNSC, 2020, pp. 13, 25) allude to broader conceptions of nature, they still rely on the Holocene understanding of nature as a counter-force from which humans are detached and against which a unified fight is necessary. Similarly, China's (UNSC, 2020, p. 17) statement highlights that:

> Humans and nature share a community of life. What hurts nature hurts humans. Climate change poses a major obstacle to sustainable development. The outbreak of the coronavirus disease (Covid-19) reminds us again that no country or individual is immune to global challenges, and solidarity and cooperation are what is most needed. Climate change endangers the future of humankind and requires joint efforts by all of us.

The socio-ecological intertwinements of the Anthropocene and the scientific predictions of the Earth System Sciences concerning trajectories towards a Hothouse Earth (Lenton et al., 2019; Steffen et al., 2018) and the existential threat for future generations have apparently not yet entered the understanding of the existing climate-security nexus at the UNSC level (Hardt & Viehoff, 2020, pp. 108–110). In general, and despite the reference to the need to "drastically change our planet's trajectory" (UNSC, 2020, p. 25 [SVG]), socio-ecological intertwinements are not considered, or only in the sense of a cause-and-effect chain that impacts on humans, stability, and security (conflict). Further descriptions on the matter of ecology, such as, e.g., possible "tipping cascades," which cause "abrupt, nonlinear responses (conversion of Amazon to Savanna)" (Lenton et al., 2019; Steffen et al., 2018, p. 4) and uncontrollable change, or any other additional temporally extensive security threat related to climate change remain absent. At the same time, it is significant that this approach to include climate change into the UNSC singles the UNFCCC out as the primary body of

intervention with respect to addressing the root causes of climate change. This is how one of the effects would turn the UNFCCC into a security actor via reducing the likelihood for conflict and at the same time put it in charge of handling existential threats.

4. Concluding Remarks and Outlook

This article addressed the following questions: a) is an official recognition of a link between climate change and security in the UNSC likely in the near future?; b) what does the proposition to include climate-security in the UNSC look like?; c) what would this imply for the UNSC as an institution?; and d) how does this approach measure up to the scientific descriptions of climate threats and Anthropocene contexts? The analysis produced three main insights. First, I exposed the climate-security concept. Second, I showed that, in contrast to previous expectations, a certain passively shared mainstream conception of an interrelated climate-security nexus exists. I conclude that, as a result, a consensus on the matter is being established, which also produces incoherences and confusions. Third, however, a transformative change of the UNSC and of the meaning and politics of security is not in sight; on the contrary, the basic tenets of international relations in force since 1945 persist despite the new challenges and threats described by the sciences.

Comparing these research results to existing Security Studies literature on the climate-security nexus can help formulate a range of future research questions. First, Security Studies and climate change research will have to re-assess several key assumptions and also specifically focus on the theory–practice analysis. Doubts on whether the concept of security changes need to be re-assessed in light of analyzing the practices by several actors (see also Berling et al., 2021). Another research finding is that a frequently mentioned counter-argument against the climate-security nexus, namely a possible militarization of the issue (see Trombetta, 2008), is not mentioned by the opponents (see Section 3). In the UNSC 2020 debate, possible militarization was only mentioned once for the case of the Arctic—and not as a possible adverse impact but as an already occurring phenomenon (UNSC, 2020, p. 10 [Belgium]), so in terms of a pro-argument. Future research will have to examine more systematically the climate-security concept analyzed here in light of scientific research on the climate-security link. As I have outlined above, this concept excludes and ignores important scientific descriptions of climate security. Another future research inquiry could focus on why, e.g., the Anthropocene and the scientific descriptions from the Earth System Sciences are not taken up at the UNSC debates. The reasons for this still need to be analyzed, and one possible research path could follow the lines of information flow and the relatively non-transparent science-policy nexus. Assessing the sources and providers of knowledge on climate-security links would require an analysis of the role of think tanks—for example, the think tank Adelphi, which is explicitly mentioned in the UNSC debate (UNSC, 2020, pp. 5–6 [Niger])—as well as other experts who contribute to the discussion. Aside from the power politics of knowledge, other forms of power politics within the climate-security nexus require more attention from researchers. Finally, another important research question should more specifically concern uncovering the institutional gap in the UN system that exists with respect to the existential security threats in the context of the Anthropocene and engage more specifically in how to break this stalemate.

Overall, the analysis presented here attempted to disentangle the climate-security black box by investigating the prevalent understandings of this nexus aiming to open up opportunities for future dialogue and also for drawing out what remains to be addressed. It aimed to encourage additional efforts to think security in the Anthropocene, as the existential security threats (see Sears, 2020) and new meanings of security as yet remain largely ignored by the only institution that has the mandate to deal with security threats.

Acknowledgments

I thank the two anonymous reviewers, Olaf Corry, Adrien Estève, Lucile Maertens, and Julia Maria Trombetta for their constructive criticism. This research partly draws on the project Climate Change and Security in the United Nations Security Council (2019–2020) and was funded by the German Federal Ministry of Education and Research in the context of the research project Multiple Crises: Covid-19 and the Entanglements of Public Health, Security and Ecology in Europe (2021–2024) associated with the CMB.

Conflict of Interests

The author declares no conflict of interests.

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Politics and Governance (ISSN: 2183–2463)
2021, Volume 9, Issue 4, Pages 16–26
https://doi.org/10.17645/pag.v9i4.4519

Article

How Climate-Induced Migration Entered the UN Policy Agenda in 2007–2010: A Multiple Streams Assessment

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Submitted: 14 May 2021 | Accepted: 9 September 2021 | Published: 22 October 2021

Abstract
In 2007, issues regarding climate-induced migration took a giant leap on the international policy agenda at the same time as a growth of interest in and salience of climate security. From having been a technical non-issue since the 1980s, climate-induced migration became one of the most emphasised consequences of climate change for a short period. After three years of fluidity in actors, institutions, and conceptual framings, issues of climate change and migration reached a formal recognition in the 2010 Cancún Adaptation Framework, marking a new era for policy discussions on climate-induced migration. This article sets out to show why this issue, which had been known to policymakers and academia for at least two decades, took such a major leap up the agenda at this specific point in time. The article draws from rich primary interview material together with an analytical framework based on the multiple streams framework in order to systematically answer this question. In doing so, the article primarily offers an empirical contribution to the knowledge and understanding of the specific agenda-setting mechanisms of climate-induced migration in an international policy context.

Keywords
climate change; climate-induced migration; global governance; multiple streams framework; windows of opportunity

Issue
This article is part of the issue "Climate Change and Security" edited by Yasuko Kameyama (National Institute for Environmental Studies, Japan) and Yukari Takamura (University of Tokyo, Japan).

1. Introduction

Issues regarding climate-induced migration took a giant leap on the international policy agenda in 2007–2010. The number of academic articles drastically increased (Findlay & Geddes, 2011), and it seemed like every single humanitarian non-governmental organisation wanted to highlight the issue (Christian Aid, 2007; Kolmannskog, 2008; Warner et al., 2009), with politicians making grand statements (UNSC, 2007) and the media producing sensational headlines (Roberts, 2007).

However, policy discussions on climate-induced migration did not start in 2007. Instead, they are usually traced back to a United Nations Environment Programme (UNEP) report in 1985 coining the concept of "environmental refugees" (El-Hinnawi, 1985). The issue was then primarily the subject of an academic debate throughout the 1990s between "alarmists" and "sceptics," with the former emphasising the great impacts of climate change on migration movements and the latter contradicting this notion arguing that this conception was, in essence, a myth (Black, 1998; Gemenne, 2011; Myers, 1997). While the impacts of environmental change and natural disasters on human mobility were known, it was a technical, academic, and peripheral discussion up until 2007.

After a period of heightened fluidity in actors, structures, and conceptual framings, the period in focus here ends with the successful inclusion of §14f of the Cancún Adaptation Framework (CAF) in late 2010. This short yet pivotal paragraph invites parties to "enhance understanding, coordination and cooperation with regard to climate change-induced displacement, migration and planned relocation, where appropriate, at the national, regional and international levels" (UN Framework Convention on Climate Change [UNFCCC], 2011, §14f). While this paragraph did not signal any substantial commitments, it provided a stepping stone for actors to elevate their work and advocacy on

climate-induced migration from thereon (Nash, 2018). This was mirrored, not least with the establishment of the Nansen Initiative (a discursive and consultative platform gathering states and organisations; Kälin, 2012) in 2011. Moreover, climate-induced migration continued as a part of the work within the UNFCCC, and at COP21 in 2015, it was decided that the Task Force on Displacement (TFD) should develop recommendations on how to avert, minimise, and address climate change-related displacement (UNFCCC, 2015). A few years later, ideas and language from both the TFD recommendations (TFD, 2018) and the Nansen Protection Agenda—the 2015 outcome document of the Nansen Initiative (2015)—could be found mirrored in the 2018 Global Compact for Safe, Orderly, and Regular Migration (UN General Assembly, 2018) which indicates states' normative intent in the migration field even though it is not in any way binding legislation. All of this was done against the backdrop of §14f of the CAF.

In this article, I focus on the three years preceding the conference in Cancún. Using primary interview material with key practitioners at the time, I ask what conditions, mechanisms and confluent factors in the preceding years led up to this landmark recognition? It is not surprising as such that an issue is on the policy agenda. What is intriguing, however, is why this entered the agenda at this particular time, especially when the issue in question had been discussed as a problem for more than two decades. Research on the policy discussions on climate-induced migration partly or specifically covering this time has looked at aspects of mandate expansion (Hall, 2016b), institutional expansion (Simonelli, 2016), UNFCCC negotiations (Warner, 2011), securitisation (Boas, 2015), discourse and conceptualisation (Bettini, 2013; Bettini et al., 2016; Gemenne, 2011; Methmann & Oels, 2015), and normative enterprises (Mayer, 2014). None, however, have tried to systematically explain why the issue had a boost at this specific time—rather than sooner or later. This article thus aims to add a perspective to the plethora of texts mentioned above. To understand the interaction between agency- and structural-based factors, this article employs the multiple streams framework (MSF) as theorised by Kingdon (1984) and its idea of a window of opportunity. In addition, this approach complements previous studies, which often use discourse analysis, norm diffusion theory, legal analysis, or institutional analysis to understand developments.

While there is no unified definition or agreement on the exact scope of the phenomenon of climate-induced migration, it generally refers to migration that has been fuelled by environmental degradation worsened by climate change (International Organization for Migration [IOM], 2009). However, this includes spectra on several levels, all of which spur debate on the scope and adequate solutions. One aspect is that of forced vs voluntary migration. For instance, when can climate-induced migration be considered forced displacement, and when is it voluntary mobility? Environmental migration is commonly intertwined with economic migration—which could be assumed to be relatively voluntary. On the other hand, migration does not have to be entirely voluntary just because it is not acute or fully forced (for more on this debate see, for example, Ionesco et al., 2017; Kälin, 2010; Piguet, 2018). Climate-induced migration that is indeed forced is also subject to conceptual debate. However, most migration scholars agree that climate migrants are not refugees as they (only based on the threat from climate change) would not fulfil the requirements of the Refugee Convention. Nonetheless, they might be in need of protection (McAdam, 2012a). These are just a few examples that illustrate a complicated conceptual debate.

In any case, the range of climate-induced migration is wide and may include disaster displacement after sudden events such as wildfires, storms, or floods, as well as migration resulting from drought or sea-level rise (Ionesco et al., 2017). Causes of migration and displacement are, however, always complex. In this case, empirical research has shown that rather than a direct cause of migration or displacement, natural disasters and environmental degradation are more often amplifiers working in intrinsic combination with context and other policies (Boas et al., 2019).

After this introductory section, the article moves on to outline the key aspects of the MSF. Section 3 applies the framework to the case of interest here, and Section 4 sums up the analysis and clarifies the conclusions and results.

2. Multiple Streams and Policy Agendas

There are moments when new policy issues make leaps up the policy agenda that seem underpinned by something intangible. A seminal model addressing this is found in Kingdon's (1984) work on American politics, in which the basic puzzle revolves around when an idea's time has come, often operationalised as the point when an issue enters the policy agenda. What starts out as merely different kinds of conditions ultimately boils down to the merging of the three streams (policy, problem, and politics) and the subsequent opening of a "window of opportunity." The MSF makes it possible to encompass both structural and agency-related aspects in an analysis and to explain why an issue enters the political agenda at a specific time point. Extensive and in-depth accounts of the MSF and its origins can be found elsewhere (Cohen et al., 1972; Kingdon, 1984), but the remainder of this section outlines the core features of the framework as employed here. In doing so, it also discusses how the concepts of the framework need and can be adapted for application to international policymaking. The MSF have, on multiple occasions, been adapted to the European Union level (see, for example, Ackrill et al., 2013; Herweg, 2015), but applications to the global level are still rare.

2.1. The Streams

The MSF conceives of policymaking and its context as three streams: the problem stream, the policy stream, and the political stream. The problem stream consists primarily of different types of conditions that are perceived as problematic. The conditions are highlighted by indicators that are not in themselves necessarily problems. Problems are a matter of interpretation and should be solvable in order to distinguish them from mere conditions. Focusing events (e.g., disasters) may put the spotlight on certain problems and attract policymakers' attention (Kingdon, 1984). Indicators and focusing events are context-dependent and can easily be applied to the international context. However, it is not necessarily the same conditions that initiate problem construction on the international level, and similar conditions may be formulated into different kinds of problems depending on the policy context. For instance, a condition related to education might become a matter of teacher qualifications or taxation in the national context, but an issue of equality and human rights internationally. In the same line of reasoning, cross-border conditions such as trade, environment, or pandemics are more likely to be constructed into international problems than, say, poor road quality.

The policy stream is primarily about two things in Kingdon's model: policy communities and policy ideas. Policy communities consist of specialists in a given policy area who are directly or indirectly involved in policymaking. The policy ideas (also described as proposals, solutions, and alternatives) exist in the policy community's discussions and in the specialists' minds. As Kingdon (2011, Chapter 6) puts it, they float around in a "primeval soup" waiting to be picked up and connected to a policy problem. In the soup, ideas may also change, evolve, and form attachments with other ideas and alternatives. Individuals within the community who have an interest in spending their time and resources on advocating an idea or proposal, and chose to do so, are considered policy entrepreneurs (Kingdon, 1984). However, solutions and alternatives mean different things in the national and international context. Legislation is usually not an option at the international level, which instead must rely on soft law, diplomacy, and socialisation activities, for instance.

In Kingdon's model, the political stream encompasses such things as national mood, changes of administration, and turnover of key persons. Kingdon (2011, p. 146) explains national mood as "the climate in the country, changes in public opinion, or broad social movements." I have changed the concept here to "public mood"—meaning the set of values, standards, and issues against which the public, policymakers, and organisations measure new problems and solutions at a given point in time. Changes in administration and turnover of key persons do overlap but are somewhat different on the international level. However, changes in national governments influence not only national but also international politics as new governments may have different objectives to pursue in international fora. Administrations and key persons could also refer to the leadership of international organisations. For instance, leaders of international organisations are important advocates and have the authority to influence visions, strategies, and priorities in the international policy sphere. Moreover, in general, new personnel have the potential to provide new competence in global governance and national politics alike.

Against the background of this short outline of the streams, I will now linger upon two specific aspects. The first concerns linkages and framing, which, in my view, are key features in all three streams. The second concerns Kingdon's main explanation for agenda leaps: the window of opportunity.

2.2. Framing and Linkages

The exercise of framing determines the conceptual boundaries through which different elements of policymaking are understood (Entman, 1991). Framing always includes more or less intentional activities by actors, often referred to as policy entrepreneurs. When this is done through a larger degree of intention, it may be referred to as "strategic framing," where actors use the frames in order to try to make a new issue "fit" within a broader set of well-established values (Rhinard, 2017; see also Florini, 1996).

I argue that we can find features of framing in all three streams. Conditions in the problem stream are constructed into policy problems through interpretation and categorisation, which determines *what kind* of policy problem the condition is viewed as and determines public and political perception (Kingdon, 2011). The categorisation, in turn, determines the policy community, which institutional venue that should/could address it as well as possible solutions (Jakobsson, 2018). Framing in the problem stream is thus intertwined with framing in the policy stream. The evolvement and combination of ideas in the "policy primeval soup" interacts with and adapts to the categorisation of policy problems. Kingdon particularly points to "value acceptability," implying that a proposal is more likely to be considered seriously if it complies with the ideological and moral principles among the policy community specialists and stakeholders. Similarly, framing matters in the politics stream as agenda items that fit with the public mood at a particular point in time are promoted and thus more likely to enter the agenda, while items incompatible with the mood are likely left out (Kingdon, 2011).

Framing is usually not so explicitly dealt with in MSF analysis. However, I find it intrinsic in all parts of Kingdon's framework, albeit in other terms (as previously exemplified). Therefore, I have chosen to specifically highlight the implications of framing in the analysis as it adds helpful explanatory leverage.

The next subsection brings the streams together and outlines how they may create a window of opportunity to advance issues on policy agendas.

2.3. Windows of Opportunity

The different streams may experience different kinds of alterations. New conditions, interpretations, or focusing events may arise in the problem stream, new communities may form in the policy stream, ideas may evolve or combine in the policy "primeval soup," new "moods" may arise in the political stream, or a turnover of key persons may occur. None of these factors, however, do in themselves firmly put an issue on the agenda. The key explanatory element of the MSF (in Kingdon's version) is the opening of a window of opportunity. Kingdon argues that the *joint effect* of confluent streams is particularly powerful in the agenda-setting process. Windows are short periods in which conditions in all three streams are favourable for a certain issue simultaneously, and through the active aid by policy, entrepreneurs make a substantial agenda leap (either onto the agenda or towards a decision). Windows are thus opened in the problem stream and/or in the policy stream, and actors in the policy stream seize those opportunities to open windows and/or make them productive.

Triggers for windows are often different kinds of contingencies, such as focusing events (such as disasters) or political alterations (e.g., turnover of central figures; see Kingdon, 1984). Policy entrepreneurs reside in the policy stream, waiting for problems—or political windows to open. While waiting, policy entrepreneurs work on different angles of preparation. One such activity is to cast light on the problem at hand, as Kingdon argues that it is beneficial if the policy issue is not completely new to policymakers when the window opens. Another activity is to prepare different kinds of alternatives and solutions that may be presented to policymakers at the right time and to familiarise policymakers with the alternatives beforehand through an exercise of "softening up" (Kingdon, 1984).

Something should be said regarding agendas and outcomes when adjusting the MSF to fit with international policymaking. First, this article uses §14f of the CAF as the outcome of the period in focus here. Even though the traditional outcome of merging streams and a window of opportunity would be a solution or political decision (not a symbolic recognition or a statement of intention), I argue that, in this context, it can indeed be considered an important outcome for the following reasons. To begin with, the foundation of Kingdon's study is to consider "not how issues are authoritatively decided by the president, Congress, or other decision-makers, but rather how they came to be issues in the first place" (Kingdon, 2011, p. 2). This implies that while formal decisions are often used as outcomes in MSF analysis, other outcomes could be of interest and still capture the essence of the approach. In addition, Kingdon makes a distinction between the governmental agenda and the decision agenda. The governmental agenda is the more general list of policy items under political discussion and consideration, while the decision agenda represents the issues that have come so far so that they become subject to decisive political decisions. In a global governance context, thinking in terms of a governmental agenda is more useful as binding decisions are not as common (as statements of intent or soft law) in the international as in the national arena. Therefore, it is reasonable to sometimes regard declarations of intention (such as §14f of the CAF) as outcomes of windows of opportunity when applying the MSF to international politics, not least when such a declaration or recognition represents a groundbreaking point for future developments (as I have argued in this article).

Against the backdrop of the analytical framework, the next section takes on the empirical analysis.

3. Confluent Streams in Climate-Induced Migration Politics

This study draws from a rich primary material where the principal material consists of in-depth interviews with 23 practitioners and five academics. The interview material was assumed to be essential as the underlying values, strategies, conditions, and structures, as well as their interrelations, were sought after—aspects which are rarely done justice in official documents (Blaikie, 2010). For instance, the interviews explained the interrelations between different policy entrepreneurs, they gave information about informal conversations and motivations, and they described the policy entrepreneurs' feelings towards a variety of events and developments.

Twelve of the interviewed practitioners and four of the academics were directly and centrally involved in the developments in 2007–2010 and active at the UN Refugee Agency (UNHCR), the IOM, the Office of the High Commissioner for Human Rights (OHCHR), the International Federation of the Red Cross (IFRC), the World Bank, CARE international, or the Norwegian Refugee Council (NRC) during that period. The remaining seven interview objects are also representatives of academia and different organisations, both the organisations already mentioned but also the European Commission, the Internal Displacement Monitoring Center, the Nansen Initiative, and the Platform for Disaster Displacement. These persons are either currently working on issues of climate-induced migration, have done so in the past decade, or have exceptional insight, for various reasons, into the general policy developments at large but were not part of the core group of individuals in 2007–2010.

The interviews were conducted between 2016 and 2021 and were approximately one hour long. They revolved around key questions such as:

- Do you perceive this period in time as pivotal to policy discussions on climate-induced migration? Why or why not?
- If yes, what were the underlying reasons for this?
- How would you describe the developments from this time?
- What were your strategies and objectives in your role at the time?

Against this backdrop, the interviewees were encouraged to speak freely about their experiences, memories, and personal conjectures. The interviews were transcribed and then categorised and analysed according to the analytical categories of the MSF and in line with a qualitative text analysis (Ritchie et al., 2014). The account below is intended to give justice to the material as a whole, but some representative quotes have been chosen for illustration.

The next four sections apply the MSF to the policy issue of climate-induced migration between 2007 and 2010. It considers the three streams and argues that there was a window of opportunity which helped climate-induced migration gain formal recognition on the policy agenda. Space constraints hinder a full account of the historical developments on climate-induced migration policy—and conceptual discussions. However, extensive reviews can be found elsewhere (see, for example, Castles, 2002; McAdam, 2012b; Piguet et al., 2011).

3.1. The Problem Stream

As already stated, environment and climate have always determined where humans can make a living. As such, it is a condition rather than a problem. In the 1980s and 1990s, this started to be interpreted as a problem, primarily by academics but also by UN agencies such as the UNEP (El-Hinnawi, 1985). The underlying mechanism that increased the problematic aspect of this was the accelerating impacts of global warming on the global climate and the general awareness of climate change, which was expected to affect human mobility much more drastically than before.

In 2007–2010, climate-induced migration was conceived as problematic in at least three different ways. First, projections of "invasions" of climate refugees to the Global North was considered a potential security problem for states (WBGU, 2007). Second, it was a problem for the vulnerable people and affected societies (Swing, 2008). Third, actors soon realised that if climate change were to displace people across international borders, they would essentially find themselves in a legal void in terms of protection as they would not be covered by the Refugee Convention or similar frameworks (Biermann & Boas, 2008).

A number of indicators highlighted the problematic aspects of climate-induced migration in the first two decades following its recognition. It was partly about increased understanding about the severity of the future potential impact of climate change on migration, but also about actual displacement events such as Hurricane Mitch in 1998 or Hurricane Katrina in 2005, which both displaced thousands (Kromm & Sturgis, 2008; Westhoff et al., 2008). However, none of these indicators gave the problem the boost in salience needed to push it onto the agenda.

However, in 2007 and just before that, the interviews point to a number of events that significantly altered the problem stream. One such event was the 2004 Indian earthquake and tsunami, which illustrated, both to policymakers and the public, the human suffering and material destruction caused by natural disasters. The tsunami had different practitioners and organisations turn their gaze toward issues of disasters and displacement (interview from 9 February 2021; Goodwin-Gill & McAdam, 2017).

Another circumstance that the interview material frequently highlighted was the IPCC fourth assessment report released in 2007, in which the IPCC highlighted migration as one of the most important consequences of climate change (IPCC, 2007). This was a significant acknowledgement as this report constituted the most comprehensive assessment of scientific knowledge on climate change there was at that point (Hulme, 2009). Yvo de Boer, then the executive secretary of the UNFCCC, held a press briefing in April 2007 (on the occasion of the launch of the report) where he particularly pointed to the "potential danger" posed by climate change if it were to trigger worldwide migration (UNFCCC, 2007b).

This was far from the only link made between state security and the (constructed) threat of climate migrants. Security linkages to climate-induced migration were present already in the 1990s through the "alarmist" (see above) strand of the climate migration debate. Myers (1997, p. 181), possibly the most prominent alarmist, argued that "environmental refugees could become one of the foremost human crises of our times" and that it could lead to turmoil, confrontation, conflict, and violence. However, the securitisation of climate-induced migration rocketed in 2007 when a number of reports feared a climate change-driven migration crisis that would "spiral out of control" (Christian Aid, 2007, p. 1), pose a "key threat" to international stability and security (WBGU, 2007, p. 11), and trigger migration at an "unprecedented scale" (UNSC, 2007; for discourse analyses of the apocalyptic notions of "climate refugees" see also Bettini, 2013; Methmann & Oels, 2015).

It should be noted here that these "threat images" were framed by a general boost in a security focus on climate change and a securitisation of the same, not least within the UN system (Kurtz, 2012; Mobjörk et al., 2016). For instance, in 2007, the UN Security Council (UNSC) held a debate where it properly considered climate security for the first time, and in 2009, climate change was branded a security issue by a UN General Assembly resolution (Born, 2017; UNSC, 2007).

The above examples all point to how indicators and focusing events contributed to the construction of a policy problem out of the condition that climate-induced migration and displacement constitutes. While this condition had been known for decades already, these events contributed to many more actors viewing this as a policy problem. The next section looks closely at the policy stream, policy communities, and entrepreneurs, as well as how different ideas regarding climate-induced migration evolve and combine into different types of policy issues with different kinds of alternatives and possible solutions.

3.2. The Policy Stream

One of the most significant happenings in the policy stream in 2007–2010 was forming a more distinct policy community regarding climate-induced displacement. These actors did not primarily represent security actors or organisations but humanitarian (e.g., IOM, UNHCR, NRC, OHCHR, CARE and IFRC), economic (e.g., World Bank), or academic actors (e.g., UN University).

Most of these organisations were not new to assisting migrants or persons struck by disaster, and some argue that they have had their eyes on environmental migration since at least the 1990s (interview from 31 March 2021; Goodwin-Gill & McAdam, 2017; Ionesco & Traore Chazalnoël, 2015). Nevertheless, all witnessed how this point in time brought salience to this issue on a completely new level, even for them. Most importantly, step by step, they found each other and started forming an advocacy community around climate-induced migration, which, in essence, remains to this day.

Gemenne (2011) and Warner (2011) have previously described how humanitarian actors during this time constructed the policy problem in terms of "the human face of climate change." The interview material aligns with the notion that bringing the human perspective into the climate change debate was a key objective as well as a potential niche for policy entrepreneurs. It was a general position in the policy community at the time that the debate needed a shift in focus from coral reefs and glaciers to human beings and to emphasise that that impact will lead to displacement and migration (interview from 8 March 2021). Interviewed 5 February 2021, one of the initiators of the Inter-Agency Standing Committee (IASC) sub-group said: "I mean, polar bears were the face of climate change, not people. We had a battleground to win, and that got us through."

The interviews also show several examples of how actors were worried about the security framing of climate-induced migration and thus wanted to steer the framing toward adaptation and humanitarian concerns rather than frames of threat issues to the west (interview from 5 February 2021). Nonetheless, however problematic, a security and threat-related framing strongly helped in getting policymakers' attention. As one interviewee put it: "These horror stories of an invasion have not been good, but it is alarmist enough, it gets people thinking" (interview from 26 February 2021).

An important part of forming a coordinated policy community on climate-induced migration was the establishment of an IASC task force on climate change with a sub-group focused on climate change migration and displacement. The group was created in 2008 and contained a number of humanitarian organisations, including IFRC, IOM, and UNHCR (Hall, 2016a). Members of this group described how they "began to run" with this issue once the IASC sub-group was established and how they quickly chose to go with promoting it as an adaptation issue (interviews from 5 February and 8 March 2021). While the IASC sub-group was central to the policy community on climate-induced migration at this time, involved policy entrepreneurs also connected through other networks, not least in conferences and research projects (Stal & Warner, 2009). The entrepreneurial efforts depended somewhat on the position and background of the actor but included lobbying, socialising with stakeholders, writing submissions, organising side events, and providing an empirical basis.

The material shows that the advocacy activities during this period were focused on "softening up" policymakers regarding issues on climate-induced migration in order to have a future more formal recognition. Advocates also worked on combining ideas about the human implications of climate change and adaptation into ideas and alternatives regarding migration and mobility. Security notions were indeed present and brought attention and salience to the issue, particularly to politicians and the public. The wider climate security discourse is usually described as consisting of two separate strands, one focusing on the security implications for states and the other for humans (Mobjörk et al., 2016), a pattern that this case clearly mirrors. However, the interviews suggest that it was not primarily the state security framing, but rather the human security framing with an adaptation focus, that made policy entrepreneurs pursue issues of climate-induced migration in the UNFCCC and accomplish the inclusion of §14f of the CAF. In this case, state security threat tactics offered some useful indicators and, in fact, imagined future focusing events (the feared invasion of "climate refugees"). In contrast, the human security narrative offered more feasible alternatives, greater value acceptability, and was also connected to something that was already underway—adaptation to climate change.

3.3. The Political Stream

This section moves on to the last stream, looking at elements such as public mood and key persons in the political administration (Kingdon, 1984).

The general change in mood regarding climate change significantly shifted in the public—as well as the political—sphere at this time. This was signalled, for example, by the status of the UNFCCC COPs. While

those had previously been relatively small events suffering from constantly changing delegations with limited interest in climate change issues, COPs grew substantially, and delegations became more professional and goal-oriented (interview from 24 February 2021). As we have seen policy entrepreneurs describe in the previous section, this was also a time when the climate change debate shifted its focus from nearly exclusively being about mitigation to also including, even emphasising, adaptation (interview from 5 February 2021). This shift became evident with the 2007 Bali Action Plan (adopted at COP13), which for the first time equally concerned mitigation and adaptation (Hall, 2016a; UNFCCC, 2007a).

Interviews also mentioned the Al Gore film *An Inconvenient Truth* from 2006 as well as the change in US administration in 2009 with Barack Obama taking office as majorly important external conditions that switched the public and political approach to climate change into something substantially more serious than before. The framing of climate-induced migration as a climate change issue in general, and an adaptation issue in particular, made the issue a much better "fit" with the public and political mood.

In addition to the change in mood, new leadership had recently come to the UNHCR with High Commissioner Antonio Guterres. In 2007, Guterres (2007) said that "the picture is very worrying" considering impacts of climate change on displacement. In 2009, he said:

> I am often asked to comment on doomsday predictions of waves of so-called "climate refugees" crashing upon the shores of the rich world. To this, I am saying: fear and speculation can only blur our vision and skew our response, which must be responsible and solidary. (Guterres, 2009)

Guterres was not directly part of the community of advocates, but he clearly had climate-induced migration as part of his personal agenda for UNHCR. He was inspired by Al Gore's film and by the idea of climate change as a "megatrend." In light of this idea, there was also an objective from Guterres to secure UNHCR's place as the dominant actor in the field of displacement, and an outstanding humanitarian agency, not least in relation to IOM. Guterres' statements on climate-induced migration set a tone in the debate and his efforts and visions guided a lot of UNHCR's work and view on climate-induced migration in those years (interviews from 3, 9, 15, 16 February and 8 and 22 March 2021; Goodwin-Gill & McAdam, 2017; Hall, 2016b).

Having made an assessment of happenings in the three streams, the next section looks at the combined effects of the developments.

3.4. A Window of Opportunity

In 2007, the nature of discussions on climate-induced migration very swiftly changed, and the political audience suddenly became "very receptive" (interview from 24 February 2021). Interviewed 8 March 2021, one practitioner stated that "it was like suddenly we put the foot on the accelerator and that's what set the stage so beautifully for Cancún."

At this time, a policy window opened for agenda advancement for climate-induced migration. Security connections and threat tactics boosted the issue in the policy stream, making it a security policy problem gaining attention from a broader public and political audience. At the same time, things simultaneously changed in the political sphere, with climate change at large gaining a significantly higher status, triggered by events such as Al Gore's film, more devoted and serious UNFCCC conferences, and a devoted high commissioner for refugees. In the same year, the Bali Action Plan signalled a shift in the climate change discussion from mitigation to adaptation, with adaptation taking (at least) an equally important part.

In the policy stream, a partly new policy community quickly formed in order to seize the opened window and push for a formal recognition of climate-induced migration in global governance—particularly in the UNFCCC context. Given that the main policy entrepreneurs were from humanitarian organisations, they were not particularly fond of the state security—and threat-related framing but rather wanted to push the human security angles. Not least because they saw an opportunity and a feasible way forward as that framing linked with the increased adaptation and risk management focus of the UN climate change negotiations. Several interviewees described how they knew that an adaptation framework was coming up for negotiation in the UNFCCC context and that they saw this as an entry point to try to push the issue.

I argue here that without all the components mentioned above happening simultaneously, it would have been much less likely that climate-induced migration would have had such a boost on the international policy agenda in 2007–2010 or that it would have gained formal recognition in the CAF. First, there were successful framings in both state security and human security connections, which gained traction. Second, the public and political spheres were receptive, partly because of the increased interest in climate change. Third, key individuals such as Antonio Guterres lent dignity to the arguments. Fourth, a coordinated humanitarian and academic group of policy entrepreneurs did the groundwork of "softening up" policymakers, providing an empirical basis, and preparing alternatives. Most importantly, the policy entrepreneurs seized the opportune moment that presented itself. All of these factors were intertwined, simultaneous and created joint effects at a particular period in time.

Having argued that this approach offers a plausible explanation for why the policy push regarding climate-induced migration happened at this specific point in time, the conclusions offer suggestions for why it did

not happen earlier. For instance, security framings of climate-induced migration had already been made in the 1990s (see, for example, Myers, 1997), and several big natural disasters such as Hurricane Mitch in Central America in 1998 displaced thousands of people (Westhoff et al., 2008). However, the public and political interest in climate change were not strong enough, and policy entrepreneurs were too few and uncoordinated.

4. Conclusions

In this study, I have argued that climate-induced migration had its formal recognition on the global governance agenda due to a successfully used window of opportunity. The assessment shows how there were joint effects from problem definition, the policy community, framing, and key persons, which resulted in a substantial agenda leap for this issue in 2007–2010.

The conjunctures generated here ties back to other prominent works within this debate in different ways, and for the most part, this study complements rather than contradicts previous findings. For instance, this study gives some theoretical framing to the already extremely detailed accounts of the UNFCCC developments during these years made by Warner (2011). Moreover, the findings align with Hall's description of the policy community (i.e., the humanitarian community) as exceptionally well-coordinated at the time (Hall, 2016a) and how some actors attempted to expand their mandates to do so (Hall, 2016b). This article puts these findings in a wider, more contingency-based context and uses them for a somewhat different explanatory aim.

On a different note, the tension between different security-related narratives on climate-induced migration is also explored in Bettini et al. (2016). As does this study, the authors notice how a conceptual shift from "climate refugees" (which tend to be more state security-related) to "climate migration" (which is more adaptation- and human security-related) have taken place. But where this study emphasises how policy entrepreneurs have used this shift for policy advancements, Bettini et al. (2016) raise concerns regarding how the shift risks making issues of climate justice invisible.

A direct compliment to the existing research is made between this article and the work of Nash (2018). Instead of using §14f of the CAF as an endpoint, as I have done here, Nash uses it as a starting point and follows the policy developments, especially within the UNFCCC, up until the Paris Agreement in 2015. So, where Nash shows how Cancún cemented climate-induced migration in the UNFCCC setting and the importance of this venue for the subsequent policy developments, this study explains the mechanisms through which §14f materialised in the first place. Furthermore, where this study illustrates the formation of a group of policy entrepreneurs from different organisations, how they started to become aware of the issue of climate-induced migration and lobbied for its inclusion in the CAF, Nash underscores how this group ramped up their work after 2010 and continued to push for policy developments towards COP21 in Paris.

The benefit of employing the MSF in this study is that it explains why this agenda leap came at this particular point in time even though climate-induced migration as a phenomenon and possible policy problem had been known in global governance and academia since at least the mid-80s. Moreover, the MSF allows for the consideration of both structural and agency-based factors. While there are still to this day no international viable and comprehensive solutions or plans to address climate-induced migration, §14f of the CAF (which is defined as the central outcome of this window) has been a landmark for later institutional, political, and conceptual developments on the issue.

In addition, this study illustrates interesting and specific points on the use of the climate security concept as such. We have seen that the issue of climate-induced migration is related to the climate security debate through two somewhat contradictory security narratives on climate-induced migration. One which foresaw a threat to international security in the potentially massive waves of migrants. Another focused on the security of the displaced, describing the vulnerable climate-induced migrants as "the human face of climate change." In sum, this article shows that the first state-security narrative connected the streams and opened a window, while the other human-security narrative made the issue of climate-induced migration find its way forward in the policy primeval soup to a clear place on the policy agenda.

Future research could continue to develop and adapt the MSF for international relations and global governance and to further explore the importance of framing in this context. For practitioners, this conclusion implies that framing matters for policy advancement and that policy entrepreneurs should be attentive to when problem, policy, and politics may merge and how they can make use of the potential windows of opportunity that may open.

Acknowledgments

The author would like to thank the three anonymous reviewers for their insightful comments, which helped improve the article substantially.

Conflict of Interests

The author declares no conflict of interest.

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Politics and Governance (ISSN: 2183–2463)
2021, Volume 9, Issue 4, Pages 27–42
https://doi.org/10.17645/pag.v9i4.4457

Article

Strengthening External Emergency Assistance for Managing Extreme Events, Systemic, and Transboundary Risks in Asia

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Submitted: 30 April 2021 | Accepted: 18 August 2021 | Published: 22 October 2021

Abstract
External emergency assistance (EEA) provided in the aftermath of a disaster has costs and benefits to the donor and recipient countries. Donors benefit from quick recovery feedback effects from the trade and cultural links, and recipient countries have additional resources to manage the emergency. However, EEA costs could outweigh the benefits. Costs include dependency, low development of risk reduction capacity, and staff burdened with managing the assistance as opposed to managing the recovery. Current efforts to reduce dependency on EEA are not sufficient; they are based on limited past experiences with extreme events and are not based on the understanding of future risks. In this article, we present the concept of a climate fragility risk index showing factors that affect a country's predisposition to be fragile to climate change threats and we suggest that countries with a high climate fragility risk index tend to depend on EEA. Further, the article presents the concept of critical thresholds for extreme events as a metric to identify possible dependency on EEA. In addition, based on expert and policy consultations organized in the Philippines and Pakistan, we identify measures that can enhance the effectiveness of EEA including targeted EEA provision, better integration of lessons learned from the relief stage into the rest of the DRR operations, proper documentation of past assistance experiences and consideration of these lessons for the improvement of EEA in the future, as well as developing tools such as critical threshold concepts that can better guide the donor and recipient countries on more effective delivery of EEA.

Keywords
climate change adaptation; climate security; disaster risk reduction; external emergency assistance; extreme events

Issue
This article is part of the issue "Climate Change and Security" edited by Yasuko Kameyama (National Institute for Environmental Studies, Japan) and Yukari Takamura (University of Tokyo, Japan).

1. Introduction

Climate change can exacerbate extreme weather events, putting severe stress on the disaster risk management capacity of affected countries (IPCC, 2012). Such countries may require more external emergency assistance (EEA), especially those with seriously impaired capacity to manage disasters. This can then put an additional burden on the national budgets of EEA donor countries.

As a result, there is an emergent view that the EEA has costs and benefits for both the donor and recipient countries, and that such assistance can have climate security implications. However, there has not been much research on identifying specific climate security implications of increased EEA needs, and how best the EEA can be managed in such a way that both the donor and recipient countries can maximize their climate security. This necessitates a revisit of the EEA in terms of climate

security. Viewing the issues associated with extreme events and EEA through the lens of climate security can help us to move away from a short-term thinking paradigm towards long-term thinking, with an emphasis on risk communication and risk mitigation.

EEA has significant implications for both the recipient and donor countries. EEA, if not designed well, may cause recipient countries to become dependent on such assistance. Conversely, EEA is an economic cost to the donor countries, and it is a lost economic opportunity that the donor country could have invested elsewhere with better outcomes for its people. Hence, improving the EEA is beneficial to both donor and recipient countries.

Keeping the above background in view, this article explores the possibilities for enhancing the effectiveness of EEA received by countries affected by extreme weather events. Towards this objective, the article explores the linkage between the climate fragility of a country and the development status of that country, by developing a climate fragility risk index (CFRI). Further, the article presents a critical threshold idea for the delivery of EEA to the countries affected by extreme weather events. Based on a set of stakeholder workshops organized in the Philippines and Pakistan, the article goes on to present various means for strengthening the long-term risk reduction learning from EEA experiences of recipient and donor countries.

2. Current Status of External Emergency Assistance

Every year, millions of dollars are being spent on EEA. Between 2000 and 2019, Asian countries received emergency assistance to the tune of $100 billion (UN Office for the Coordination of Humanitarian Affairs [UN OCHA], 2021). In addition to financial resources, countries are also employing their military to deliver disaster relief related services. A survey conducted by the American Security Project (2012) indicates that militaries in more than 70% of countries around the world have humanitarian assistance and relief as a critical mission. The role of the military in disaster assistance may increase in the future, putting such personnel in high demand and possibly escalating the cost of humanitarian assistance due to military deployment.

The figures reported in terms of EEA often do not reflect the time and resources spent by the donor countries in delivering assistance to an endpoint. These resources include the time spent by the ministries and relevant government agencies in deliberating and designing the assistance, and in deploying the assistance in the field.

One of the means of reducing dependency on EEA is to strengthen disaster risk reduction (DRR). It is expected that DRR will provide climate security benefits mainly through contributing to resilience to shocks, and by positively affecting the physical, environmental, social, and economic assets that communities depend upon for their well-being. Relief and rehabilitation are important areas of DRR and have been traditional areas of operation for governments for centuries. As a result, governments have made significant progress in perfecting relief operations in the aftermath of natural disasters, especially for "normal" events (those that are within the experience domain of local stakeholders).

However, extreme events, such as those with a return period of 50 or 100 years or more, are still a challenge for governments especially when they occur at a place and time that is least expected. This is largely due to a lack of experience and expertise in dealing with extreme events, and a lack of capacity, especially at the local level. As a result, many governments require external support for rescue and relief in the short term and for reconstruction and rehabilitation in the long term.

2.1. Current Status of External Emergency Assistance: A Case of Japan

Japan contributes a significant amount of EEA to countries affected by severe disasters. Currently, a major proportion of Japan's EEA is allocated to address emergencies emanating from climatic hazards such as floods and typhoons which are also likely to be influenced by climate change in the future (Figure 1).

Climate change projections indicate that losses associated with cyclones will increase, there is likely to be an increase in the average maximum wind speed of cyclones, and flood losses in many locations will increase in the future (high agreement; IPCC, 2012). This indicates the possibility that developed countries like Japan may have to allocate more resources for EEA if the capacity of vulnerable countries is not significantly improved in the future. This could have climate security implications for both donor and recipient countries.

As such, Japan's climate security is affected by a set of complex factors. For example, one of the major sources of climate threat to Japan is related to its food imports. Japan imports more freshwater than the water withdrawn within its borders and saves nearly 20 km^3 of water by importing food. Climate change impacts in exporting countries will result in food and water insecurity for Japan (Inuzuka et al., 2008).

Disasters elsewhere can have a significant impact on Japan's economy. For example, the Bangkok floods of 2011 caused a total estimated loss of $47 billion, with 90% of the losses accrued by Japanese companies and related investments (Prabhakar & Shaw, 2020). This indicates how the impacts of extreme weather events are increasingly becoming transboundary.

Japan invests significantly in developing countries that are highly vulnerable to natural hazards and related losses. Japan's foreign direct investment outflows to Asian countries have been increasing over the past decade. Foreign direct investment has increased especially in Thailand after a brief decline following the 2011 floods. Japanese companies are projected to increase

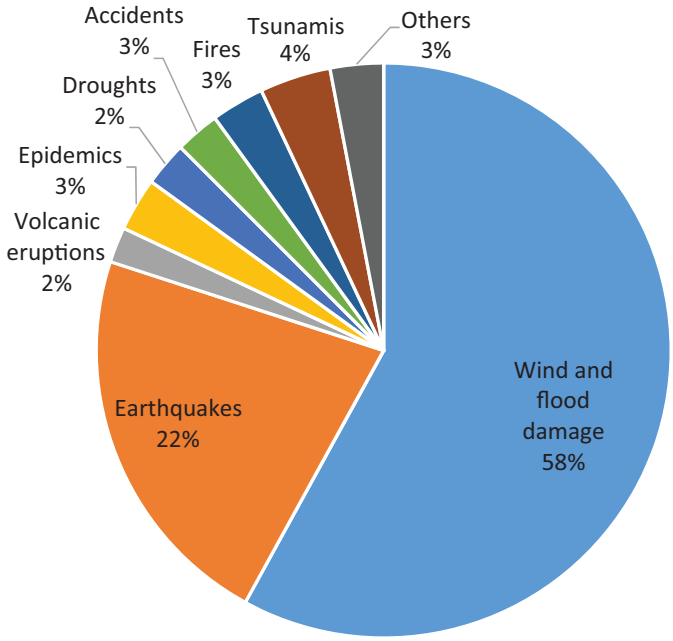

Figure 1. The proportion of EEA provided by Japan by type of events. Source: Japan International Cooperation Agency (JICA, 2017b).

investments in ASEAN (Association of Southeast Asian Nations) and China (JETRO, 2018). This signifies the need for Japan to reconsider and redesign its EEA strategy, thereby maximizing its climate security as well as that of recipient countries.

Japan's first experience with EEA was to respond to the Cambodian refugee crisis in 1979. This issue made the Japanese government realize the necessity of building capacity to send EEA to countries that needed assistance (Kawakami et al., 2014). Following the establishment of the Japan Medical Team for Disaster Relief in 1982, Japan enacted the Law Concerning Dispatch of the Japan Disaster Relief Team (JDR law) in 1987, which expanded the limited scope of Japan's EEA to include medical teams to deal with various significant disasters in general (Ministry of Foreign Affairs [MOFA], 2017). When Japan enacted the Act on Cooperation with UN Peacekeeping Operations and Other Operations in 1992, which deals with conflict-related issues, the area covered by the JDR law was further specified to include natural hazards and human-induced disasters (Nakauchi, 2011). Japan's efforts on EEA consist of three pillars: personnel contribution, in-kind contribution, and financial contribution (MOFA, 2021). Japan International Cooperation Agency (JICA) is in charge of the operation of two of the pillars: (1) personnel contribution, namely dispatching the Japan Disaster Relief Team, and (2) in-kind contribution, namely provision of emergency relief goods. The other pillar, financial contribution, is operated by the Ministry of Foreign Affairs (MOFA), either bilaterally or multilaterally. In the event of a large-scale disaster, Japan provides EEA based upon a request from the government of the country affected (JICA, 2017a).

Focusing on personnel contribution, Japan's EEA consists of five categories: (1) search and rescue team, (2) medical team, (3) infectious diseases response team, (4) expert team, and (5) self-defense force unit (JICA, 2020). Since the implementation of the JDR law in 1987, as of July 2021, a total of 160 teams have been dispatched to 48 countries and regions. Historically, Japan has developed its institutional framework for EEA to meet the needs of countries that have been hit by natural disasters promptly and effectively. There are two major developments worth highlighting concerning operations and the institutional structure of personnel contribution. First was the experience of EEA responding to an earthquake disaster in Central Java, the Republic of Indonesia in 2006. This marked the first time that Japan's EEA included a team to support not just emergency assistance, but also the post-disaster recovery phase (MOFA, 2006). The team reviewed the situation and developed plans for early recovery, thereby making assistance and recovery a seamless, holistic project. Second, in response to the Ebola outbreak in 2015, the newest team out of the five categories, namely the infectious diseases response team, was established (MOFA, 2016). Through operations over 30 years, Japan's EEA has improved in many respects, especially in terms of its effectiveness and flexibility. The other key achievement is its international recognition. In 2010, the search and rescue team was classified as "heavy" by INSARAG (International Search and Rescue Advisory Group) External Classification, which is the highest classification (JICA, 2017a).

While Japan has a significant record of operations since the formal inception of EEA in 1987, there are

only limited academic reviews that analyze the effectiveness, advantages, or shortcomings of this assistance. This article is an effort to fill this gap, aiming to make the function of EEA more effective, especially with regard to DRR and future risks. Generally speaking, the majority of the reviews and evaluations of Japan's EEA discuss how to strengthen the activities of the Japan Disaster Relief Team, given the legal and institutional framework. There has been research on how to realize effective management of Japan's self-defense force for EEA (Kiba & Yasutomi, 2014). Issues surrounding the legal or institutional frameworks are also related to the effectiveness of EEA. A typical example is the case of Haiti in 2010. The recipient government was slow to issue a demand for assistance, resulting in a delay in dispatching Japan's Disaster Relief Team. Consequently, there was a discussion on how strictly Japan should adhere to the principle that, as stipulated in JDR law, the country can only dispatch EEA after it receives a request for assistance (Kamata, 2012). Other issues include how to realize efficient logistics or better coordination with the recipient and other donor organizations, and how to manage the health of disaster relief workers (Nakauchi, 2011; Noguchi et al., 2018). Moreover, JICA's review of its own dispatch experience and its research projects to strengthen the activities of EEA are more focused on the efficiency of its operations.

In light of the review of the historical development of Japan's EEA and related literature, there are two areas where significant improvements can be expected in terms of policies and operations for EEA. First, there is a lack of clarity on how to effectively situate EEA in the overall framework of JICA's policy on official development assistance (ODA) which aims to mainstream disarmament, demobilization, and reintegration (DDR) in development or in MOFA's policy on humanitarian aid in general. While JICA's policy on DRR has been in place since 2006 and aims at mainstreaming DRR in development (JICA, 2017b), it is not clear whether this overall framework applies to EEA operations in any sense. A review of reports by JICA for the historical timeline of dispatches of EEA shows that there has been no such consideration of either short-term or long-term perspectives. Similarly, MOFA's policy provides an overall framework for Japan's humanitarian aid policy (MOFA, 2011). After pointing out that human security constitutes the overarching challenge for humanitarian assistance, the MOFA policy discusses the diversification of humanitarian crises. The document encompasses not only natural and human-induced disasters but also includes conflicts and provides general five policy responses: (1) assistance to refugees and internally displaced persons, (2) smooth transition from emergency assistance to early reconstruction and development assistance, (3) response to natural disasters, (4) security of humanitarian aid workers, and (5) civil-military coordination. Concerning natural disasters, the policy underlines that Japan provides wide-ranging support to enhance the capacity of developing countries in their efforts on disaster reduction.

Second, with the recent movement toward aligning DDR and climate change adaptation, the current discussions on EEA lack perspective on covering long-term disaster risk management. A recent study points out that although preparedness is a key factor in DRR, a substantive amount of ODA has been used for EEA, indicating the disconnection between EEA and long-term disaster risk management (Shimano et al., 2016). This aspect of financial issues between overall DRR policies and EEA has been the topic of discussions on development studies concerning ODA in general (Raschky & Schwindt, 2012; Thérien & Lloyd, 2000). Beyond the issue of finance, there are significant limitations on establishing a framework for long-term disaster risk management, keeping EEA within the scope of other ODA policies on DDR and climate change adaptation. This issue is reflected in the assessment of the EEA strategy for individual cases.

2.2. Climate Security, Fragility, and External Emergency Assistance

To improve the efficacy of various forms of EEA that Japan and other donor countries provide, it is important to assess their effectiveness in both the short and long term. From the short-term point of view, this type of assistance should reach those in need in a timely manner so as to safeguard the life, health, and dignity of the affected people. Further, short-term positive impacts could lead to a long-term engagement between the recipient and donor countries to ensure positive, long-term risk reduction. In addition, such engagements may also spill over into feedback for Japan itself in terms of a positive impact on its economy and people. Hence, such assistance can lead to the long-term outcome of engagements facilitated by short-term opportunities created by extreme events. Here, the concept of climate security and fragility comes in handy when looking at EEA through a new lens, as these concepts provide a long-term perspective on the sustainability of assistance interventions.

Security refers to the political, institutional, and social environment where individuals, societies, and countries have the freedom to decide their current and future wellbeing. Climate security denotes the threats posed by climate change to various aspects of human security (Prabhakar & Shaw, 2021). It has become evident that climate security is an important issue for both recipient and donor countries. Due to the inclusive nature of what defines climate security, discussions on climate change have been able to expand beyond traditional notions of specific areas such as food and energy security, to encompass a much more holistic meaning.

Climate security can be seen both as a framework that guides policy interventions and institutions, and as an outcome of policies and institutional actions (Figure 2). As can be seen from Figure 2, as a guiding framework for policies, climate security enables integrated response

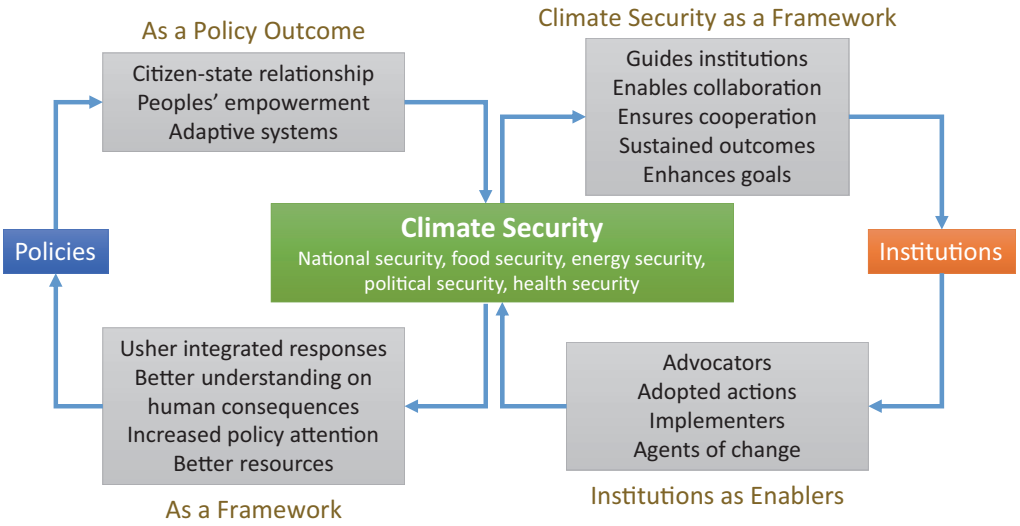

Figure 2. Climate security as a policy outcome and as a framework that guides policies and institutions. Source: Based on Prabhakar and Shaw (2021).

by various actors, helps provide a better understanding of the human consequences of climate change, resulting in better policy attention, and enables dedicated delivery of resources to the causes of climate change. On the other hand, as a policy outcome, climate security bonds together the citizen–state relationship, thus empowering stakeholders and helping to build adaptive systems. Similarly, as a guiding framework for institutions, climate security enables institutions to collaborate, ensures cooperation, sustains the outcome of institutional actions including through collaboration and cooperation, and helps motivate institutional goals and ambitions to strive for better outcomes. These positive impacts on institutions turns them into agents of change with positive overall climate security outcomes in society.

Climate security can manifest in a variety of ways depending on a country's disposition. It is also becoming apparent that climate security is highly interdependent in an increasingly integrated world. Consequently, Japan's climate security can be understood as a function of all the internal and external stresses resulting from climatic events.

Climate fragility has been defined as:

> The state of the country's capacity, legitimacy and authority level of the country's government wherein the state is not in a position to offer basic governance functions, lacks ability to develop a mutually constructive relationship with the society and lacks ability to provide basic security to its citizens and institutions. (Prabhakar & Shaw, 2019, p. 4; see also Ruttinger et al., 2015)

State fragility can be affected by many factors and it has been realized that climate change can act as a threat multiplier for state fragility. Factors such as food price fluctuations, migration and internal displacement, extreme weather events, and unintended impacts of policies can exacerbate state fragility (Prabhakar et al., 2017; Ruttinger et al., 2015). This close connection between climate security and state fragility affects the ability of countries to address the consequences of extreme disasters. For this reason, there is a need to look into the relationship between state fragility and the ability of countries to provide disaster assistance.

Given the above viewpoint, our hypothesis is that the climate fragility risk of countries can provide a good reflection of a country's dependency on EEA. This means that countries that have high climate fragility are characterized by low climate security and high dependency on EEA. Countries with high climate fragility may fail to make maximum use of the EEA they receive as their governance systems are not able to carry out proper EEA management.

3. Methodology

3.1. Development of Climate Fragility Risk Index

In this article, CFRI was developed as a means of quantifying the climate fragility of countries. CFRI is a unitless index, developed using indicators that directly affect the fragility of states and institutions. The index shows the relative climate fragility of countries. The purpose of CFRI is also to see if state fragility has any impact on the state's ability to provide effective relief assistance to affected people.

At this point, it is important to understand the difference between CFRI and various other risk indices that have been presented prominently in the existing literature. These include, but are not limited to, the Global Climate Risk Index (GCRI) of Germanwatch (Germanwatch, 2021), UNEP's Disaster Risk Index (DRI; UNEP, 2003), and more prominently the Notre Dame Global Adaptation Index (ND-GAIN; Chen et al., 2015). Although there are some overlaps among these indices, the purpose and output of these indices are different and

have been adopted to varying degrees. Table 1 captures some characteristics of these indices. The final column identifies whether these indices can provide an understanding of the fragility condition of states (which is the purpose of CFRI).

Based upon the realization that the available indices do not adequately provide an understanding of the fragility of a country or an administrative region, a need was identified to develop a CFRI. The conceptual framework (see Figure 3) for developing this index is derived from Prabhakar and Shaw (2019), Prabhakar et al. (2017), and Ruttinger et al. (2015). These studies identified various underlying factors of climate fragility risks such as hazards, migration, food prices, policy and governance, and resource scarcity. The risk-compounding conceptual framework suggests that the capacity of the state and civil society to address risks is negatively affected by a set of climate fragility risks that vary from context to context. These fragility risks tend to be compounded due to the interlinkages that operate among the underlying factors of these risks. The compounding of risks diminishes the capacity of the state to provide necessary services, and further exacerbates the climate change impacts over time if the underlying fragility risks are not addressed and mitigated. With every iteration of this cycle, one can observe a risk magnification as the available capacity is insufficient to mitigate risks in each cycle. For states to reduce climate risks, they need to reverse this cycle by working on the capacity of the state and civil society, and by addressing the underlying factors and decoupling linkages between them so that the compound fragility risks can be mitigated.

A literature review was conducted to identify appropriate indicators for inclusion in the CFRI. Further, these

Table 1. Some prominent risk indices available in existing literature and their ability to assess the fragility nature of states.

Risk index	Characteristic	Applicability to fragility status
GCRI	An index was developed based on the number of deaths, deaths per 100,000 population, economic losses, and loss per unit GDP. The index is based on the actual disaster impacts in a particular year. Received prominence.	Doesn't indicate if the state became fragile, doesn't include any policy and governance-related indicators.
DRI	Unlike GCRI, DRI is robust as it utilizes several spatial and temporal, risk, and vulnerability indicators. It helps calculation of the average risk of death. Not specific to climate change but covers earthquakes, floods, and cyclones.	Though some indicators include political and social indicators, the output of the index itself doesn't indicate whether the fragility state of a country will be affected.
ND-GAIN	ND-GAIN employs nearly 74 variables to form 45 indicators for calculating the vulnerability and readiness of countries to climate change.	This is the closest index that can indicate the fragility state of a country as represented by the readiness component of the index. However, it is complex and difficult to apply at the sub-national level.

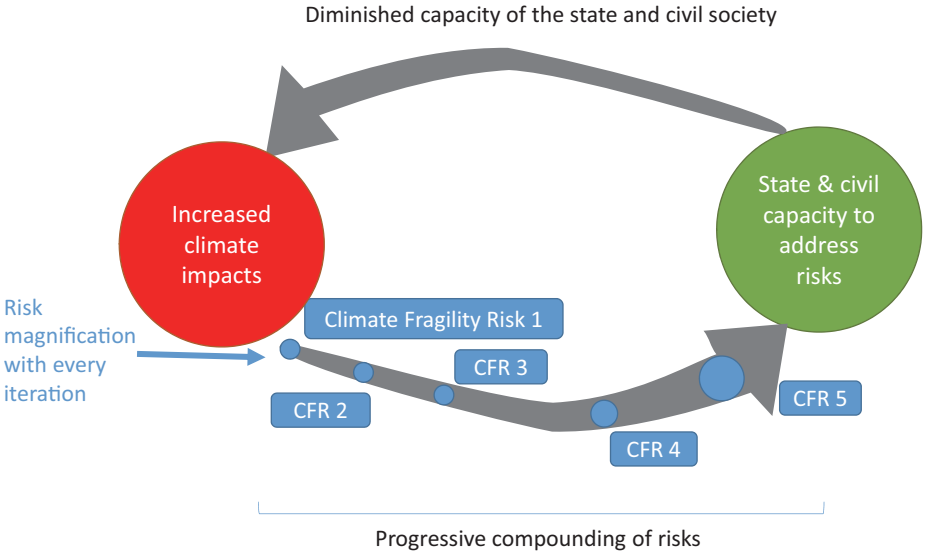

Figure 3. Framework showing compounding of risks and risk magnification.

indicators were strengthened by the responses provided by experts in an online survey and expert consultations organized as a part of this study. The index was developed using data from sources presented in Table 2. Since data for all indicators are not available, wherever appropriate, a proxy indicator was used as shown in the table.

Data on all the indicators are in different units. This disparity was removed by transforming the data using the linear normalization technique with adjusted saturation levels. Wherever published saturation levels are not available, the saturation levels are adjusted in full. Wherever a range of values are available, the minimum and maximum values were decided accordingly (e.g., as in the case of the Climate Risk Index [Germanwatch, 2019]). No weights were assigned to these indicators in the final CFRI value to avoid the subjective weights that differ from one expert to another. The results are shown as a heat map using the web-based choropleth tool, Carto (Carto, 2019).

3.2. Developing Critical Threshold Levels for Receiving External Emergency Assistance

This is a new idea that has been developed by the authors of this article with no known precedence in the existing literature. The basic assumption of the critical threshold levels for EEA is that countries tend to need EEA when disaster damages cross certain critical levels of damages, including loss of life and economic damage, exceeding the needed capacity to manage the emergency. Disaster damage tends to vary even within a country due to varying levels of intensity of disasters, location of the disaster (e.g., highly developed urban areas vs. poorly developed rural areas with different disaster management and mitigation capacities), and the timing of the disaster (e.g., more recent disasters of the same magnitude may cause less damage as governments are continually improving the disaster risk mitigation efforts). Hence, making sense out of this complexity is crucial to understand under what circumstances a country may need EEA so that the assistance providers can be vigilant and provide appropriate assistance (amount and nature) quickly.

The critical threshold concept determines EEA as a function of damage threshold, economic capacity, institutional capacity and so on, as Equation 1 represents:

Equation 1: Country assistance requirement = f(θd, GDP, financial capacity, institutional capacity…)

In the above equation, θd denotes the disaster threshold at which the country tends to depend on EEA.

Table 2. Indicator framework used in developing the CFRI.

Indicator	Proxy indicator	Rationale and limitations	Source of the data
Local competition for water	Baseline water stress	Higher water stress can lead to high competition for water. However, water may not always be the case depending on the local governance as represented by the governance indicator below.	WRI, 2018
Extreme weather events	Climate risk index	It covers climatic hazards. It is regularly updated on an annual basis.	Germanwatch, 2017
Migration and internal displacement	% of the population affected by migration and internal displacement	Provides information on the internally displaced and migrants. This data was converted into % of the population.	IDMC, 2018
Food price volatility		Calculated as a standard deviation of crop prices over ten years in the local currency.	FAO, 2018
Sea level rise (SLR)	% of the population affected by SLR	Instead of SLR alone, % of the population affected by SLR was used to reflect better on the social and economic impacts.	Climate Central, 2015
Unintended effects of policies	World Bank Regulatory Quality indicator	The closest available data on unintended effects of policies is the World Bank Regulatory Quality indicator. It reflects policy effectiveness. We assumed that the higher the regulatory quality, the fewer unintended effects of policies.	The World Bank, 2018
Insured losses	Insurance claims	This mostly doesn't represent losses from political and social unrest.	Various sources

Source: Based on Prabhakar et al., 2017; Prabhakar and Shaw (2019).

Since various factors can affect the critical thresholds for receiving EEA, an extensive literature review was conducted to identify an exhaustive list of indicators (see the Supplementary File). More than 100 indicators were identified grouped into four categories. These categories are a) disaster impact characteristics, b) national response capacity, c) international response capacity, and d) disaster exposure, vulnerability, and capacity. A select few indicators are presented in the Supplementary File attached to this article.

For developing this critical threshold, data from openly available databases such as EM-DAT and UN OCHA was used. Following consultations with these data sources and with national-level disaster management officers and databases, the study team realized that there were pertinent data gaps to developing a critical threshold measurement using this exhaustive list of indicators. A decision was made to restrict the number of indicators to only a few, including EEA received in monetary terms (USD) as a dependent variable. The independent variables selected include deaths, number of people affected, damage, GDP, governance effectiveness, and poverty. These indicators were qualitatively narrowed down after assessing their interdependency with other indicators listed in the Supplementary File and depending on the data availability. The study team realized that the lack of data has critically restricted the range of indicators to be included in the critical threshold analysis.

The economic impact of extreme events is an important consideration that determines the need for EEA. Hence, the reason for using GDP, a macroeconomic indicator, and poverty, another economic indicator of people's income, has been that GDP indicates the overall country's economic capacity to withstand economic shocks from extreme events, while the poverty headcount ratio indicates the proportion of people that may require immediate economic relief. These variables were in turn assessed through Principal Component Analysis (PCA) using the Oblimin rotation (assumption: Principal components [PCs]/factors are correlated), and the factor number was reduced based on the rule of Eigenvalue < 1. The PCA helped group these independent variables into a few groups.

3.3. Expert Consultations for Understanding the Effectiveness of External Emergency Assistance

The author team organized two policy consultation workshops in Manila, the Philippines, and Dubai, United Arab Emirates, for stakeholders from Pakistan to understand, firstly, how EEA provided by countries like Japan was effective in managing the disaster emergencies, and then how to improve the efficacy of EEA in the future, especially by keeping in view the climate security of both the donor and recipient countries. These workshops brought together various relevant stakeholders involved in overseas development assistance, emergency relief assistance, long-term rehabilitation and risk reduction, and climate security. The experts were drawn from various government departments, academia, the research community, NGOs, and civil society engaged in the field of disaster risk management. These consultations have helped to develop a common understanding of the current issues with emergency relief assistance and other related development assistance programs, and to identify means to improve them in such a way that both the recipient and donor country enjoy positive benefits. Discussions at these workshops have contributed to a deeper understanding of the opportunities and challenges for developing the critical threshold concept (Section 4.2) and other means of improving EEA effectiveness (Sections 4.3 and 4.4) presented in this article.

4. Results and Discussion

This section discusses the results of the CFRI and presents various ideas on how to improve EEA. These discussions are drawn based on the authors' expert judgement of the current state of affairs for EEA as well as a series of consultations that the authors have conducted.

4.1. Climate Fragility Risk Index

The CFRI investigation revealed that the amount and form of climate fragility risks vary by country (Figure 4). This emphasizes the importance of developing country-specific strategies for addressing climate fragility risks. It also emphasizes that the ability of countries to respond to climate extremes can vary due to different underlying fragility risks. The average CFRI for developing countries, which include Bangladesh, Cambodia, China, India, Indonesia, Lao PDR, Malaysia, Myanmar, Pakistan, and the Philippines was 0.76. For developed countries, comprising Australia, Japan, and the Republic of Korea, the CFRI was 0.66, showing a marginally lower CFRI than developing countries.

Variances in exposure to sea-level rise (where Vietnam and Thailand are particularly susceptible) and food price volatility accounted for the majority of the differences between countries (where Pakistan scored highest). When it came to metrics of internal displacement and the regulatory quality of country governance systems, there was much less variation. Because of its high sensitivity to water stress and high food price volatility, Australia had a comparatively high CFRI among developed countries.

Furthermore, the investigation revealed a reasonably close relationship between CFRI and country GDP per capita. The analysis demonstrated a link between a country's developmental condition and its climate fragility. This indicates that a country's developmental status has a direct impact on the severity of how risks can compound and magnify quickly (as interpreted through the framework in Figure 3).

The power relationship between CFRI and GDP appears to point to a key level of per capita income

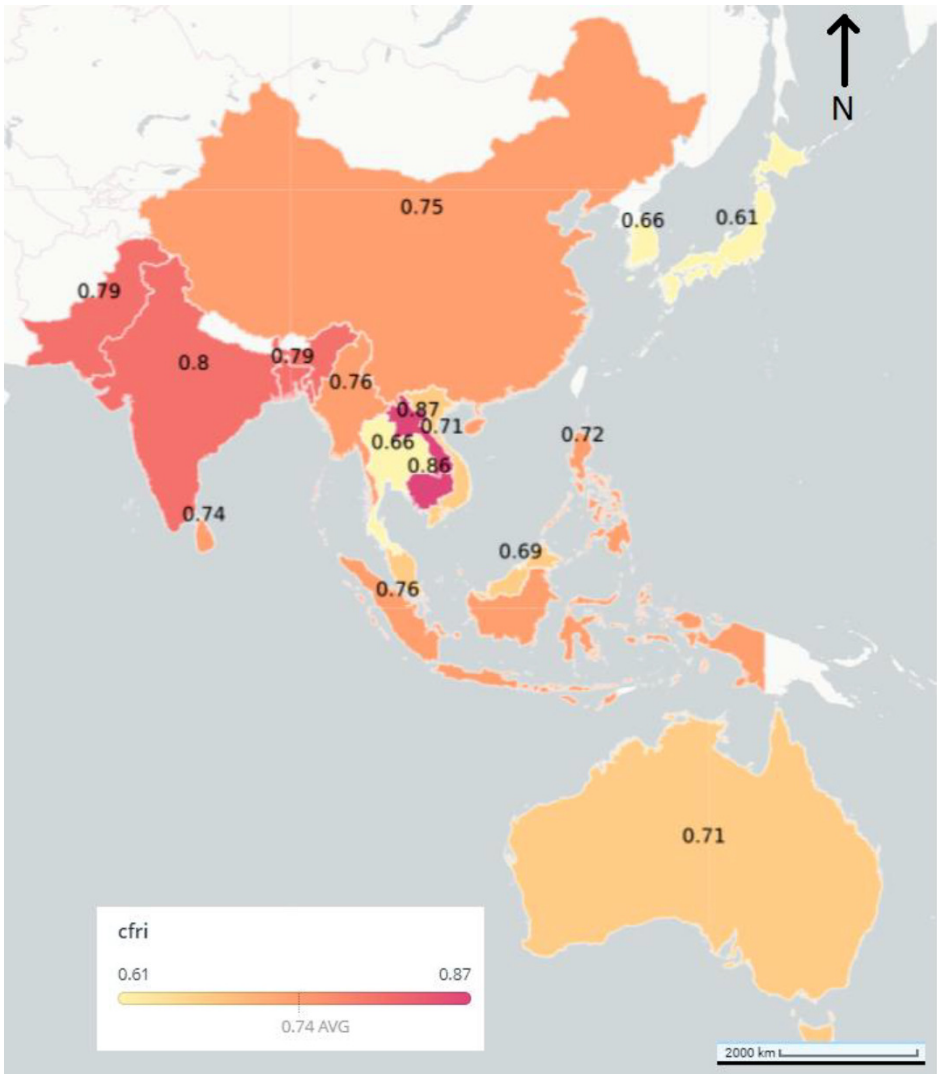

Figure 4. CFRI of countries in Asia and Oceania.

below which countries are more vulnerable to climate change. With the inclusion of more developed countries in the analysis, the association between CFRI and per capita GDP became stronger (Figure 5). The relationship between a country's development status and climatic concerns has long been acknowledged in the literature (Hallegatte, 2013).

The CFRI could provide a yardstick to measure the relationship with a country's ability to provide relief in the aftermath of disasters. It helped to identify the relationship between the climate fragility of states and with the developmental state of the countries. Largely, countries that are economically developed may suffer relatively less from fragility risks. However, climate fragility is still a major concern for both developed countries and developing countries, albeit to a different degree. Furthermore, developing the critical threshold concept will identify critical data gaps that the national governments will have to address in the future, as well as identifying innovative means of obtaining the information, for example through crowdsourcing or employing remote sensing technologies for damage assessment. This would entail bringing together the science and technology ministries and other relevant stakeholders to engage with the DRR community at the national level to develop an information platform that helps in the quick assessment of disaster impacts.

4.2. Critical Threshold Concept for the Emergency Relief Readiness

The critical threshold analysis indicated that countries have different critical thresholds for EEA. The PCA has helped to reduce the factors down to two PCs. After conducting the PCA, a regression equation for EEA dependence was developed with two PCs. The following are the critical thresholds of EEA for selected countries:

$$\text{Afghanistan} = -0.007 \times PC1 - 25555 \times PC2 + 38020265$$

$$\text{Bangladesh} = 0.000 \times PC1 + 7.058 \times PC2 + 19520455$$

$$\text{China} = 0.008 \times PC1 - 2.50 \times PC2 + 20740127$$

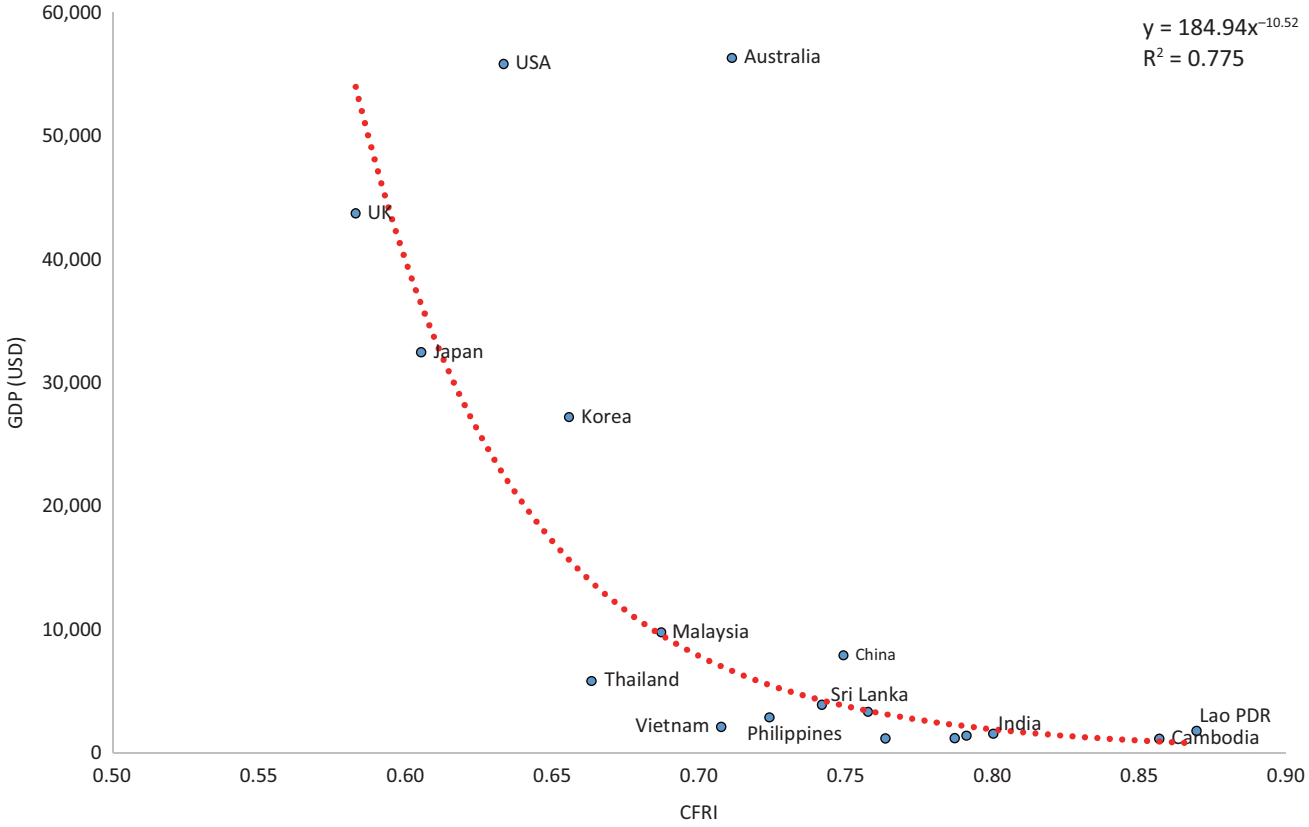

Figure 5. The GDP and CFRI nexus.

India = −8.55 × PC1 + 0.000 × PC2 + 38072756

Indonesia = 4.48 × PC1 + 50.46 × PC2 − 9700875

Pakistan = 0.04 × PC1 + 112 × PC2 − 1305814894

Philippines = 0.948 × PC1 − 0.002 × PC2 + 58522475

Sri Lanka = 0.001 × PC1 + 57.2 × PC2 − 19513408

Vietnam = 0.000 × PC1 + 3.421 × PC2 − 2977399

Taking the example of the Philippines, it should be understood that the Philippines tends to call for EEA when the PC1 reaches a value of 58522475. Here, PC1 is comprised of disaster impact indicators while PC2 consists of macroeconomic capacity. The composition of PCs varies by country as shown in Table 3. The percentage σ^2 in the table indicates the proportion of variance explained by each PC. It can be observed that in most cases, GDP and poverty are the common factors in PC1 while the number of people affected or dead are the most common factors in PC2. This indicates that the country's economic capacity is the most important factor in determining whether or not a country calls for EEA.

It should be understood that disaster management capacity and economic capacities within a country are not uniformly developed. Therefore, whether or not a country needs EEA depends on where the event occurred. For example, in a relatively well-developed economy, an extreme event in a remote and underdeveloped region could inflict severe damage, requiring significant EEA.

The relation between the country assistance requirement and damage thresholds (disaster impacts) could vary widely among countries. Some countries may follow reliable damage threshold-assistance relationships: e.g., as shown in Figure 6, countries A and B are calling for EEA only after disaster losses cross a certain level every time they called for external assistance (instances marked with circles). It is evident that for these countries, the concept of critical thresholds for assistance works well. However, in other countries this function is less clear, e.g., countries E and H seem to call for EEA across all the damage levels they faced. This could be due to varied capacities in different parts of these countries, or the very low capacity of countries to deal with disaster emergencies in general. In these cases, the application of critical threshold should be further specialized to consider country-specific circumstances, as well as the varied capacities of local governments and institutions within a country. Hence, the research needs to identify a means to reliably estimate assistance thresholds that work for all countries. One approach is to have a high resolution of the threshold, i.e., to have sub-regional or sub-national thresholds for the assistance-damage functions to work well. At the moment, there is insufficient information to determine these hypotheses, and collecting this data to validate this hypothesis is time-consuming.

Table 3. Composition of PCs of the critical thresholds for selected countries in Asia.

Country	PC1	% σ^2	PC2	% σ^2
Afghanistan	GDP, poverty, affected	42	Dead, governance	29
Bangladesh	Poverty, GDP, governance	50	Affected, dead	23
China	Damage, dead, governance	47	Poverty, GDP, affected	26
India	Poverty, GDP, affected, dead	39	Damage, governance	21
Indonesia	GDP, poverty, governance	59	Affected, dead	28
Pakistan	Poverty, governance, GDP, affected	58	Dead	24
Philippines	Dead, damage, affected	63	Poverty, governance, GDP	32
Sri Lanka	GDP, poverty	41	Dead, affected, governance	26
Vietnam	Governance, GDP, damage, poverty	58	Affected, dead	25

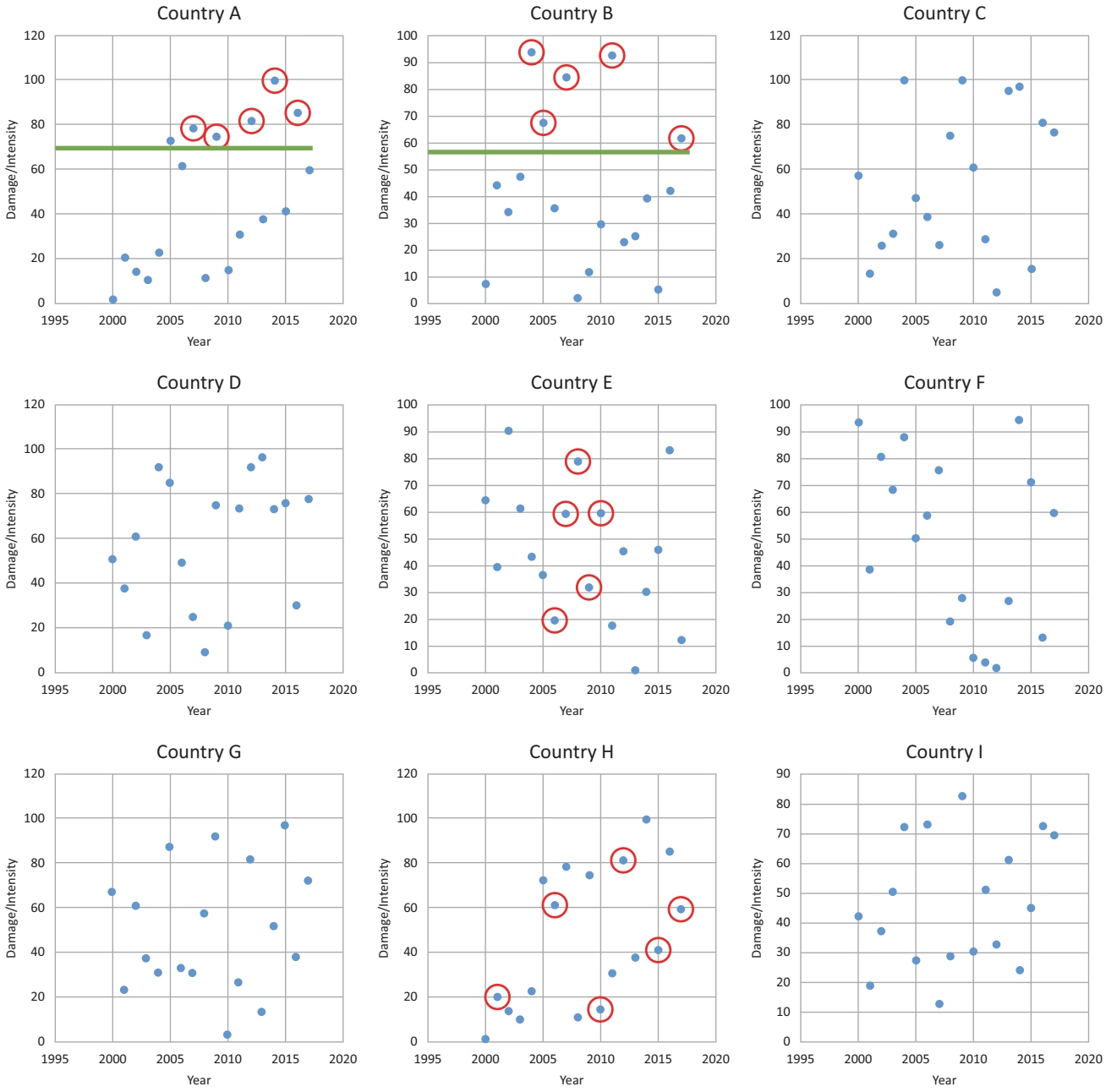

Figure 6. Pictorial depiction of critical threshold concept. Source: Prabhakar et al. (2019).

4.3. Delivering Appropriate International Emergency Relief Assistance

The current picture of how emergency relief is delivered across international borders is rather complex and chaotic, and, over the years, efforts have been made to improve relief delivery across borders in a systematic manner. Efforts on an international level are largely led by UN OCHA wherein it strived to improve prioritization and reduce duplication while ensuring that relief reaches the neediest under diverse circumstances. It does so by engaging with relief coordination and by streamlining procedures for relief finance delivery by sharing information among the participating countries and institutions. Other than UN OCHA, non-governmental agencies such as the International Federation of Red Cross and Red Crescent Societies and Red Cross continuously raise resources for assisting with emergencies. The Red Cross works independently, often providing financial support not to governments and institutions, but rather, directly to those areas and people affected. The Red Cross also works with governments to strengthen their relief coordination mechanisms, by contributing to the development of national-level rules and regulations and carrying out capacity building. Despite these efforts, international emergency relief delivery can still benefit from improvements in the following areas: (1) timely delivery of relief, (2) delivery of appropriate relief, and (3) treating relief and recovery phases in isolation.

4.3.1. Timely Relief Delivery

Often, international relief may be delayed due to the time-consuming coordination that has to take place between governments and institutions, and the lack of information on what kind and how much relief is needed. There are instances where the relief continued to arrive even years after the disaster making the relief ineffective for recipients.

4.3.2. Ensuring Appropriate Relief

Due to limited time and information available in the immediate aftermath of a disaster requiring international assistance, there are often limitations to relief material arriving in disaster-affected locations. These limitations include: (1) insufficient relief (relief material may not be sufficient in quantity to the affected population), (2) poor quality relief (poor quality food and other items that are considered unusable and or below the dignity of the affected people), and (3) inappropriate relief (relief material that is not suitable to local conditions, e.g., wool blankets sent to a tropical country).

4.3.3. Treating Relief as an Isolated Part of the Disaster Risk

Most of the time, the experiences gained during disaster relief operations can provide deeper insights into disaster risks and vulnerabilities. It is important that messages received during the period of disaster relief are used to inform the risk reduction interventions implemented after the relief phase (Figure 7). However, agencies that engage in disaster relief, mostly at the national level, are often different from the agencies engaged in reconstruction, preparedness, and risk mitigation. As a result, the important messages and lessons learned at the relief stage may be lost and do not contribute to long-term risk reduction. Even though countries are developing unified DRR mechanisms at the national level with coordination in the form of national and local DRR committees, there is still ample evidence from those consultations that the messages from the relief phase are not properly passed on so as to inform the subsequent risk reduction interventions. Moreover, networks and relationships formed during relief do not materialize into long-term engagements for affecting sustained risk reduction, which is a huge lost opportunity for risk reduction.

To address these issues, several interventions have been taken up both at the national level and international levels. For example, UN OCHA strives to communicate with major relief providers to provide appropriate relief and coordinate finances. Similarly, national governments are preparing guidelines to make efficient relief delivery (e.g., the Philippines International Humanitarian Assistance Guidelines). Our consultations indicate that a pre-emptive relief delivery mechanism could help address time delays and delivery of inappropriate relief. For example, the Red Cross is working on the idea of forecast-based relief, whereby relief delivery is pre-empted based on the forecasted damages at the local level. The consultation processes employed for developing modified Philippines International Humanitarian Assistance Guidelines instilled similar ideas among the relevant government departments in the Philippines. There is a growing emphasis for countries to reduce

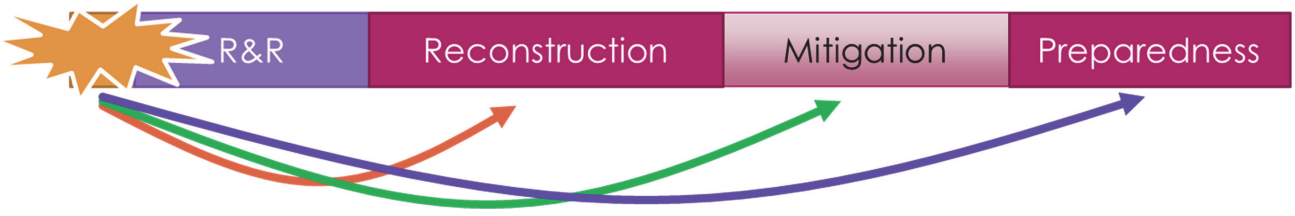

Figure 7. Linking lessons from the relief and rehabilitation stage to the rest of the DRR stages.

their international relief assistance dependency and for focusing the external relief on niche areas and to link these interventions with the long-term risk reduction measures.

4.4. Necessary Developments at the National Level

4.4.1. Improvements at the National Level

National disaster risk management committees play a crucial role in recommending the declaration of national calamity in affected countries. For example, in the Philippines, it is the National Disaster Risk Reduction and Management Council that advocates the president to declare a certain disaster as a national calamity, and such a declaration automatically qualifies the government to call for external assistance. In Pakistan, a national calamity is declared by the prime minister with advice from the National Disaster Management Authority. These agencies need sufficient and timely information on the relief needs on the ground on a real-time basis to decide on the need to call for EEA. While the formal process proceeds at its own pace, the proactive international assistance providers often do not wait for the official assistance request but rush the assistance to the affected countries based on the information they have at that time and according to their experience. Hence, properly documenting past assistance experiences and quantifying them in terms of critical needs at each level of disaster is important and should be shared with all donor countries and institutions for appropriate relief delivery.

4.4.2. Donor Country Policy on External Emergency Assistance

It is often policy in donor countries that influence the nature and effectiveness of EEA. The policy in Japan on provision of the EEA is that it will only respond to specific official requests made by the affected countries. In fact, there were only very few instances where Japan has sent relief or an assistance team voluntarily without waiting for an official request from the affected country. Japan's stance on external assistance has significant implications for the design and scope of the critical threshold concept since the concept is based on delivering the "appropriate relief at the appropriate time."

Since Japan only responds to specific official requests, depending on the way the emergency assistance requests are made, many issues associated with voluntary relief assistance could be inherently and partially addressed. The critical threshold concept works best for circumstances where the voluntary deployment of assistance is under consideration. Nevertheless, Figure 8 shows the appropriate location where such a framework can be put to operational use within the Japan–Philippines context (highlighted by the red-colored decision box). Here, the donor countries or agencies that provide EEA can refer to the critical threshold values, developed based on either historical data or on projected hazard intensity and magnitude, and then they can decide whether or not the impending disaster is likely to overpower the country's economic capacity to respond or if the country needs external assistance.

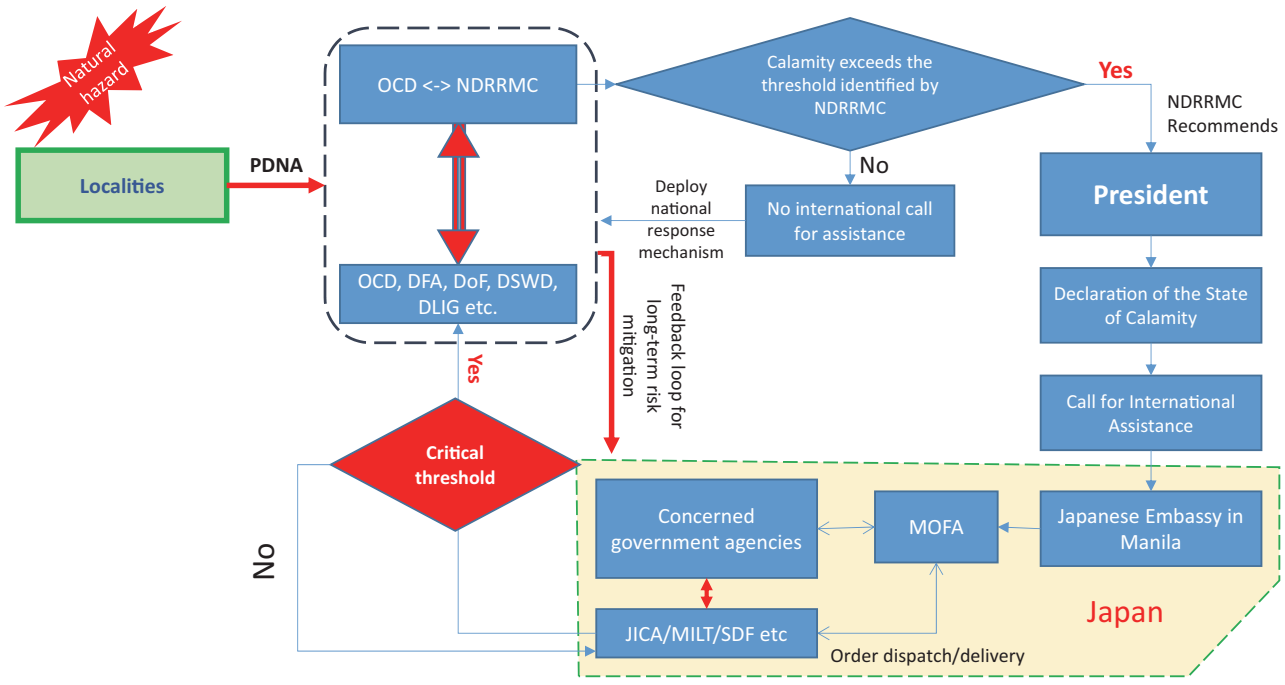

Figure 8. Pictorial representation of the location of critical threshold framework operating in a bi-lateral relief assistance paradigm; in this case, the example is between Japan and the Philippines. Source: Prabhakar et al., 2019.

5. Conclusions

Climate change has significant implications for extreme events and, as a result, will make many vulnerable countries depend on EEA, including in Asia. This is likely to have an impact on both recipient and donor countries. As a major donor in Asia, Japan will be profoundly impacted. To some extent, EEA has costs and benefits for both donor and recipient countries. Hence, any improvements in EEA will benefit both the donor and recipient countries to a varying degree. Future improvements to EEA should be made by keeping the climate security and fragility concepts in mind as they can guide countries to ensure positive and long-term benefits from short-term relief engagements. They can also help countries to minimize dependency on external assistance.

The critical threshold concept can deliver multiple benefits for fine-tuning EEA in the aftermath of extreme events such as typhoons, as there is often very little time for the national governments to evaluate the situation and respond adequately. To address the issue of EEA effectiveness, we have shown how the climate fragility of countries can have an impact on the development status of countries and in turn possibly influence their dependency on EEA. We have also shown the concept of a critical threshold for extreme events and argued that this concept can be employed to pre-empt EEA delivery effectively. However, the use of such tools needs to be implemented without impinging upon national sovereignty, as donor countries have the right to decide how to support the affected countries (i.e., either voluntarily or upon request) and how the EEA recipient countries want to receive assistance (e.g., the nature and amount of assistance).

Whether or not countries such as Japan, which mainly only respond to official requests for EEA by the affected countries rather than responding voluntarily, can utilize the concept of critical threshold remains to be seen. Japan may still be able to use this analysis to strengthen future EEA by looking at the past experiences and find ways to strengthen its response, develop country-specific EEA strategies for maximizing effectiveness, and use future climate projections to understand EEA implications.

During the consultations organized by the authors, it became evident that countries in Asia are in favor of improving their disaster relief assistance mechanisms and are willing to engage with international stakeholders to harmonize measures for delivering focused relief assistance with a long-lasting impact. However, some questions remain which will be important to move forward. For example, it is still not clear how the relief assistance requests are treated by donor countries such as Japan, i.e., what priorities the donor considers before delivering the assistance, what determinants guide the donor to provide external assistance, how a donor consults with other agencies within the donor country, and how the final decision-making is done on what to deliver and how. Is it always the request of the recipient country that prevails, or do donors consider long-term implications in taking decisions?

There are limitations concerning the development of the critical threshold concept, including limited data availability, fragmented data, i.e., data spread across different ministries and departments, and sensitivity of sharing data with foreign governments especially in terms of the number of military deployed, the location of stock, timeframe for deploying certain types of relief, etc. There is a need to address these issues before coming up with a reliable decision support system for strengthening EEA and eventually minimizing dependency over the medium to long term.

Acknowledgments

Authors are grateful for the financial support received from the Environment Research and Technology Development Fund (2–1801), Environment Research and Technology Development Fund (2–2102), and Strategic Research Fund (SRF) of the Institute for Global Environmental Strategies.

Conflict of Interests

The authors declare no conflict of interest.

Supplementary Material

Supplementary material for this article is available online in the format provided by the author (unedited).

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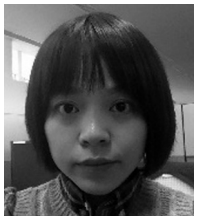

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Politics and Governance (ISSN: 2183–2463)
2021, Volume 9, Issue 4, Pages 43–52
https://doi.org/10.17645/pag.v9i4.4275

Article

Gender in the Climate-Conflict Nexus: "Forgotten" Variables, Alternative Securities, and Hidden Power Dimensions

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Submitted: 19 March 2021 | Accepted: 14 July 2021 | Published: 22 October 2021

Abstract
The literature on the security implications of climate change, and in particular on potential climate-conflict linkages, is burgeoning. Up until now, gender considerations have only played a marginal role in this research area. This is despite growing awareness of intersections between protecting women's rights, building peace and security, and addressing environmental changes. This article advances the claim that adopting a gender perspective is integral for understanding the conflict implications of climate change. We substantiate this claim via three main points. First, gender is an essential, yet insufficiently considered intervening variable between climate change and conflict. Gender roles and identities as well as gendered power structures are important in facilitating or preventing climate-related conflicts. Second, climate change does affect armed conflicts and social unrest, but a gender perspective alters and expands the notion of what conflict can look like, and whose security is at stake. Such a perspective supports research inquiries that are grounded in everyday risks and that document alternative experiences of insecurity. Third, gender-differentiated vulnerabilities to both climate change and conflict stem from inequities within local power structures and socio-cultural norms and practices, including those related to social reproductive labor. Recognition of these power dynamics is key to understanding and promoting resilience to conflict and climate change. The overall lessons drawn for these three arguments is that gender concerns need to move center stage in future research and policy on climate change and conflicts.

Keywords
Anthropocene; civil war; division of labor; environment; masculinity; protest; resources; social reproduction; violence; vulnerability

Issue
This article is part of the issue "Climate Change and Security" edited by Yasuko Kameyama (National Institute for Environmental Studies, Japan) and Yukari Takamura (University of Tokyo, Japan).

1. Introduction

The intersections between climate change and conflict are of increasing political concern. In 2019, for instance, the UN Security Council recognized climate change as a threat multiplier negatively affecting peace, with Under-Secretary-General for Political and Peacebuilding Affairs Rosemary DiCarlo stating: "The risks associated with climate-related disasters do not represent a scenario of some distant future. They are already a reality for millions of people around the globe—and they are not going away" (UN News, 2019).

This policy interest has been matched by a rapidly growing academic literature in the past decade. Recent cross-case analyses find that climate change-related impacts, including disasters, water scarcity and food insecurity, influence violent and non-violent conflicts within states (e.g., Ide et al., 2020, 2021; Koren et al., 2021). These findings are also supported by qualitative evidence suggesting, for instance, that droughts and higher food prices increase conflict risks (Gleick, 2014; Heslin, 2020). Low intensity conflicts like civil unrest are more sensitive to climate change than high intensity violence, such as civil wars, while no conclusive evidence has been found directly linking climate change and armed international disputes. While a few scholars remain skeptical about a climate-conflict nexus, there is increasing consensus that climate change is one among many (although rarely the major) drivers of intrastate conflict risks (Mach et al., 2019).

With very few exceptions, however, the literature on climate change and conflict has so far not meaningfully considered gender. Fröhlich and Gioli (2015) were among the first scholars to call for a systemic integration of work on global environmental change, gender, and peace and conflict. Their call has been picked up, among others, by Cools et al. (2020), investigating the impact of rainfall shocks on partner violence, as well as by Yoshida and Céspedes-Báez (2021), who highlight the gender dimensions of environmental peacebuilding. Likewise, a number of recent reports by universities or international institutions disentangle how climate change intersects with the Women, Peace and Security Agenda (Tanyag & True, 2019; UN Environment Programme et al., 2020), how environmental stress affects women's and girls' right to peace (Yoshida et al., 2021), and how women confront the combined challenges of climate change and violent conflict (Smith et al., 2021). Overall, gender is nevertheless still at the margin of climate-conflict research. Yet, a gender perspective is essential for understanding the complex interlinkages between climate change and conflict.

We define gender as the socially constructed norms, roles, attitudes, and attributes associated with people of different sex characteristics and the relations between and among these different groups. Gender relations influence power dynamics and are closely tied to hegemonic norms of femininities and masculinities. These norms shape how crises, including armed conflicts and disasters, emerge, evolve, and are experienced by different individuals. This understanding acknowledges that gender analyses focus on multiple, socially constructed notions of female and male, rather than on women (and their vulnerability, invisibility, or agency) alone. This also implies that gender intersects with other markers of social difference, such as class or ethnicity, to produce complex structures of power and exclusion. When discussing conflict, we refer to perceived conflicts of interest between at least two social groups resulting in manifest actions by at least one group, such as protesting or fighting. Such forms of conflict are often deeply tied to notions of state or societal insecurity, which consequentially also dominate climate-conflict research (Daoudy, 2020). In Section 3, we illustrate how broader notions of security could further this research field.

The (for the most part) separate scholarships on (1) environmental change and gender as well as (2) gender, peace and conflict have demonstrated how gendered power dynamics result in different vulnerabilities to environmental crises and violent conflict. Likewise, the social construction of gender and its associated power structures can be drivers of both environmental degradation and violent conflict. Connecting insights from both scholarships hence holds a vast potential for furthering knowledge on the climate-conflict nexus while building critical awareness of underlying power structures.

In this article, we therefore argue that gender is an integral dimension of the conflict implications of climate change. In the subsequent sections, we substantiate this argument along three broad lines: First, gender is an important, yet understudied intervening variable in the climate-conflict nexus. Second, by including gender concerns, research on climate change and conflict can unpack the concept of security and re-frame its dependent variable, including the often "invisible" violence occurring in the domestic sphere. Third, a gender perspective allows for a broader interrogation of the concept of resilience, and hence opens new perspectives on adaptation and empowerment, including in the context of armed conflicts. The conclusion summarizes how gendered power dynamics are important within the climate-conflict nexus and discusses pathways for future research.

2. Gender and the Climate-Conflict Nexus

Existing empirical studies are strongly variable-oriented, seeking to identify the impact of climate change (independent variable) on conflict (dependent variable) in various contexts (intervening variables). Previous research has demonstrated that factors like the physical security of women (Hudson et al., 2009), the promotion of gender equality (Wood & Ramirez, 2018), and the fulfillment of women's rights (Harris & Milton, 2016) reduce violent conflict risks. However, most empirical studies on climate change and conflict have so far ignored gender-related variables. There are good reasons to address this omission.

To start with, gender roles and identities can play an important role in either instigating or mitigating climate-related conflict. Consider pastoralist conflicts in northern Kenya, Uganda, and South Sudan—some of the literature's most common cases—as illustrative examples. Different pastoral groups (e.g., the Karamojong, Pokot, and Turkana from Kenya and Uganda; or the Dinka and Nuer from South Sudan) have engaged in violent confrontations over the past decades that involve cattle raids, tensions surrounding territorial control, and

revenge killings. Climate change is predicted to increase drought frequency and intensity in East Africa. Droughts, in turn, tend to accelerate tensions among pastoralists, and between pastoralists and farmers (although examples of cooperative responses exist as well; see Adano et al., 2012). Scarcity of fodder and water force pastoralists to move their cattle into border regions or even territories traditionally used by other groups, hence increasing the likelihood for violent confrontations. In extreme cases, the adverse impact of climate change can result in direct violent competition over water or grazing areas. Moreover, raiding neighboring groups is a frequently used measure to re-stock cattle when a significant portion of the herd perishes during a drought (Ensor, 2013; Schilling et al., 2012).

Cattle raiding in Kenya, Uganda, and South Sudan is strongly tied to gender roles and identities. It has traditionally been considered one of the markers signaling a male youth's transition from adolescence to social adulthood (Ensor, 2013). In order to marry, a man has to pay a considerable bridewealth to the woman's family, usually in the form of cattle. This custom encourages particularly poor men to engage in cattle raids as a means to acquire the required wealth. Further, in some communities, successful raiders are considered heroic and dependable breadwinners, and hence more desirable husbands (and sons). Likewise, "[w]omen would tell the men who did not go raiding: You are not a man" (Mkutu, 2008, p. 242), and fellow men would likewise mock them as cowardly and non-manly. Such violent masculinities and conflict-sustaining gender roles constitute a major intervening variable between climate change's negative impacts on livestock and violent conflict. Nevertheless, the strength of such gender norms varies across communities and, in some areas, the association between cattle wealth and marriage is loosening (Omolo, 2010).

This illustrates how gender norms can act as a conduit to conflict in situations of environmental degradation due to climate change and threatened livelihoods. These cases also demonstrate how gender should not be equated to women and girls (Enloe, 1993). Gender norms can also have negative implications for men, which are manifested in these conflict situations. While associated with patriarchal power structures, norms connecting cattle raids with masculinity and social status can also cause strong psychological stress. Likewise, men frequently incur severe or fatal injuries during such raids. Moreover, while an intersectional gender perspective can allow for a better understanding of the different impacts on different women and men, it is important for scholars and practitioners alike to not equate work or research on gender equality with women's vulnerability. For example, women act as strong advocates for peaceful conflict resolution (Funder et al., 2012) or as indispensable providers for the household in times of crisis (Johnston & Lingham, 2020). Women also demonstrate considerable agency in conflict transformation, peacebuilding, climate change action, and resilience.

Furthermore, gender acts as an intervening variable between climate change and conflict when patriarchal social structures that lead to unequal gender relations and normalize violence against women combine with personal and political factors to motivate women to join armed groups (or at least facilitate recruitment efforts of the latter). During the Nepalese civil war (1996–2006), for example, around 30% of the fighters and activists of the Maoist rebels were women. Many of them were motivated to participate in the armed struggle by the Maoists' explicit objective to challenge existing forms of gender discrimination, including male-centered inheritance rights, the absence of legal protection against sexual harassment, inferior access to health and education for women and girls, and the virtual absence of women in decision-making roles. These gender inequalities did not affect all women equally but intersected with caste and class issues to create particular forms of marginalization and exclusion. For instance, the rebels recruited most women (as well as men) among the poor and lower castes (Acharya & Muldoon, 2017; K. C. & Van Der Haar, 2019).

Similar patterns of strong female rebel mobilization in the face of high gender inequality and repressive structures can be observed for other armed movements, such as the Kurdistan Workers' Party (PKK) in Turkey (Tezcür, 2015) and the People's War Group in India (Scanlon, 2018). This is in line with evidence suggesting that countries with weak (de facto and de jure) protection of women face higher conflict risks, although the specific causal paths leading to this outcome are still being investigated (Wood & Ramirez, 2018). Climate change can accelerate such gender-related risk factors for armed conflict, for instance by increasing gender inequality or generalized livelihood insecurity (see Smith et al., 2021; and Sections 3 and 4 of the present article).

These examples show that gender can be a motivating factor for taking up arms, both through gendered identities and norms surrounding violent masculinities, and as a reaction to existing gender inequalities. Gender can therefore serve as an important intervening factor in the climate-conflict nexus, particularly when climate change affects associated risk factors like droughts, cattle availability, and livelihood insecurity. This reinforces Cockburn's (2010, p. 140) argument that gender relations are "an intrinsic, interwoven, inescapable part" of conflict analysis. Considering (intersectional) gendered inequalities and norms can thus yield important insights when studying the contextual conditions for, causal pathways underpinning, and resilience factors related to climate-conflict links.

3. A Gender Perspective Interrogates the Notions of Security: Of Whom? And From What?

As the still limited but steadily growing evidence base shows, gender is not just an often-unexamined intervening variable in climate-conflict research. Gender

considerations should also shape the definition of dependent variables. In other words, gender should inform the sort of conflict and security that is considered when examining the security implications of climate change. Climate-conflict research has diversified its focus in recent years (Koubi, 2019), which is no longer limited to civil war, but also includes social unrest (Koren et al., 2021), peaceful protests (Ide et al., 2021), and support for the use of violence (von Uexkull et al., 2020). This is considering that protests and radical positions can pave the way for more intense forms of (violent) conflict. Likewise, this broader perspective also speaks to critiques of climate-conflict research as overly focused on threats to state security like civil wars to the detriment of human security (Selby & Hoffmann, 2014).

In line with this expanded understanding, the vast and long-established field of security studies is similarly experiencing an expansion of the conceptualization of "security." In particular, gender-sensitive and feminist approaches emphasize that there is a gender bias in core security studies concepts including the state, violence, war, peace, and security itself. Drawing on these approaches, scholars have gained empirical insights from analyzing new or neglected subjects pertaining to the experiences of women (Sjoberg, 2009). The use of violence against women and girls as a tactic of war has been widely documented in conflict-related studies. Recent examples include the sexual enslavement of Yazidi women and girls in Northern Iraq and the sexual and physical abuse of Rohingya women and girls in Myanmar (Prügl, 2019). Evidence indicates that sexual and gender-based violence (SGBV) during conflict predominantly affects women and girls but has also been perpetrated against men and boys as a weapon of war. However, far less examined is violence perpetrated against women and girls by their own family members in conflict and post-conflict settings, even though it affects a much larger number of women and girls than sexual violence perpetrated by militias, rebel groups and government forces (Human Security Research Group, 2012).

The impacts of climate change on vulnerable settings can deepen gender inequalities, increase the vulnerability of women and sexual minorities, and indirectly exacerbate sexual and gender-based violence (Castañeda Camey et al., 2020). For example, women and girls who adapt to climate change by walking longer distances to collect water or wood (as a result of changed precipitation patterns) or who seek shelter in refugee camps after climate-induced disasters are more exposed to various forms of violence, including rape and robbery (Horton, 2012). Sexual and gender minorities including people with transgender identities also frequently face increased insecurity after climate-related disasters, for instance in emergency shelters (Gaillard et al., 2017).

Both in India and Nepal, women's relative and absolute poverty increased in the face of climate-related disasters in the recent past, among others due to their limited access to land titles, irrigation schemes, credit, and markets. If their husbands die during such a disaster, women not only suffer personal loss, but also experience reduced social status and limited protection from sexual violence (Ahmed & Fajber, 2009; Sugden et al., 2014). It is worth noting that men can also face additional risks. Delaney and Shrader (2000) argue that, although disaster-affected Central American women endured greater vulnerability in the aftermath of the Hurricane Mitch due to their lower social and economic status (see also Ensor, 2009), more men than women died during the event itself as they took greater risks. This, in turn, was driven by prevailing gender norms about men as protectors and breadwinners. This is an example of how men's security also can be compromised by gendered norms regarding masculinity during disasters.

In other countries, such as Mexico, where climate-sensitive livelihood strategies (e.g., agriculture, livestock, forestry, fishing, hunting) are predominantly considered male activities, poor harvests and livestock loss result in lower earnings and food insecurity, putting pressure on men's traditional role as providers and compromising their breadwinner identity (Pearse, 2017). This raises men's poverty and psychological stress, but also increases the likelihood of intimate partner violence, usually against women (Cools et al., 2020). Such consequences have also been documented in Australia with the impacts of drought on rural communities: Women, already overloaded by work, became increasingly financially responsible for family sustenance as farm incomes declined. Associated income-related stress led to an increase in alcohol and drug consumption by men as a coping mechanism, again resulting in reduced men well-being as well as increased physical and emotional abuse against women (Whittenbury, 2013).

Child marriage is another manifestation of gender inequalities and violation of children's rights that may increase in times of crisis and that has been observed in disaster-affected areas such as in Zimbabwe (Otzelberger, 2014). In South Sudan, resource-constrained families will marry off their daughters at an increasingly young age: "This has been explained as a survival strategy to obtain cattle—vital among pastoralist groups—money, and other assets via the traditional practice of transferring wealth through the payment of dowries, in the absence of other viable alternatives" (Ensor, 2014, p. 20). Such coping strategies—and the associated impacts on young women's and girl's security—are likely to become more prevalent with climate change resulting in increased drought frequency and livelihood pressures. This example, like those discussed in previous paragraphs, emphasizes the importance of an intersectional perspective: Educated women from powerful, wealthy, and/or high caste households are less likely to face the risks associated with collecting water or firewood, and are able to draw on alternative resources, including those of other household members, to enhance their resilience to the impacts of climate-related disasters.

The cases presented here demonstrate how a gender perspective alters and expands the notion of what conflict might look like, and whose security is at stake. As shown in this discussion, climate change not only acts as a threat-multiplier that intensifies the risk of armed conflict and social unrest; it also has serious implications for intra-household conflicts and the security of women (and also of men and sexual minorities) in everyday contexts, including in the form of SGBV (Thurston et al., 2021). More systematic gathering of gender-disaggregated data would support comparative analyses on this issue. Gender analyses are also critical to better understand how underlying inequalities aggravate people's vulnerability in crises and undermine their capacities to adapt to changes. In addition, by acknowledging SGBV as a security issue, we are prompted to recognize it not only as a consequence of crises, but as a crisis in its own right. This point is increasingly being addressed by a body of research on the linkages between climate change, disasters, and violence against women and girls (e.g., Cools et al., 2020; Le Masson et al., 2019; Thurston et al., 2021).

4. A Gender Perspective Interrogates the Concept of Resilience

While SGBV is perhaps the most acute manifestation of gender inequality, the examples provided above also highlight other forms of gender injustices embedded within the climate change-conflict nexus to which a gender perspective can draw needed attention. These injustices are often not experienced as separate events, but are rather part of the composite realities that people face in their everyday lives where intersecting inequalities are manifested and reinforced through social norms and practices.

Notably, gendered norms about the intra-household division of labor are critical for understanding how climate change and conflict can cause gendered impacts. An important aspect of this is the unequal burden of the social reproductive labor which is central for the proliferation and the survival of household members. While social reproduction has not yet been fully considered in the climate-conflict nexus (for an exception, see Tanyag, 2018), there is recent research in the separate fields of climate change and conflict which can be built upon when considering gender in the climate-conflict nexus.

Research indicates that the labor that is traditionally assigned to women and girls (e.g., unpaid care and domestic work) increases in times of crises (Dankelman, 2010; Enarson & Morrow, 1998). For instance, following the Great East Japan Earthquake of 2011, women who were evacuated to displaced centers were tasked with preparing meals which they did without being paid. This was not the case for male evacuees who were not expected to contribute to this task, and had the option of collecting and removing rubbish, for which they received compensation (Saito, 2012).

In the aftermath of disasters or armed conflicts, the risks associated with securing one's livelihoods such as longer walking distances to fetch water and finding alternative food sources not only raise the risk of SGBV; they also mean a significant increase in unpaid care and domestic labor which falls disproportionally on women and girls due to the gender division of labor prevalent in their societies (Alston et al., 2019; Pearse, 2017; UN Women, 2016). In addition, household livelihood opportunities and resources are often insufficient in crisis situations, as income-generating activities might cease during intergroup fighting, or assets such as livestock die during a climate-related disaster. At the same time, social infrastructure such as health services might be weakened and overburdened. In such conditions, the labor that women and girls are required to devote to household chores and caretaking responsibilities can increase even further (Buckingham & Le Masson, 2017; Johnston & Lingham, 2020).

These consequences might affect different groups of women to different degrees depending on intersecting vulnerabilities and power structures. But for many young women and girls, these increases in social reproductive responsibilities due to disasters and conflicts may well have long-lasting negative consequences, as the time and effort invested in their expanded responsibilities may interfere with their education (Bradshaw & Fordham, 2015). Similarly, older women might take on more responsibilities by caring for young children and helping out with household tasks. Men have also been documented to take on new and non-traditional responsibilities within the household in times of drought (although women usually continue to do the majority of this work; Oxfam International, 2016).

Furthermore, the norms and power structures that produce the gender division of labor can also regulate and constrain women's opportunities and agency to amplify their and their families' resilience. In post-conflict Eastern Chad, rural communities have to cope with chronic food insecurity, economic fragility, and regular droughts. While men resort largely to temporary and sometimes permanent migration to find new livelihoods, women have to deal with rigid gender norms that forbid them to run a business, earn an income, own land, and decide how to use it or access stock in the family granary even if their husband is absent. This "denial of resources and opportunity," a form of economic violence stressed by the majority of the participants of a recent study, restricts women from diversifying their livelihoods and accessing basic services (food, education, health, etc.). This makes them, and their household members, more vulnerable to environmental shocks and stresses by limiting the resources available to them in the event of a crisis. This is especially true when men do not earn a regular and/or sufficient income, particularly if they have multiple wives since polygamy is widely practiced in the region (Le Masson et al., 2019). In other cases, instead of limiting opportunities, stresses generated by the impacts of

climate change and disasters create additional productive responsibilities for women along with greater social reproductive work (see above).

Gendered experiences of climate stress and violent conflict often manifest in women and girls enduring more limited access to resources such as food and water, and basic services like education and healthcare. Yet, it is imperative to transcend limited approaches that focus on short-term coping mechanisms—as a short-hand for resilience—and identify power-sensitive frameworks that address the long-term root causes of vulnerability. The mainstream adoption of the resilience concept, especially in policy implementation, as something intrinsically "good" conceals power structures, inequalities, and gendered vulnerabilities within societies. It does so by mainly focusing on the ability to cope and recover at individual, local, or national levels, instead of aiming to fundamentally change societies for long-term transformation (Brown, 2015). This understanding of resilience is thus inadequate for elucidating the intersecting vulnerabilities that women and girls experience in the conflict-climate nexus. These gender-differentiated vulnerabilities often stem from, or are exacerbated by, inequities within local power structures and embedded in sociocultural norms and practices (Jordan, 2019).

It follows that women's and girls' experiences in crisis situation are not just an impact of exogenous shocks and stressors but need to be understood in terms of structural power relations which are reproduced in policy responses and in social norms. Those render different women's experiences and the labor they perform "undervalued, uncounted, and unpaid" (Tanyag, 2018, p. 566). When a significant part of the survival strategies of households and communities essentially relies on the invisible social reproductive labor performed predominantly by women it can lead to a "feminization of survival" (Sassen, 2000). If resilience and recovery policies fail to acknowledge this labor, they inadvertently also accept the depletion and gender injustice encompassed within this unequal gender division of labor. A gender perspective can unveil these unintended effects. Studying social reproductive labor allows us to reassess where the resilience of communities and households resides (Kozak, 2021). By recognizing social reproductive labor as equally relevant, and crucial for survival, it helps us broaden the understanding of what kind of support is required in order to truly strengthen resilience (Rai et al., 2019).

Similar to how instances of SGBV change our interpretation of the concepts of security and conflict, experiences of unequal labor burdens can alter our understanding of how resilience is achieved. Further, a gender perspective underscores that the concepts of security and resilience cannot be understood as separate, as they are both part of the human (gendered) experience. Kronsell (2019) notes that human security as a concept challenges conventional understandings of security which only refer to acute threats and exclude structural violence. Dankelman (2010) offers a conceptual framework on gender, human security, and climate change, where human security is defined as: (1) security of survival, which entails mortality risks, and levels of health; (2) security of livelihoods, including food, water, energy, shelter, income generating opportunities and environmental security; and (3) dignity, which encompasses respect of basic human rights, capacities, and participation in decision-making processes. In line with this framing, a more gender-responsive research approach to study the manifestations of climate change and conflicts helps to better document and respond to underlying gender inequalities that aggravate people's vulnerabilities and undermine security in its multiple forms, from risks to women's dignity to conflict insecurity.

5. Conclusion

The intersections between climate change and conflict have attracted increasing attention in recent years, as evidenced by a broad range of scholarly publications and various UN Security Council debates (for an overview, see von Uexkull & Buhaug, 2021). Research on the intersections of gender, conflict, and climate change has, nonetheless, remained limited owing in part to the tendency to investigate this multifaceted interface only in terms of pairs of components (Fröhlich & Gioli, 2015). Consequently, gender concerns still play only a marginal role in debates about the interconnection between climate change and conflict despite a variety of rich insights that could be derived from such an approach.

In this article, we emphasize the importance of a gender perspective to understand the dynamics and impacts of the climate-conflict nexus. Gender roles (e.g., cattle raiders as heroes, breadwinners, and good husbands) and unequal gender structures (e.g., the marginalization and impoverishment of women in conflict-prone societies) are important contextual factors that shape climate-conflict risks in various world regions. Furthermore, gender inequality, intersecting with other inequality structures like class or caste, can aggravate or change the impact of both climate change and conflict, and shape how they are experienced by different people. The cases on SGBV and the gender division of social reproductive labor show us that a gender perspective can interrogate and redefine our understanding and fundamental concepts in the research on the climate-conflict nexus, such as conflict, (in)security, and resilience.

The commonality between these interrogations and redefinitions lies in an understanding of gender inequalities as both manifested and reinforced through social norms and power relations. Norms framing notions of violent masculinities, male breadwinners, or female reproductive labor are often taken for granted and deeply embedded in society. Likewise, SGBV often remains "invisible." Social stigma means that violence survivors are expected to bear the burden of insecurity

without possibilities of redress (Davies et al., 2016). Moreover, women's labor is often not only ignored or considered insignificant, but it is expected, demanded, and taken for granted. Women contribute to building peace, resilience, and security (Omolo, 2010; Pearse, 2017), and their agency needs to be recognized and supported. Men can also suffer from adverse impacts of climate change and conflict, often related to their identities as breadwinners, protectors, and warriors. The gendered impacts of both climate change and conflict need to be better understood and given higher priority in order to be mitigated. A gender perspective can help to understand such impacts, while providing a more nuanced, and often more grounded analysis of the inequalities and injustices that both underpin and are exacerbated by conflicts and climate change.

With the exception of the examples of Japan and Australia, we derive the evidence used in this article from countries located in the Global South. This does not imply that we consider these countries to be naturally violent, unable to deal with environmental problems, or a threat to the Global North (Ide, 2016). Rather, it reflects that most large-scale armed conflicts in the past 70 years took place in the Global South (among others as a result of colonial legacies and Cold War geopolitics), and that many countries in the Global South are more vulnerable to (albeit less responsible for) climate change. A large part of the literature on gender and climate change thus tends to follow and reproduce an impact-focused narrative where victims of climate change are predominantly black women in poor settings of the Global South (Arora-Jonsson, 2011; MacGregor, 2017).

Understandings of conflict, security, and resilience as discussed in Sections 3 and 4, especially the broader interpretations, are relevant to the Global North as well. Unequal divisions of labor, intra-household violence, livelihood loss due to disasters, and norms of men as protectors, among others, are phenomena well known in North America, Europe, and Australia. A gender perspective to climate change and notions of (in)security also interrogates the causes of environmental degradation and conflict, not just their consequences. Environmental and feminist scholars have generated and called for more research inquiries in the Global North and in industrialized societies to examine the linkages between gender norms and unsustainable ways to exploit the environment or extract natural resources (Buckingham & Le Masson, 2017).

Nevertheless, gender-responsive analyses remain the exception rather than the norm in climate-conflict research. Because all manifestations of both violent conflict and climate change affect people differently, a gender perspective is essential when considering environmental policy and security-related decision-making, as well as in the development and implementation of strategies concerning mitigation and adaptation. This includes recognizing women as a heterogenous group whose gender identities intersect with other axes of social difference like class, caste, and ethnicity. Likewise, we caution against conceiving women as passive victims and ignoring that both women and men have particular capacities and resilience as well as vulnerabilities.

We encourage further work to address four specific challenges. First, investigate the role of gender norms and identities in increasing (or decreasing) both conflict risks and environmental degradation (including climate change). Second, critically interrogate how climate change does not only affect violent conflict and social unrest, but also broader notions of security and conflict, including SGBV and other threats to human security. Third, inform responses to both climate change and conflict by highlighting the roles that women (can) play in building peace and resilience, and address power structures that constraint women's agency to play such roles. This should include deepening our understanding of social infrastructure as an integral part of the policy responses to climate and conflict challenges. Fourth, as a cross-cutting concern, document gender-based inequalities and insecurities in the context of climate change and conflict as part of larger efforts to generate disaggregated data for analysis and policy programming.

Addressing these challenges is certainly no easy task. But doing so would not only facilitate the integration of climate, gender, and conflict research, but also allow for more inclusive and effective policy and programming that promotes the achievement of Sustainable Development Goals 5 (gender equality), 13 (climate action) and 15 (peace, justice, and strong institutions).

Acknowledgments

We thank two anonymous reviewers as well as the editors for helpful comments on earlier versions of this article. Tobias Ide's research was funded by the Australian Research Council (DE190101268). We acknowledge support by the Open Access Publication Funds of Technische Universität Braunschweig.

Conflict of Interests

The authors declare no conflict of interests.

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Politics and Governance (ISSN: 2183–2463)
2021, Volume 9, Issue 4, Pages 53–64
https://doi.org/10.17645/pag.v9i4.4419

Article

Japan's Climate Change Discourse: Toward Climate Securitisation?

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Submitted: 28 April 2021 | Accepted: 8 July 2021 | Published: 22 October 2021

Abstract
This article situates Japan in the international climate security debate by analysing competing climate change discourses. In 2020, for the first time, the Japanese Ministry of the Environment included the term "climate crisis" (*kikō kiki*) in its annual white paper, and the Japanese parliament adopted a "climate emergency declaration" (*kikō hijō jitai sengen*). Does this mean that Japan's climate discourse is turning toward the securitisation of climate change? Drawing on securitisation theory, this article investigates whether we are seeing the emergence of a climate change securitisation discourse that treats climate change as a security issue rather than a conventional political issue. The analysis focuses on different stakeholders in Japan's climate policy: the Japanese Ministry of the Environment, the Ministry of Economy, Trade, and Industry, the Ministry of Foreign Affairs, the parliament, the Cabinet, and sub- and non-state actors. Through a discourse analysis of ministry white papers and publications by other stakeholders, the article identifies a burgeoning securitisation discourse that challenges, albeit moderately, the status quo of incrementalism and inaction in Japan's climate policy. This article further highlights Japan's position in the rapidly evolving global debate on the urgency of climate action and provides explanations for apparent changes and continuities in Japan's climate change discourse.

Keywords
bureaucratic politics; civil society; climate; crisis; discourse; emergency; Japan; securitisation

Issue
This article is part of the issue "Climate Change and Security" edited by Yasuko Kameyama (National Institute for Environmental Studies, Japan) and Yukari Takamura (University of Tokyo, Japan).

1. Introduction

Climate change is undeniably one of the most pressing issues of our time. Global warming "will amplify existing risks and create new risks for natural and human systems" (Intergovernmental Panel on Climate Change, 2014, p. 13). The international community adopted the Paris Agreement in 2015 to limit "the increase in the global average temperature to well below 2 °C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5 °C above pre-industrial levels" (UN, 2015, p. 3):

> [L]imiting global warming to 1.5 °C, compared with 2 °C, could reduce the number of people both exposed to climate-related risks and susceptible to poverty by up to several hundred million by 2050 [and] may reduce the proportion of the world population exposed to a climate change-induced increase in water stress by up to 50%. (Intergovernmental Panel on Climate Change, 2018, p. 9)

Japan is already experiencing the impacts of climate change. The Global Climate Risk Index, which looks at losses and fatalities stemming from extreme weather events, ranked Japan as the most affected country in the world in 2018 and fourth-most in 2019 (Eckstein et al., 2019, 2021). In 2018, a heatwave that killed more than 1500 people "could not have happened without human-induced global warming" (Imada et al., 2019). Given the

increasing impact on people's livelihoods, this article investigates to what extent Japan's climate change discourse addresses global warming as a security challenge.

Security-related climate change discourse can be further divided into two discourses: 1) a "conflict" discourse that focuses on the link between climate change and resource scarcity, which can lead to conflict and consequently threaten state stability, and 2) a "security" discourse that highlights the link between climate change and human security—particularly threats to people's livelihoods (Busby, 2019; Detraz & Betsill, 2009). The conflict-centred discourse's focus on military responses has been criticised as detrimental to efforts aimed at limiting climate change (Detraz & Betsill, 2009; Elliott, 2012; McDonald, 2013).

In 2007, the impact of climate change on peace and security was discussed for the first time in the UN Security Council. Japan's representative showed little enthusiasm for linking climate and security (UN Security Council, 2007). This reflected how security is conceptualised in Japan, as either "national security" (*anzen hoshō*) or "comprehensive security" (*sōgō anzen hoshō*). The Ministry of Defence, in charge of national security, does not deem climate change a relevant issue concerning military matters. Although the Ministry of Foreign Affairs (MOFA) adopts the broader notion of human security, it has thus far refrained from linking it to climate change (Kameyama & Ono, 2021). Occurrences of securitisation in Japan's foreign and defence policy are limited to traditional security issues such as China's military rise (Schulze, 2016) and North Korea's nuclear development and past abductions of Japanese citizens (Hagström & Hanssen, 2015). Since "climate conflict" discourse is largely absent in Japan, this article focuses on "climate security" discourse.

For decades, UN organisations and climate activists have been trying to securitise climate change, i.e., make policymakers treat the issue with the urgency of a security threat (de Wilde, 2008; McDonald, 2013). Recent examples include Greta Thunberg (2019a), who famously warned at the World Economic Forum that "Our house is on fire," as well as UN Secretary-General António Guterres (2019), who has stressed that "if we don't urgently change our ways of life, we jeopardise life itself."

In 2019, a wave of "climate and environmental emergency" declarations began sweeping the globe. By October 2020, 1,788 jurisdictions in 31 countries had declared climate emergencies, covering more than 820 million citizens (Climate Emergency Declaration Campaign, 2020). Further signalling a climate security discourse gaining traction are "climate crisis" statements, for example in the EU's updated 2020 Nationally Determined Contribution under the Paris Agreement (EU, 2020) and in US President Joe Biden's (2021) remarks on "Climate Day" on day seven of his presidency.

In Japan, climate change has hitherto been "framed as an economic as well as an energy problem" (Kameyama, 2017, p. 167). However, the Ministry of the Environment (MOE) included the term "climate crisis" (*kikō kiki*) in its annual white paper in 2020 (MOE, 2020). It attracted media attention for being the first governmental publication to use the term "climate crisis." Later that year, the Japanese parliament declared a "climate emergency" (Diet of Japan, 2020).

The recent emergence of security-related climate change rhetoric in Japan has not yet been covered in the academic literature. Since the first climate emergency declarations emerged in Japan in late 2019, signalling a potential turning point in Japan's climate change discourse, the in-depth analysis of recent documents focuses on the short yet crucial period from late 2019 to early 2021.

This article poses the following research question: To what extent is Japan addressing climate change as a security threat? Put differently, does the use of the terms "climate emergency" and "climate crisis" signal a discursive shift toward climate securitisation in Japan's climate policy?

1.1. Japan's Climate Change Policy and Discourse

Japan's climate policy has fluctuated between the roles of leader and laggard. This process has been "closely linked to the struggle between the often competing norms of economic growth, energy efficiency, international contribution, and environmental protection" (Hattori, 2007, p. 75). Key actors shaping Japan's domestic climate policy are the Ministry of Economy Trade and Industry (METI) and the MOE, while the government largely takes a back-seat role. Whereas the METI promotes economic growth and energy efficiency, the MOE is pushing for stronger environmental protection including climate action. The power balance between these two usually favours the METI and the (heavy) industries it represents (Sofer, 2016; Watanabe, 2011).

A noteworthy exception to this dynamic was the second half of the 1990s when Japan positioned itself as a climate leader and hosted international climate negotiations. In this context, the MOFA became involved in climate policy debates and the Liberal Democratic Party Prime Minister Ryūtarō Hashimoto (1996–1998) pushed for an ambitious climate policy, including the promotion of greater awareness of the "global warming problem." Against this backdrop, the notion of environmental protection and an international contribution outweighed concerns about the economic costs of climate change mitigation (Hattori, 2007). Support by the MOFA and the prime minister tipped the scale in the inter-ministerial competition between the METI and the MOE in favour of the position advocated by the MOE (Kameyama, 2002, 2017; Tiberghien & Schreurs, 2010; Watanabe, 2011).

After the US withdrew from the Kyoto Protocol in 2001, raising concerns about the international competitiveness of Japan's industry, the balance of power shifted back to the METI-sponsored discourse on climate policy in which "the cost side" of mitigation was

emphasised (Kameyama, 2017, p. 170). Following a UK proposal to include climate security in the UN Security Council agenda in 2007, the MOE published a Report on Climate Security. However, it quickly dropped the term, arguably due to climate security being outside the scope of Japanese conceptions of security and to avoid impinging on the security responsibilities of the Ministry of Defence (Kameyama & Ono, 2021).

The shift from leader to laggard in the 2000s was exacerbated after the Fukushima Daiichi nuclear accident in 2011. Successive administrations under Prime Minister Shinzō Abe (2012–2020) were characterised by the "prioritisation of economic growth over environmental issues, and hence the greater bureaucratic influence of the METI over the MOE" (Incerti & Lipscy, 2018, p. 632). While the government pushed for nuclear reactor restarts in the name of climate change mitigation, it had, in fact, lost power to implement its nuclear energy policy (Koppenborg, 2021), which led to a significant increase in Japan's reliance on coal to replace discontinued nuclear power plants.

Internationally, Japan was criticised for submitting unambitious emissions reduction targets for the 2015 Paris Climate Summit (Kameyama, 2017). "Unwilling to give up Japan's status as an important contributor to global climate change efforts" (Incerti & Lipscy, 2018, p. 629), Japan was under pressure to present an improved climate strategy when it hosted the G20 in 2019. Japan's long-term strategy under the Paris Agreement "for the first time in the history of Japanese official decisions on climate change…declared that reducing GHG [greenhouse gas] emissions would stimulate economic growth rather than viewing it only as an economic burden" (Kameyama, 2021, p. 77). Hence, toward the end of Abe's term, there were apparent efforts to reconcile the focus on economic growth with climate change mitigation efforts and the desire to exhibit international leadership.

Abe's successor, Yoshihide Suga, has also expressed his intention for Japan to assume an international climate leadership role. Following climate neutrality announcements by several countries, in 2020, Suga announced the goal to achieve carbon neutrality by 2050. At the time of writing, the Suga administration is in the process of hammering out revised emissions reduction targets for the Climate Summit in November 2021.

Interestingly, in the past decade, cities and non-state actors have emerged as a potential force for change in Japan's climate policy. Cities with ambitious climate action plans, with the Tokyo Metropolitan Government as the most famous example, became dynamic contrasts to Japan's otherwise lacklustre climate policy (Koppenborg, 2018; Sofer, 2016). After the Paris Agreement, many non-state actors in Japan began setting more ambitious targets for greenhouse gas reductions than the government (Kameyama, 2021).

What is driving changes in Japan's otherwise METI-dominated climate policy and discourse? Overall, "international climate politics are one of the largest factors affecting Japan's climate policy" as Japan seeks to contribute to international climate action (Watanabe, 2011, p. 28). If the MOFA and the government, most notably the prime minister, begin framing climate action as part of Japan's international contribution, it can shift the balance of power in favour of the MOE's more ambitious climate policy stance and introduce a reframing of climate change. In addition, Japan's involvement with the G7/8 and the position of other states, most notably the US, can impact Japan's climate policy (Kameyama, 2017; Tiberghien & Schreurs, 2010). Furthermore, the recent rise of Japanese non-state climate action is partly influenced by international movements in the context of the 2015 Paris Agreement negotiations (Kameyama, 2021).

Regarding the impetus for the adoption of "climate security" language in Japan in recent years, we expect that it either came from international climate politics or local and non-state actors in Japan. We further suppose that the climate change discourse put forward by the METI will remain hegemonic unless the MOE's climate crisis language gains support from other ministries and the government, most importantly the prime minister.

To assess a potential shift in Japan's climate-change discourse, this article draws on securitisation theory and discourse analysis, outlined in the following section. An analysis of Japan's climate discourse should include the ministries involved, i.e., the MOE, the METI, and the MOFA, as well as other stakeholders, including the prime minister and other Liberal Democratic Party power brokers, cities, and non-state actors. The analysis first focuses on the main ministries involved, subsequently broadens the scope to include other Japanese stakeholders, and then situates Japan's climate change discourse in the literature on Japan's climate policy and discourse. Finally, it discusses potential explanations for change.

2. Securitisation Theory and Discourse Analysis

Securitisation is a concept developed by the so-called Copenhagen School in the late 1990s (Buzan et al., 1998, p. 26). More recently, the environment as a study domain has attracted the attention of securitisation scholars (Balzacq et al., 2016). Securitisation can be thought of as the elevation of an issue from the sphere of politics to the sphere of security, i.e., the construction of a security issue. When an issue is securitised, it is deemed so important that extraordinary measures must be taken immediately to ensure the survival of a referent object—in our case, the Japanese nation. Securitisation is carried out by one or more securitising actors who try to convince a relevant audience about the existential threat posed by a specific issue and the need to undertake extraordinary measures (Buzan et al., 1998, pp. 23–24). In this case, the relevant audience are the abovementioned key climate policy actors.

Discourses can be thought of as temporarily fixed constellations of meaning in which signifiers (words,

objects, and actions) are given specific meaning by their linkages to other signifiers. Signifiers can thus have widely different meanings in different discourses depending on which other signifiers they are placed in relation to. Drawing on an example by Howarth (2000, p. 9), an ecological discourse might conceive of a "forest" as "an object of intrinsic natural beauty," whereas a capitalist discourse might frame the same forest as "an obstacle to the building of a motorway." In the former discourse, the signifiers "forest" and "beauty" are tied together, while in the latter, the "forest" might be seen as a "business opportunity." Needless to say, these two discourses structure widely different understandings of the forest and what should be done with it (preservation/destruction). It is therefore important to investigate word linkages in the text under analysis.

We should point out that we do not imply that discourses directly cause action. But we do argue that powerful discourses have enabling and constraining effects on actors through their ability to render certain practices logical and others illogical (Doty, 1993). This means that the subsequent discourse analysis will not be able to predict the extent to which Japan's climate policy will change, but the discovery of a burgeoning securitisation discourse would demonstrate that the "conditions of possibility" (Weldes & Saco, 1996, p. 395) for serious climate action have materialised.

Since we are interested in examining the extent to which climate change is being securitised in Japan, it is necessary to clarify what a securitising discourse looks like. A minimum requirement is the framing of climate change as an existential threat that requires extraordinary measures. However, we would also suggest that to speak of a full-fledged securitising discourse, antagonism against the status quo must also be present in some form or another. This is because a securitising discourse is by nature status quo challenging as it seeks to radically revise conventional wisdom about what the main security threats are.

In the following, we conceptualise three degrees of securitisation: non-securitisation, moderate securitisation, and strong securitisation. The first refers to discourses that altogether refrain from framing climate change as an existential threat. The second points to discourses that frame climate change as an existential threat but are less clear about extraordinary measures and refrain from using antagonistic language toward climate change's culprits. US President Joe Biden (2021, para. 9), for example, has talked about the need to "confront the existential threat of climate change," but he does not single out climate perpetrators. The third signifies discourses that both frame climate change as an existential threat requiring extraordinary measures and exhibit antagonism toward actors fuelling climate change, e.g., oil and gas companies, indifferent or slow-moving politicians, climate change deniers, etc. The speech by activist Greta Thunberg at the 2019 UN Climate Action Summit is a good example: "People are suffering. People are dying. Entire ecosystems are collapsing. We are at the beginning of a mass extinction, and all you can talk about is money and fairy tales of eternal economic growth. How dare you!" (Thunberg, 2019b). The statements by UN Secretary-General António Guterres (2019) at the same event are not as combative as Greta Thunberg's, but they clearly condemn activities that further fuel climate change: "Is it common sense to give trillions in hard-earned taxpayers' money to the fossil fuel industry to boost hurricanes, spread tropical diseases, and heighten conflict?" The antagonistic warnings by Greta Thunberg and António Guterres represent strong securitisation while US President Joe Biden's statement represents moderate securitisation language due to the lack of antagonism.

To examine whether Japan is moving toward securitisation of climate change, it is necessary to analyse the major competing climate change discourses in Japan and the power balance between them. The analysis draws on numerous written documents: ministries' annual papers, government members' statements in the Japanese parliament (Diet of Japan), the prime minister's speeches at international climate conferences, cities' emergency declarations, and climate NGOs' statements. In the following analysis, we will identify how these documents place climate change in relation to other signifiers and thereby sketch out the extent of securitisation in Japan's climate change discourse.

3. Discourse Analysis

The simplest method to discern differences between relevant ministries' attitudes toward climate change is a word count of key terms. We have excluded the Ministry of Defence from the discourse analysis because it is not involved in climate policymaking and because its 2020 white paper hardly contains any references to climate change. As seen in Table 1, unlike the MOE, neither the METI nor the MOFA has adopted the term "climate crisis'' in their white papers. While these numbers demonstrate whether these ministries have adopted a climate crisis framing or not, they do not reveal the specific ways in which the ministries articulate different discourses on climate change. The following discourse analysis seeks to show how the MOE, the METI, and the MOFA frame climate change in their 2020 white papers.

3.1. METI, MOE, and MOFA White Paper Analysis

3.1.1. Crisis Framing

The natural starting point for a climate change discourse analysis is to look at how the respective white papers incorporate the term "climate change" into their discourses. We can label the MOE discourse as a securitisation discourse because it unmistakably frames climate change as an existential threat "that shakes the foundation of existence for humanity and all living beings"

Table 1. Appearance of key terms in the ministries' annual papers.

Keywords (climate concerns)	MOE	METI	MOFA
Climate crisis (*kikō kiki*)	5	0	0
Climate change (*kikō hendō*)	495	49	81
Survival (*seizon*)	10	0	6
Societal change (*shakai henkaku*)	96	0	1
Decarbonisation (*datsu-tanso*)	162	60	4

Note: Derived from a keyword search in the METI (2020), the MOE (2020), and the MOFA (2020).

(MOE, 2020, p. 20). The crisis framing is clearly inspired by international developments. The first reference to "climate crisis" reads as follows:

> Among the world's main leaders, there is a growing sense of risk. Furthermore, on the grassroots level, particularly overseas, there are demonstrations by young people, demanding countermeasures against climate change, as well as a growing movement by local governments to declare a "climate crisis," so now we are living in an age that can be described as a "climate crisis" (MOE, 2020, p. 3).

Almost the entire first chapter is dedicated to the negative effects of climate change. To drive home the fact that climate change has real-life consequences and is an existential threat for everyone, pages six to nine are devoted to natural disasters that have struck Japan and other countries in recent years. Each disaster is described in detail, including the number of deaths, buildings destroyed, and estimated costs. This is followed by a section that spells out the scientific relation between climate change and these disasters (MOE, 2020, pp. 9–18). The MOE paper links climate change to different negatively loaded signifiers, such as disasters, extreme rain and drought, rising sea levels, the spread of infectious diseases, crop failure, extinction of wildlife, and disruptions of human societies. Hence, the meaning that is given to climate change in the MOE discourse is that of an all-encompassing and potentially all-ending threat that must take precedence over all other threats.

In contrast, the METI paper makes no mention of a "climate crisis," but the paper does warn of two crises of a radically different nature (METI, 2020, pp. 323–327): 1) a hypothetical "supply crisis," in which Japan's traditional oil suppliers are no longer able or willing to supply Japan due to unforeseen emergencies and 2) a "domestic crisis," in which natural disasters damage oil and gas stockpiles. To the extent that there are securitisation moves in the METI paper, these moves are limited to the securing of a steady supply of oil and gas—commodities that have adverse effects on climate change. Although the term "climate change" is used 49 times and the METI paper refers to the "climate change problem" (p. 85) and "the fight against climate change" (p. 96), the term is never followed by an explanation of the negative consequences on humans, animals, or the planet. Hence, it is left unclear to the reader exactly why climate change is a problem and why it needs to be fought.

Similarly, the MOFA diplomatic bluebook contains many references to climate change, but hardly any descriptions of its effects. While traditional security threats, such as North Korea's missiles and China's military build-up, are said to constitute a "very severe security environment" (MOFA, 2020, p. 12), no such trepidation is expressed in the passages concerning climate change. The "crisis" label is attached to several conflicts and issues, such as the "Syrian crisis" (p. 123) or the "humanitarian crisis" of refugees (p. 204), but climate change is never framed as such. Climate change is occasionally framed as a "problem" (p. 242) or a "global issue" (p. 11), but mostly qualifiers are absent. On page 11, the paper states that "the severity of natural disasters is forecast to continue to intensify with the effects of climate change." It is noteworthy that this is the only passage in the whole paper where climate change is directly linked to real-life effects. All other mentions of climate change fail to make this linkage, giving readers the impression that climate change is an abstract problem largely detached from their lives. In fact, climate change is almost always mentioned as one of many items in list-ups of problems facing the world. No prioritisation is given to climate change.

The clear causality between climate change and crisis/disaster in the MOE paper is virtually non-existent in the other papers. Since neither the MOFA nor the METI identifies climate change as a particularly threatening issue, this contributes to the framing of climate change as a non-urgent problem.

3.1.2. Calls for Action

The discursive difference between the white papers can also be discerned by how they suggest that climate change should be dealt with. In line with its securitising nature, the MOE white paper argues that climate change must be countered with extraordinary measures. The clearest example of this is found in the introduction. It states that to secure a liveable environment for future generations, "our traditional societal system and everyday habits of mass-production, mass-consumption, and mass-waste must be revaluated" (MOE, 2020, p. 3), i.e., a critique of the consumerist way of life. The paper also argues for the necessity of "transforming our current

economic and societal systems and initiating a paradigm shift" (p. 35). As shown in Table 1, the term "societal change" is mentioned 96 times in the paper. By warning that climate change will lead to "grave problems for which traditional measures no longer work," the MOE follows the securitisation formula of calling for extraordinary measures "outside the normal bounds of political procedure" (Buzan et al., 1998, p. 24).

Given that the METI paper presents interruptions in Japan's fossil fuel supply, rather than climate change, as its greatest concern, it is not surprising that the most emphatic policy proposals in the paper are not related to climate change, but rather to securing a stable supply of oil, gas and coal. The METI paper calls on the Japanese government to strengthen its "resource diplomacy" (*shigen gaikō*; METI, 2020, p. 36) to ensure "friendly relations" with supplier nations (p. 226). In short, the clearest policy proposals in the METI paper concern the stable supply of the very commodities that are most damaging to the environment. The METI paper acknowledges climate change as a problem, but unlike the MOE's sweeping calls for action, the METI paper's suggestions are incremental, technocratic, and highly business oriented. All suggestions essentially boil down to innovation and technology, thus downplaying the MOE's calls for more radical societal change, a term that is not even mentioned in the METI paper. The paper advocates "discontinuous innovation" (*hirenzoku-na inobēshon*) that will create "new technologies that are completely different from those that exist in today's society" (p. 87). It also frames the effectiveness of Japan's thermal power plants as a contribution to decarbonisation. Moreover, the METI insists on the export of Japan's "cutting-edge" power plants and "clean coal technology" to these countries as a "practical climate change countermeasure'' (p. 282).

The METI clearly views the struggle against climate change as a battlefield where businesses should stand at the forefront. By getting businesses to pollute less and invest in green technologies, a "virtuous cycle of environment and growth" is said to be achievable (METI, 2020, p. 94). The METI seeks to incentivise ecological business practices through "green finance promotion," or, in other words, funding of companies that invest in green technologies or take steps to reduce their carbon footprint. The definition of "green industrial activity" should not be too strict, it argues, for fear that the business community could lose its interest. In practice, this means that companies and projects become eligible for green funding if they can show that they "contribute to the transition toward improved GHG [greenhouse gas] emission reduction and low-carbon economies" (p. 93). Needless to say, such a loose standard of green funding enables a gradualist approach by the corporate sector. In sum, the measures suggested by the METI either run counter to fighting climate change (securing oil, gas, and coal), or enable incrementalism (more effective power plants, faith in the innovation of revolutionary technologies, and loose standards for green funding).

Like the METI, the MOFA calls for "business-led discontinuous innovation" that will create a "virtuous cycle of environment and growth" (MOFA, 2020, p. 215; both phrases come from Japan's 2019 long-term strategy under the Paris Agreement). The MOFA paper acknowledges that divestment from fossil fuel-related industries can be one way to mitigate climate change, but stresses that "divestment alone cannot address climate change" (p. 215). Accordingly, it holds that climate change should be fought by offering companies financial incentives to innovate green technologies (p. 215). These policies strongly resemble those in the METI paper. The paper also outlines how climate change features in Japan's foreign policy. Here, it points out Japan's USD 3 billion contribution to the Green Climate Fund, aimed at helping developing countries implement climate change mitigation measures, as well as Japan's Joint Crediting Mechanism, which allows Japan to list greenhouse gas reductions in other countries as part of its own nationally determined contribution to the Paris Agreement if it has provided these countries with low-carbon technologies. Hence, the MOFA's calls for action are largely market-based and business-friendly. There is nothing in the paper that comes close to advocacy for extraordinary measures.

The MOFA and METI papers share an incremental, business-oriented approach and a belief in innovation in their discussion of climate change policy. They thus reject the MOE's plea for extraordinary measures, i.e., a fundamental transformation of Japan's economic, energy, and societal systems.

3.1.3. Lack of Antagonism

There are limits to the MOE's securitisation moves, however. This is particularly palpable in the absence of antagonistic language, i.e., no criticism of polluting industries, Japan's insufficient climate policy, or positions by competing ministries like the METI. The environmental problems in the MOE white paper appear like crimes without a perpetrator. It should be remembered that a white paper is supposed to be a representation of the government position and requires Cabinet approval for publication, so there are limits to how antagonistic a white paper can be. Nonetheless, subtle criticism of other discourses and even governmental policy is possible even in a white paper. Rear and Jones, for example, show that when neoliberal ideas began gaining traction in Japan in the 1990s and early 2000s, the white paper of the Ministry of Education, Culture, Sports, Science and Technology criticised Japan's education policy for placing "too much emphasis on conformity" and advocated "reforms to promote individualisation and diversification" (Rear & Jones, 2013, p. 382). This kind of critique of competing discourses and the policies they structure should be seen as a type of antagonism in the context of a white paper. Hence, the lack of even subtle antagonism means the MOE white paper must be characterised as a moderate securitisation attempt.

3.1.4. Competing Discourses

In summary, we have shown that the MOE on the one hand and the METI and MOFA on the other represent two differing and often incompatible discourses on climate change. The MOE represents a moderate securitisation discourse, which sees climate change as an existential threat that requires extraordinary measures but omits mention of particular culprits. Conversely, the MOFA and particularly the METI represent a non-securitising, incrementalist discourse, which sees climate change as just one of many problems facing Japan and does not advocate specific countermeasures beyond technology innovation, efficiency improvements, and business incentives, while actively promoting the use of fossil fuels in the name of energy security.

3.2. Japanese Context

3.2.1. A Burgeoning Climate Securitisation Discourse?

This section examines the extent to which the moderate securitisation discourse introduced in the 2020 MOE white paper resonates in Japan's overall climate change debate. To this end, Table 2 provides an overview of other Japanese stakeholders' climate policy frames.

Beginning with the Cabinet members, MOE Minister Junichirō Koizumi first mentioned "climate crisis" on February 25, 2020, in the Diet of Japan and has continued to do so since. By stressing that the MOE and the METI "are not enemies," he explicitly refutes antagonisms toward the METI's status quo-oriented policies. With the Diet of Japan's "climate emergency declaration," many parliamentarians have presumably adopted the climate crisis framing in 2021, but, notably, Prime Minister Suga, Foreign Minister Toshimitsu Motegi (2019–) and his predecessor Tarō Kōno (2017–2019) have not used the term "climate crisis" in the Diet of Japan (as of March 2021).

Looking at cities and NGOs, the Japan Climate Initiative, the Kiko Network, and several cities adopted climate securitisation language even before the MOE in 2020 and the Diet of Japan in 2021. A total of 40 local governments in Japan had issued climate emergency declarations by October 2020 (Climate Emergency Declaration Campaign, 2020). While Table 2 only lists the climate emergency declaration by Kamakura City, all local governments' emergency declarations can be understood as support for the securitisation move.

In sum, a moderate securitisation framing has garnered support from several Japanese cities and NGOs, the MOE, and its minister as well as the nonpartisan group of parliamentarians behind the Diet of Japan's climate emergency declaration. On the governmental level, however, the incrementalist discourse with its focus on promoting fossil fuels and on relying on future innovation is still hegemonic as it enjoys support by all major actors except the MOE and Koizumi. While the efforts of securitisation actors have led to the establishment of climate securitisation as a new minor discourse, they have so far failed to garner support from the actors needed to transform it into a hegemonic one.

3.2.2. Impetus for Adopting Climate Securitisation Language

This section discusses where the impetus for adopting climate securitisation language has come from. Japanese climate securitisation actors refer to international trends, albeit different ones. As seen in Table 2, MOE Minister Koizumi's first reference to a "climate crisis" clearly acknowledges the phrase's foreign origins. The MOE white paper also traces the language of crisis back to world leaders, grassroots demonstrations overseas and local government action (see the second quote in Section 3.1.1). It can also be mentioned that the MOE white paper emphasises the inspirational impact Greta Thunberg's climate activism has had on millions of young people in Japan and abroad (MOE, 2020, p. 21). The Diet of Japan's climate emergency declaration similarly cited global perceptions as its impetus for action (see Table 2). The Japan Climate Initiative draws inspiration from "organisations of various non-state actors [that] are getting underway in other countries" (Japan Climate Initiative, 2018, p. 1), while Kamakura City links its own climate emergency declaration to the global trend among cities to adopt such declarations (Kamakura City Council, 2019). Japanese securitisers were clearly inspired by international climate politics.

How about the international influence on the government? US President Joe Biden has repeatedly used the term "climate crisis" since taking office in January 2021. In the Diet of Japan, Suga made his first mention of climate change only after Joe Biden was elected as US President. Both Suga and Motegi almost always mention climate change in the context of the Japan–US alliance. This suggests that their concern about climate change is mainly aimed at strengthening the Japan–US alliance. Given this focus and the US' traditionally strong influence on Japan, one might have expected Suga to adopt crisis language when attending Joe Biden's Earth Day Climate Summit on April 22. However, Suga refrained from doing so despite declaring his intention to "lead global public opinion" (Suga, 2021, para. 1). Hence, the adoption of climate crisis language by the US under Joe Biden may have led more Cabinet members to address climate change in the Diet of Japan, but, so far, has not led to the Japanese government taking up similar climate securitisation language.

4. Discussion and Conclusion

This article set out to investigate the extent to which Japanese stakeholders are securitising global warming. The key finding is that securitisation actors—Japanese cities and climate NGOs, the MOE, and its minister Koizumi, as well as a multi-partisan group of parliamentarians—have established climate

Table 2. Climate change framing by stakeholders in Japanese climate policy.

Actor Category	Actor Name	Crisis Framing	Action Calls	Antagonism
Civil Society	Kiko Network	"Climate change—a threat to the survival of our species''	"Realisation of a zero-carbon society and economy''	—
	Japan Climate Initiative	"Whether [the Paris Agreement] goal will be achieved or not will affect the survival of human beings''	"Expanding and accelerating efforts toward a decarbonised society'' "Working with each other and with national governments to accelerate their nationally-determined processes of transformation"	—
City	Kamakura	"The global environment is deteriorating due to climate change'' "We are calling for the announcement of a 'climate emergency declaration'"	"Our goal is to achieve zero emission of greenhouse gasses"	—
Parliament	Diet of Japan (Climate Emergency Declaration)	"We share the global perception that 'the global warming problem now has exceeded the realm of climate change and entered into a situation of climate crisis'"	"Strive for the immediate realisation of a decarbonised society, carry out a reorientation of Japan's economic society"	—
Government	PM Suga Speech	—	"By 2050, Japan will aim to reduce greenhouse gas emissions to net-zero'' "Addressing climate change is no longer a constraint on economic growth, rather it will lead to dynamic economic growth" by "focusing on a virtuous cycle of the economy and the environment.'' (2020 Climate Ambition Summit)	—
	Toshimitsu Motegi	—	"Making international contributions in the field of climate change has become the most important task for our foreign policy''	—
	Tarō Kōno	—	"Follow international trends" and "implement the Paris Agreement''	—
	Shinjirō Koizumi	"Climate change is now seen as such a serious issue that abroad it is even referred to as a climate crisis'' "There is a growing perception in all areas of Japan that climate change has entered the phase of a climate crisis"	"Decarbonised society" Lower coal-dependence "as much as possible''	The MOE and the METI "are not enemies''

Notes: Created by the authors based on the METI (2020), Diet of Japan (2020), Japan Climate Initiative (2018), Kamakura City Council (2019), Kiko Network (2021), MOE (2020), Suga (2020), as well as a keyword search of statements by Suga, Koizumi, Motegi, and Kōno in minutes of Diet of Japan debates during their ministerial period, or until March 4, 2021, available at Diet of Japan (2017–2021).

securitisation as a new minor discourse. In doing so, they were clearly influenced by recent securitisation trends in international climate politics.

In contrast to the strong securitisation language used by UN Secretary-General António Guterres and climate activist Greta Thunberg, among others, Japanese securitisation actors, including civil society, pursue moderate securitisation by refraining from adopting combative language against specific culprits. One explanation for this might be the nature of civil society in Japan. According to Pekkanen (2003, p. 133), "it is hard for autonomous groups to become large and hard for large groups to be autonomous" due to the licensing process for so-called non-profit organisations, which includes considerable ministerial oversight and, therefore, expectations of compliance to the governmental line. Furthermore, "the LDP's [Liberal Democratic Party] return to power appears to have diminished the role of the strongest environmental advocates," including the removal of the head of the Kiko Network from policy advisory councils (Sofer, 2016, p. 14). Hence, the Kiko Network's choice of language might simply be a strategic decision to avoid further exclusion from policy discussions. As for the Japan Climate Initiative, it should be mentioned that it is part of a global network committed to working with governments rather than to lobby for stronger action.

Why did the MOE adopt a moderate securitisation discourse? Most crucially, the MOE's ability to push for stronger climate action depends on its ability to convince the METI to shift Japan's energy policy, since the majority of Japan's greenhouse gas emissions comes from the energy sector. Hence, non-antagonism most likely represents a strategic decision by the MOE to avoid antagonising the METI and increase the chances of convincing it to adopt stronger climate policies.

While the efforts of securitisation actors have led to the establishment of climate securitisation as a new minor discourse, they have so far failed to garner support from the prime minister and the METI. These findings are in line with previous findings of the importance of prime ministerial involvement to bring about change in Japan's METI-dominated climate discourse and policy (Kameyama, 2017; Tiberghien & Schreurs, 2010; Watanabe, 2011). Rather than adopting climate securitisation language, Suga (2020) repeated the language in the 2019 long-term strategy under the Paris Agreement almost word by word at the 2020 Climate Ambition Summit—as did the METI and MOFA papers. The analysis has revealed that the framing of climate change mitigation as an opportunity for economic growth has apparently replaced the former hegemonic METI-sponsored framing of climate change action as an economic burden. The broad adoption of the economic opportunity framing, introduced by Suga's predecessor Shinzō Abe, further suggests that prime ministerial support is crucial for a new discourse to become hegemonic in Japan.

Comparing Japan to the "climate crisis" language used by Joe Biden and the EU in its updated national determined contributions for the Paris Agreement, it becomes clear that Japan is lagging international developments. Japan's position as a leader or laggard has previously been explained by the relative weight attributed to the conflicting goals of economic growth, international contribution, and environmental protection (Hattori, 2007). Even though the Suga government stresses climate change mitigation as an opportunity for economic growth and seeks to exhibit global leadership, the government is far from leading the global climate change discourse—or international climate politics for that matter. Considering Schoppa's (1993, p. 383) finding that foreign pressure will "produce the most positive results when these strategies resonate with domestic politics," the government's avoidance of the term "climate crisis" can be explained by its insistence on promoting coal, historically the biggest contributor to global warming.

In conclusion, the Japanese government has yet to walk the walk after talking the international contribution talk. Hitherto lacklustre greenhouse gas reduction targets under the Paris Agreement and support for fossil fuel projects garnered Japan two unflattering Fossil of the Day Awards at the 2019 UN Climate Summit, which the Climate Action Network awards to countries it regards as laggards. Suga's predecessor Shinzō Abe was further denied the chance to speak at the UN Climate Action Summit in September 2019, which was designed to showcase climate leaders' actions. These setbacks notwithstanding, the emergence of a moderate securitisation discourse has at least created the conditions of possibility for more comprehensive and drastic climate policies going forward. The extent to which this opening for change in Japan will be pursued is an important object for future research.

Acknowledgments

We would like to thank the anonymous reviewers for their comments and suggestions. We also thank the thematic issue editor, Yasuko Kameyama, for valuable feedback on an earlier article draft presented at the 2020 Annual Workshop of the German Association for Social Science Research on Japan. This open-access publication received financial support from the Chair for Environmental and Climate Policy at the Technical University of Munich.

Conflict of Interests

The authors declare no conflict of interest.

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COGITATIO

Politics and Governance (ISSN: 2183–2463)
2021, Volume 9, Issue 4, Pages 65–78
https://doi.org/10.17645/pag.v9i4.4427

Article

Transforming the Dynamics of Climate Politics in Japan: Business' Response to Securitization

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Submitted: 28 April 2021 | Accepted: 19 July 2021 | Published: 22 October 2021

Abstract
In 2020, Japan suddenly changed course and made carbon neutrality its intermediate target. In an attempt to understand this drastic policy change, this article analyzes the effects of climate security discourses on the perception of the Japanese business community, which holds the pivotal position in Japan's climate policy. It particularly focuses on the effect of securitization on the source–impact asymmetry, one of the intrinsic features identified as a major obstacle to effective climate governance. From this standpoint, the article measures the extent to which the issue of climate change has been securitized in Japan, and also the extent to which the Japanese business community has come to share the securitizers' sense of exigency. In so doing, this article employs the text-mining method called KH Coder to analyze relevant government documents as well as statements issued by Keidanren (also known as Japan Business Federation). The analysis shows that the Ministry of the Environment together with other governmental actors has collectively securitized the issue within the context of Japanese society, but that its impact on industry has been indirect, pointing to the complexity of its causal impact.

Keywords
business community; climate policy; environmental politics; Japan; securitization

Issue
This article is part of the issue "Climate Change and Security" edited by Yasuko Kameyama (National Institute for Environmental Studies, Japan) and Yukari Takamura (University of Tokyo, Japan).

1. Introduction

In 2019, Japan received two ignominious Fossil of the Day awards from the Climate Action Network for refusing to phase out coal-fired power generation and also for not upgrading its 2030 target of a 26% carbon emission cut from the 2013 level. Indeed, ever since the 2011 Fukushima nuclear disaster, Japan has been building new coal-fired power plants to make up for the decommissioned nuclear power plants rather than expanding renewable energies (Schumacher, 2017). In 2018, Japan's dependence on thermal power reached 85.5% of its total power supply with coal power taking up a third of that portion (Agency for Natural Resources and Energy, 2021). Needless to say, this excessive dependence on coal firing has become a major obstacle to Japan's upgrading of its emission reduction targets. Yet, in the fall of 2020, the government abruptly announced its new 2050 target of carbon neutrality, followed by the announcement of a target aiming for a 46% reduction in emissions by 2030 in April 2021. In the following month, the government revised the Act on the Promotion of Global Warming Countermeasures to give the new 2050 decarbonization target the legal foundation that it needed ("Kaisei-chikyuondankataisakusuisin-ho," 2021).

The primary aim of this article is to understand this policy change by examining whether a sense of urgency shared among Japanese policymakers and the business community became the driving force for this change. For an analytical framework to guide our research, this article draws on the "securitization" literature developed by the Copenhagen School in international relations with a view to adapting the concept to the context of climate policy. How will we know when the securitization

of climate change is successful? What features of the climate issue would work against it? Which governmental actors have engaged in a securitizing act in Japan? Has such securitization moderated the effects of those features militating against successful securitization? Has the business community changed its attitude toward the mitigation of climate change as a result of that? In answering these questions, this article shall make full use of a text-mining method developed for social research to analyze the contents of both the government's official documents and the statements issued by Keidanren (also known as Japan Business Federation) with regards to climate issues.

The following caveats are, however, in order. First, the text-mining method used in this article can only provide us with a broad picture of overall tendencies with ample room for different interpretations. Consequently, the inference that will be drawn from the data will be necessarily subjective. In order to address this deficiency inherent in such a text-mining method, however, the author shall supplement the analysis to the extent possible with available qualitative data to make the inference as plausible as it can be. Second, even if the text-mining method does not directly reveal the causal impact of securitization on the perception of a target actor, which is, in the case of this article, the Japanese business community, it does not necessarily mean that securitization has had no impact. It simply means that the causal link between the securitization and the actor's attitudinal change is more complex than can be captured by this quantitative method. It is therefore more important to see empirically if there has been an attitudinal change in the target actor, and to find out what the attitudinal change has been associated with to make an inference from the available data. With this in mind, let us now take a look at the concept of securitization.

2. Challenges in the Securitization of Climate Change

2.1. Applying the Concept of Securitization to Climate Change

Environmental issues are one of the first non-military areas to which the concept of security was applied by practitioners and scholars alike (Brundtland, 1987; Homer-Dixon, 1994; Palme, 1982). In applying the concept to environment issues, their intention was to point out that overburdened eco-systems would seriously undermine nations' security in the traditional sense of the word based on a statist "threat-defense" logic. This article, however, will follow in the footsteps of the Copenhagen School of security studies originally developed by Barry Buzan, Ole Wæver, and Jaap de Wilde, and will feature an alternative, more expansive view that the concept of security has characteristics, which are common to different sectors, going beyond the traditional logic (Buzan et al., 1998). The reason for taking this theoretical stance is not because the inquiries into the effect of securitization on traditional security actors are unimportant, but rather it is because the objective of this article is to find out empirically whether the securitization of climate issues has had any effects on industry's perception toward the issue of climate in Japan. From this standpoint, therefore, this article sees a security problem as emerging in any situation where the existence of something or someone is seriously being threatened. In the environmental sector, the earth system or civilizations can be a security issue (for instance, any threat to the continued existence of species; Buzan et al., 1998, p. 23). By extension, the problem of "climate security" exists whenever climate change endangers the global ecosystem, the safety of coastal and riparian areas, agricultural production, public health, and/or social stability (Gleditsch, 1998; Kameyama & Ono, 2021; Levy, 1995; McDonald, 2013; Trombetta, 2008). The "securitization" of climate therefore refers to a process whereby the perception of an existential threat to some of these objects comes to be shared by important members of a collectivity (Buzan et al., 1998, pp. 29–31). As such, the process generally involves two steps. First, some authoritative actor claims that there is an existential threat to some objects (a securitizing act). Second, a "significant audience" accepts this discourse as a legitimate claim (Buzan et al., 1998, p. 25).

This interaction between the securitizing actor and the audience is readily applicable to climate security. Given the importance of science, an epistemic community composed of climatologists should be the most likely candidate for an effective securitizing actor in this field (Buzan et al., 1998, pp. 71–73; Haas, 1990, 1992, 2007, 2016). Once the scientific claim is confirmed, however, other actors such as governmental actors and NGOs are expected to join in as securitizing agents as well. Who is the most significant audience for the securitization of climate, then? It is without question industry, because it is the largest contributor to the emission of CO_2, and as such should be the most important audience for, as well as the most powerful "veto actor" against securitization (Buzan et al., 1998, pp. 75–79).

What needs to be revised in the original formulation of securitization, however, is the criteria for "successful" securitization. The original formulation associates successful securitization with the adoption of extraordinary emergency measures "outside the normal bounds of political procedure" (Buzan et al., 1998, p. 24). Yet, it is clear that this will not apply to climate change, because any decision to address climate security cannot be trans-political in nature. We should consider securitization to be successful as long as it "transforms the way of dealing with" the problem instead (Trombetta, 2011, p. 137). That is, as long as the securitization of climate urges a country to set an ambitious emission reduction target as well as to reformulate its energy policy to meet such a target, the securitization of climate should be regarded as successful, even if its outcome does not include a trans-political and/or trans-legal regulatory response.

2.2. Two Types of Asymmetry as Constraints on Climate Securitization

Even so, securitization is not easy. Different factors bear upon the outcome (Balzacq, 2011, pp. 7–8; Salter, 2011, pp. 122–126). Here two intrinsic features of climate change that may work against successful securitization shall be discussed. One is what shall be referred to as source–impact asymmetry. This feature is concerned with the discrepancy between the location where the impacts of climate change are felt and the location of its sources. This asymmetry is indeed a common feature shared by other global environmental issues (Buzan et al., 1998, pp. 84–91). In the case of climate change, countries in the Global North have generally been the sources of the problem, while countries in the Global South are the ones which feel most of its impacts in the form of floods, droughts, or forest fires (Yamada, 2017). This asymmetry thus increases the cost of mitigation relative to its benefits for industrialized economies.

Another impediment is what shall be referred to as scale–identity asymmetry. That is, there is a mismatch between the scale of the problem and the identity of actors. The scale of the climate issue is inherently systemic in terms of its sources as well as its impacts regardless of their uneven distribution within the system. Yet, the identity of states that make up the system is not yet sufficiently global; actors rarely regard the welfare of the system as their own (Wendt, 1999). This self-regarding identity of states is likely to create a dynamic of rivalry among states, and as such states will be reluctant to come to grips with a threat of a global nature in fear that doing so will put them at a disadvantage vis-à-vis others especially in commercial competition. In other words, the scale factor matters for an effective response to a global environmental challenge (Buzan et al., 1998).

The Japanese experience seems to bear these claims out rather well, because until recently Japan has been most reluctant to set ambitious CO_2 emission reduction targets. Just before the Paris Conference of 2015, the Japanese government proposed an emission cut of only 26% from the 2013 level by 2030, and it announced a cut of only 80% by 2050 in the following year (Kotsubo, 2016). The 26% emission reduction target in particular did not seem ambitious enough in light of the fact that the EU was already planning to reduce its emissions by at least 40% from the 1990 level in part by consolidating multi-level approval procedures for renewable energy development (Oberthür, 2019; Schumacher, 2019). As unambitious as these Japanese targets may be, Keidanren still criticized the government on behalf of coal-dependent industries for setting such demanding targets (Japan Business Federation, 2016, pp. 7–8). Moreover, it has also fought tooth and nail against any hint of introducing carbon pricing, be it emissions trading or a carbon tax (Ohta, 2016, pp. 231–258). This business community's deep-seated resistance has been driven in part by Japanese electric utilities' need to meet spikes in electricity demand during heat waves, and also in part by the hitherto lack of progress in sustainable finance with Japan's major banks being firmly committed to coal-fired power plants, both domestically and internationally (Schumacher et al., 2020). For their part, the Ministry of Economy, Trade and Industry (METI) and the Liberal Democratic Party have also consistently endorsed industry's lethargic position (Sekine & Sakurai, 2018). Protected by this "iron triangle," therefore, industry's lack of enthusiasm toward decarbonization has come to set the tone for the country's Basic Energy Plans. According to the most recent Basic Energy Plan at the time of this writing, Japan should aim, in the supply of electricity, for a 26% share in coal-fired power, a 20 to 22% share in nuclear power, and a 22 to 24% share in renewable energy by 2030 (Sakurai et al., 2020). Arguably, therefore, Japan's climate policy has been effectually subordinated to its coal-dependent energy policy.

In light of this context, in the section below, the following questions should be addressed. First, to what degree has the climate issue been securitized and by whom? If multiple governmental actors have been involved in the securitization, what commonalities do these actors have? Has the Paris Agreement affected the way in which the climate issue has been securitized? Second, how has securitization affected the two asymmetries discussed above? While we can readily speculate that climate securitization will drive home to the audience that Japan is a victim as much as a culprit of climate change, thus somewhat rectifying the source–impact asymmetry, it would be unrealistic to assume that securitization will suddenly change the identity of states from "rivals" to "friends" even in the presence of a common global threat. As such, we should primarily focus on the first asymmetry in our following analysis. Third and finally, we should ask whether climate securitization has transformed the view of the business community and if it has, to what extent and how? The most straightforward impact of securitization on industry would be that industry would come to share the securitizers' view of climate security, resulting in the moderation of industry's resistance to setting ambitious emission reduction targets and hence in the acceptance of the government's about-face on climate policy. Has that been the case? Let us explore this below, but first methodology should be discussed.

3. Analyzing the Government's Climate Security Discourses and Their Impact on the Japanese Business Community

3.1. Methodology

Let us briefly discuss the analytical methods used in this article. In order to analyze the discourses and hence the perception of relevant actors, the text-mining method called KH Coder (hereafter Coder) will be applied to the official documents of these actors (Higuchi, 2017). This

method has allowed the author to do the following: first, to measure the frequency of words used in the text, second, to create "co-occurrence networks" among dyads of words used in each sentence, and third to measure the level of co-occurrence between specific words.

Here is how the data are collected. First, the documents, which are available in html or pdf formats on the actors' official sites, have been divided into two groupings, using 2015, the year when the Paris Agreement was concluded, as a threshold. The reason for this division is because the Paris Agreement has required all of its parties to report their adaptation measures, thus enabling them to reflect on their own climate risks. Second, only those sentences containing words related to climate change have been selected for analysis, and the Coder's frequency function has been used to measure the frequency of word appearance. Here it is assumed that the more frequent the appearance of the words associated with "threat and security" (e.g., "emergency," "threat to life," and "death") is in the texts, the level of securitization will be higher. Moreover, it is also assumed that the level of securitization will be higher still if these words are accompanied by such adjectives as "serious" and "urgent."

Third, "co-occurrence" networks containing both "nodes" and "edges" that connect these nodes are created for each group of texts by using the Coder's co-occurrence function. The threshold of word appearance for nodes is set according to the volume of sentences in the examined text so that there will be around 150 nodes for each map. Similarly, the threshold for connectivity is set to include around 600 edges so as to keep the number of co-occurrence clusters within 10. The networks above this threshold are thus grouped into clusters shown in different colors. It is assumed here that the nodes that are connected by edges have intimate relationships, and that the more edges there are, the greater the intimacy of their relationships will be.

Fourth, the Coder's word association function has been used to measure the relative proportions of co-occurrences between specific words, which are deemed to be important in deciphering the actors' perceptions on key topics. It is assumed here that the greater the proportion of co-occurrences in a given dyad is, the relationship of the dyad will be stronger than that of other dyads. Lastly, the Coder's keyword in context function has been used to examine how the tightly linked words are actually used in the text.

3.2. Securitization by the Ministry of Environment

Let us start with the Ministry of the Environment (MOE), which is the most likely domestic candidate for a securitizing actor. Figures 1 and 2 show the co-occurrence networks for the *Kankyo hakusho* (White Papers on the Environment; MOE, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020a) being divided into two periods: Period 1 (2009–2014) and Period 2 (2015–2020), respectively. The network nodes that are shown in Figure 1 contain words that appear 85 times and above, and the threshold of 600 "edges" is used for creating clusters. In Figure 2, words used 120 times and above appear as nodes, and the links containing 750 edges and above appear as co-occurrence clusters.

What does the comparison of these two periods tell us? First and foremost, the data indicate that the usage of words connoting existential threats has substantially increased, with the frequency of words coded as "threat and security" jumping from 69 times in Period 1 to 99 times in Period 2, and the frequency of words coded as "risk" similarly jumping from 65 times to 167 times. It implies that Japan is now increasingly being portrayed as a victim of climate change. Accordingly, Figure 1 indicates that the "adaptation" node (toward the very left in red in the middle range) for Period 1 is quite small in size, and also not connected to any concrete policies, whereas Figure 2 shows that the "adaptation" node (toward the bottom in light blue) for Period 2 is more pronounced, and also connected to words such as "planning," "local governments," and "adaptation policy" as well as to "impacts," indicating that adaptation has become a real policy issue. If one looks more closely at the 2020 white paper, for instance, it provides concrete data on the number of deaths caused by heat strokes "closely connected" with climate change, reaching 1581 and 1224 deaths in 2018 and 2019, respectively, and also refers to the testing of the "heat-stroke warning alert" system developed jointly by the MOE and the Japan Meteorological Agency in the Kanto region to promote the adoption of preventive measures among citizens (MOE, 2020a, pp. 90–91). In the same document, the MOE also discusses the importance of promoting renewable energies such as electric vehicles that can be used as alternative sources of electricity in the event of a large-scale blackout resulting from a storm (MOE, 2020a, p. 37).

Has this change in self-perception affected Japan's attitude toward mitigation, then? In this connection, it is important to see that the word "de-carbonization" appears only in Period 2, although as a small node (toward the top in green in Figure 2); in Period 1 the word "low carbon" (toward the bottom on the right in mustard in Figure 1) appears instead. This is rather significant, because it suggests that the MOE has begun to emphasize the importance of bringing down the nation's carbon emission to zero only since 2015. Moreover, this analysis clearly shows that the MOE has placed a premium on the introduction and promotion of renewable energies (on the right in red in Figure 2 back-to-back with the "low carbon" cluster) in achieving either low or zero carbon emissions. The overall picture as to where the MOE stands on the issue of climate security is thus clear; faced with greater climate risks, Japan should aim for a low-carbon or decarbonized society by shifting to renewable energies as soon as possible.

These analytical results are corroborated by the statement made by Environmental Minister Shinjiro Koizumi

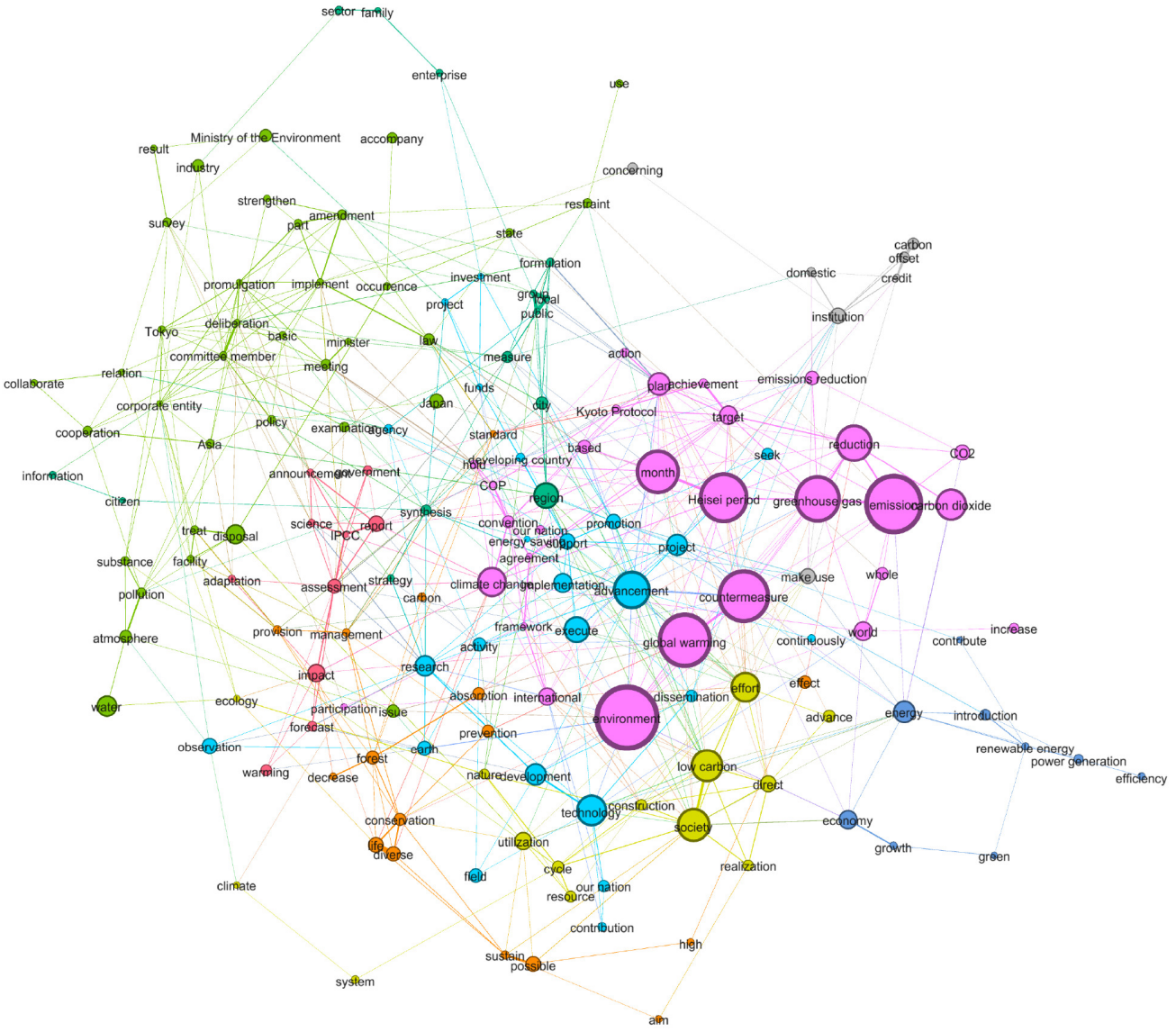

Figure 1. The discourse map of the MOE for Period 1.

at a news conference held in connection with the 2020 White Paper on the Environment on June 12, 2020:

> This year for the first time, we the Ministry of the Environment have made it explicit in the White Paper that we now regard the issue of climate change as the climate crisis….It has been pointed out that, from now on, global warming will increase the risks of rain storm disasters and heat waves even further, and we think that we are currently facing this very crisis….As such, we are planning to share this sense of crisis with many other players in an attempt to facilitate the transformation of our society….And in order to turn this crisis into an opportunity, we would like to collaborate to an even greater extent than before with other relevant ministries, local governments, businesses and our citizens in order to promote the redesigning of our economy and society in the post Covid-19 period by making three transitions, namely transitions to decarbonization, a circulation economy, and a decentralized society….The reason why we the Ministry of the Environment are currently seeking and enhancing collaboration with the Ministry of Defense over renewable energies is precisely because we share the belief that such collaboration will contribute to those things (the independence and survival of our nation) and also that this climate crisis is a national security issue for our country. (translated by the author; MOE, 2020)

3.3. The Formation of a Coalition of Securitizing Actors Within the Government

How have other ministries responded to the climate risks? Have they come to share the MOE's view of climate security? Here let us analyze the official documents that have been co-authored by multiple ministries entitled The Synthesis Reports on the Monitoring,

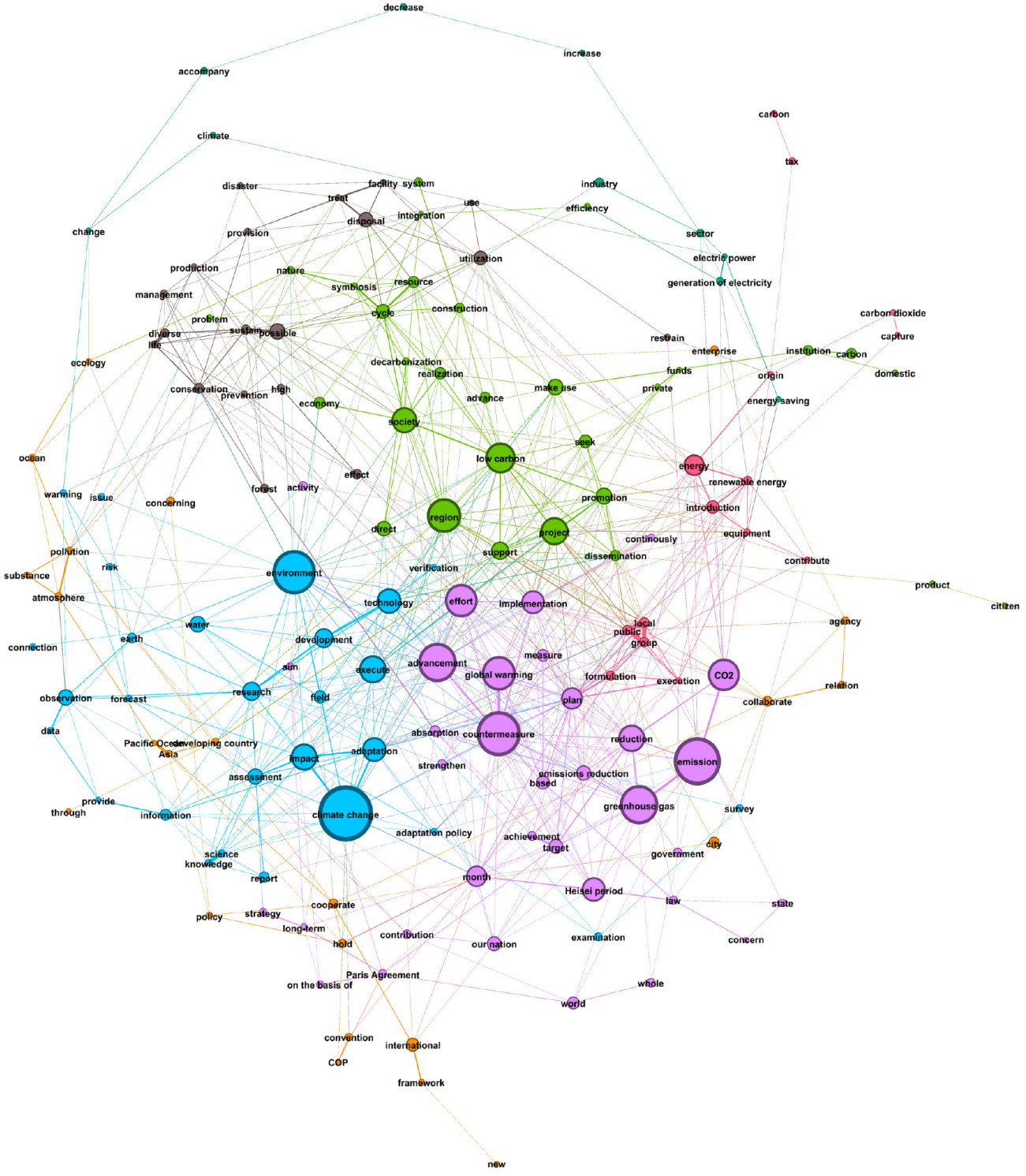

Figure 2. The discourse map of the MOE for Period 2.

Forecast and Assessment of Climate Change (synthesis report below) to see what their collective discourses suggest. Two synthesis reports (Ministry of Education, Culture, Sports, Science and Technology et al., 2009, 2012) were published in Period 1, and were co-authored by the Japan Meteorological Agency, the Ministry of Education, Culture, Sports, Science and Technology and the MOE. In Period 2, so far only one synthesis report (MOE et al., 2018) has been published, but two more ministries, namely the Ministry of Land, Infrastructure and Transport and the Ministry of Agriculture, Forestry and Fisheries, have joined the authorship.

Figure 3 shows co-occurrence networks from the synthesis reports from Period 1. All the texts containing a total of 1394 sentences have been coded and the words used 30 times and above appear as nodes,

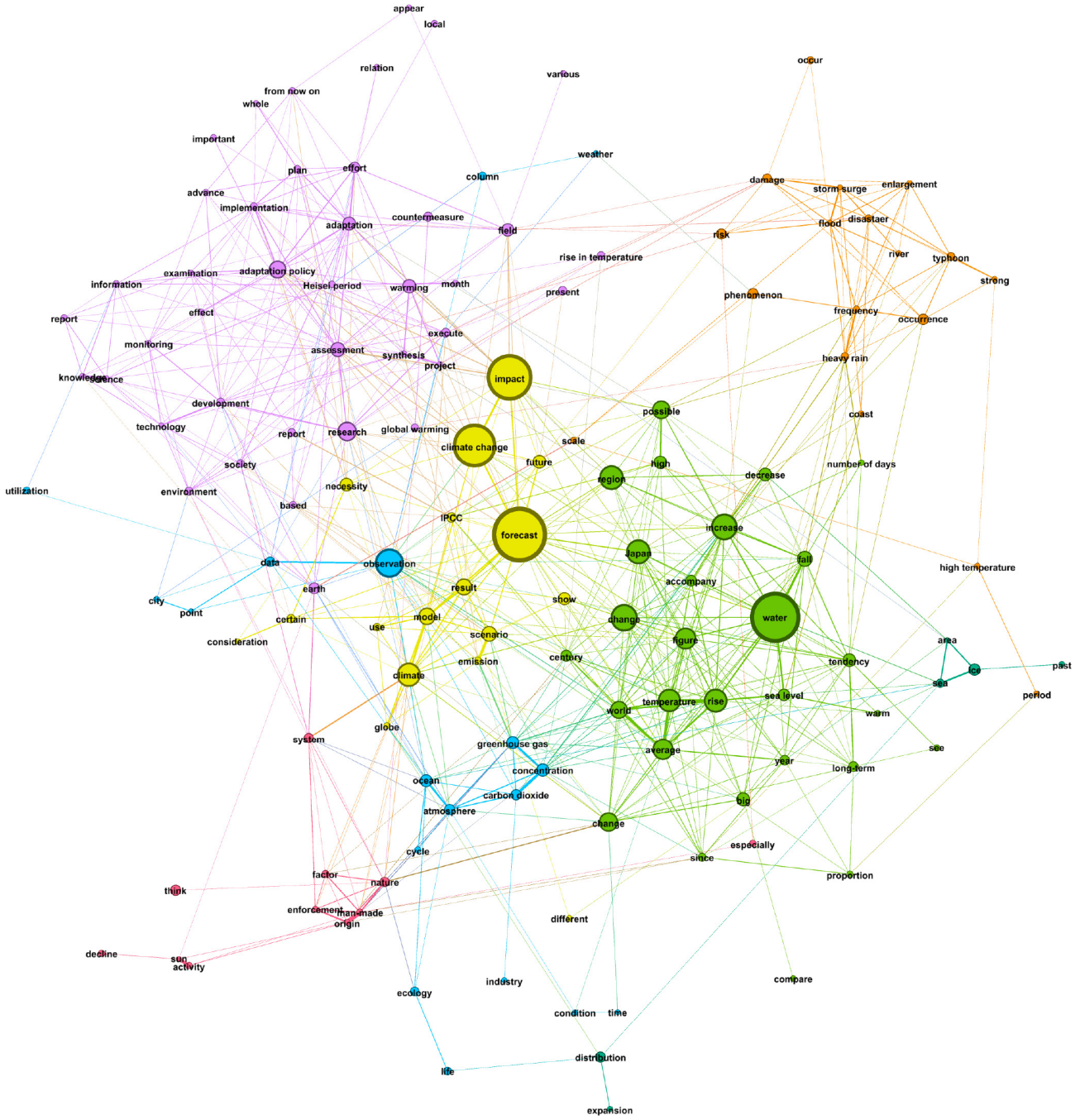

Figure 3. The discourse map of a bureaucratic coalition for Period 1.

and 700 "edges" and above as co-occurrence clusters. Similarly, Figure 4 shows co-occurrence networks for the synthesis report in Period 2, which contains a total of 1027 sentences. Here the words used 25 times and above appear as nodes, and 600 "edges" and above as co-occurrence clusters.

First of all, the most striking difference between the two periods is that the report in Period 2 makes more references to the social and economic impacts of climate change, as "climate change" seems strongly linked to "agriculture" and "disaster" (in the lower right quadrant in purple in Figure 4); by comparison, "impact" (a noticeable node near the center in mustard in Figure 3) is not directly linked to "disaster" (a small node in the upper right quadrant in orange) in Period 1. Moreover, in the report for Period 2 more pages are given to the impacts of climate change on Japan itself; a total of 60 pages are on the potential impacts of climate change, of which 56 are on Japan referring to such impacts as the degradation of rice grains, decreasing fish stocks, and the increasing number of landslides. This tendency is also clearly indicated by an increase in the number of specific types of disasters being mentioned such as typhoons and floods (the upper right quadrant in orange in Figure 4). The term

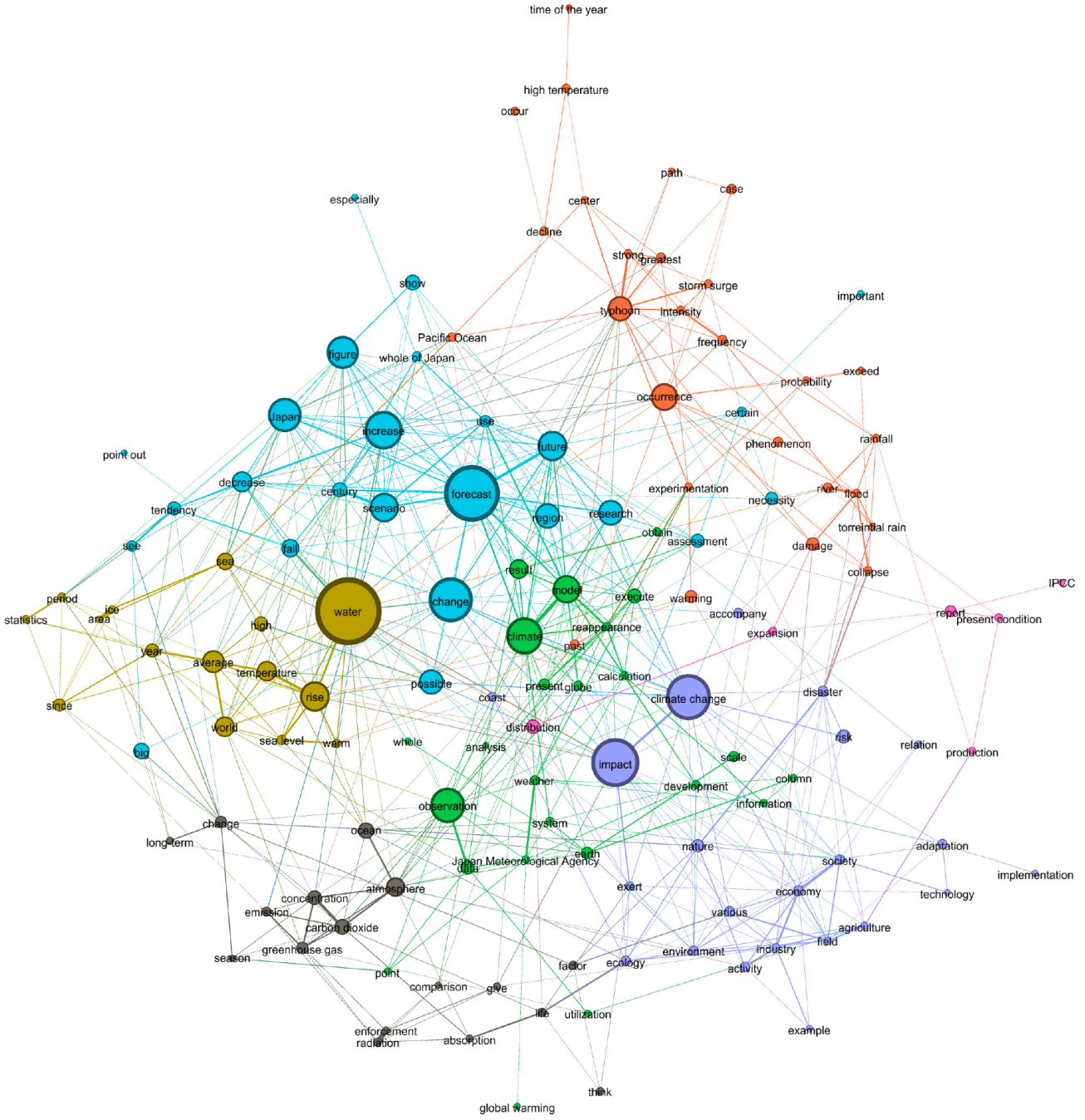

Figure 4. The discourse map of an expanded bureaucratic coalition for Period 2.

"typhoon," for instance, appears 128 times in Period 2, whereas it appears only 59 times in Period 1. Equally importantly, the link between these disasters and such adjectives as "strong" or "maximum level" seems strong in Period 2; 46% of the sentences containing the word "typhoon" also contain the term "maximum level." In this context, it is interesting to note that the report discusses fatalities as well as the destruction of houses resulting from landslides within the context of linear rain bands and typhoons (MOE et al., 2018, p. 98). This tendency to emphasize the serious impacts of climate change is also shown in the increasing number of references being made to its security threats and risks. The number of sentences containing words coded as "threats and security" or "risk" has increased in Period 2 from 17 to 35, and 37 to 66, respectively. In this connection, it is worth mentioning that the 2018 report cites droughts and floods affecting agricultural production as a typical case of a climate risk for Japan (MOE et al., 2018, p. 114). Also, interestingly enough, this report provides the data indicating a long-term trend in the rise of deaths caused by heat strokes as well as a strong correlation between those deaths and the number of days marking highs exceeding 30°C (MOE et al., 2018, p. 107).

In sum, from the analysis above, one can therefore infer that a coalition of governmental actors including

domestically oriented powerful ministries such as the Ministry of Land, Infrastructure and Transport and the Ministry of Agriculture, Forestry and Fisheries has been the driver for the securitization process in Japan. The only difference between the MOE's white papers and the synthesis report in Period 2 is that the latter does not contain many references to de-carbonization itself. This is, however, to be expected, given that the synthesis report was written precisely for the purpose of sharing information on climate risks within the government. Arguably, then, it has successfully produced the collective knowledge that Japan is as much a victim of climate change as its culprit.

3.4. The Effect of Securitization on the Business Community

How has this securitization process affected the perception of the Japanese business community? As discussed earlier, Keidanren has been one of the most vocal veto actors, refusing to accept even the 80% emissions cut that the Japanese government had committed itself to.

Figure 5 shows co-occurrence networks that have emerged from the coding of the two most recent Keidanren documents on the issue of climate (Japan Business Federation, 2020a, 2020b). A total of 240 sentences in these two documents have been coded and

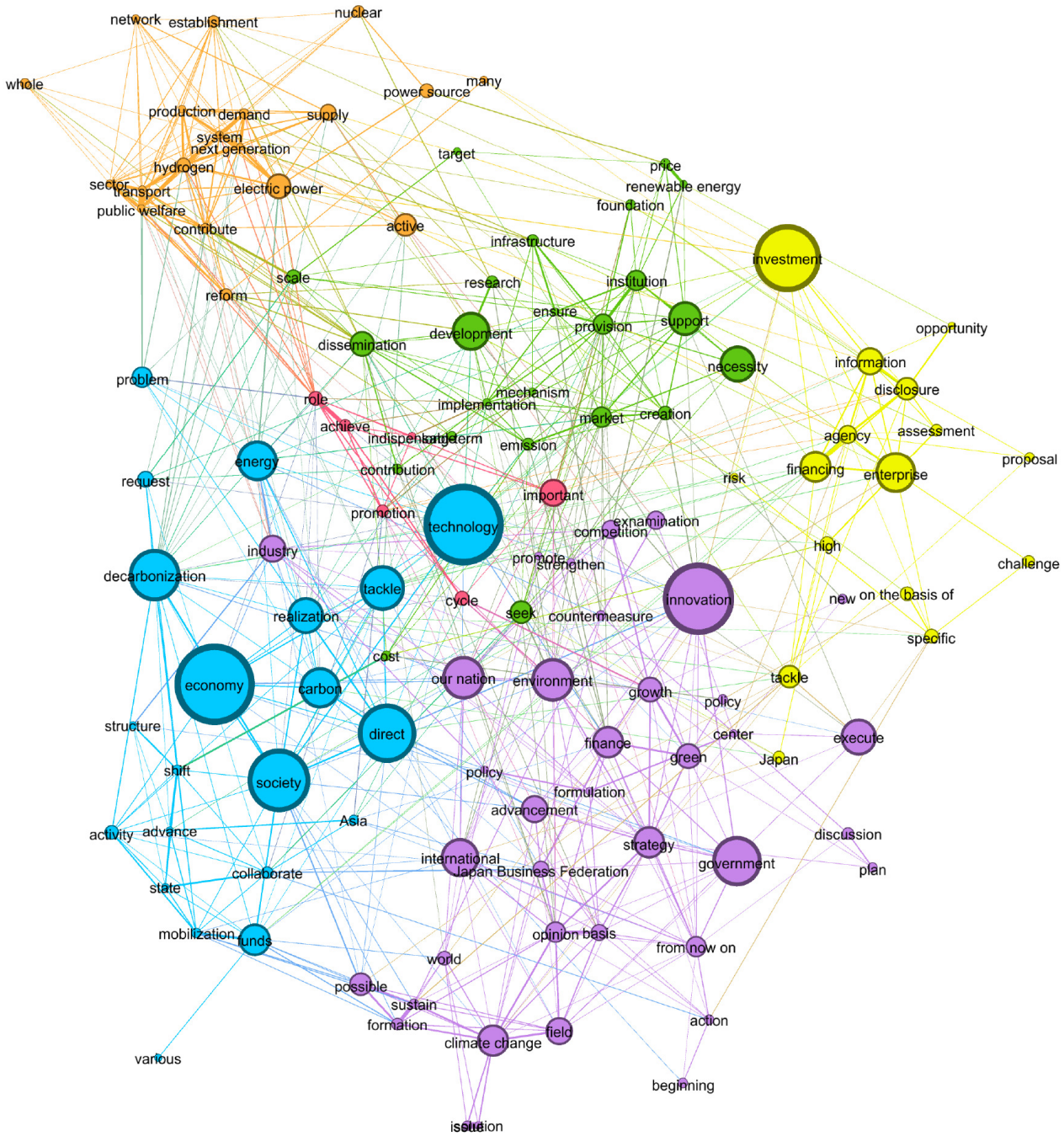

Figure 5. The discourse map of keidanren regarding climate issues.

the words used five times and above appear as nodes while 700 "edges" and above appear as co-occurrence clusters. One of the most interesting features regarding Keidanren's discourses is that unlike the government discourses analyzed above, almost no security-related terms show up in these documents, even though the term "climate crisis" comes up once in one of them. The use of the term "decarbonization," on the other hand, is more salient in these documents. This raises an interesting question. Where does Keidanren's interest in "decarbonization" come from, if it is not generated by the existential threat from climate change?

Regardless of its origin, however, if businesses aspire to achieve decarbonization, they obviously need to call their dependence on thermal power into question. Yet, it is strange that the term "thermal power" does not even constitute a node in this discourse map. Only "nuclear power" shows up as a node (toward the very top in orange), while the term "renewable energy" is closely linked to "price" (in the upper right quadrant in green), suggesting that renewables are too costly for industry. In contrast to "renewable energy," the node of "technology" is fairly prominent (near the center in blue), and well connected to the node of "decarbonization" (toward the left also in blue); nearly a third of the sentences containing "decarbonization" have co-occurrences with the word "technology." Furthermore, the link between "finance" and "innovation" (in the lower right quadrant in purple) also seems rather strong with almost 60% of the sentences containing the word "finance" having co-occurrences with the word "innovation." This suggests that the business community deems sustainable finance crucial for technological innovation, a view also shared increasingly by the Japanese financial community committed to promoting environmental, social, and corporate governance investments (Schumacher et al., 2020). This mapping therefore suggests that the Japanese business community is less interested in altering the composition of Japan's basic energy structure than in promoting technological innovation as a way to achieve decarbonization. The Keidanren's Challenge Zero initiative whereby 137 corporate entities carry out projects aimed at developing "green technology" (Japan Business Federation, 2020a) is a case in point. More interesting still is the presence of a strong link among the terms "finance," "innovation," "government," "growth," and "strategy" (also in the lower right quadrant in purple), because this connectivity clearly suggests that the business community expects the government to play an active role in promoting innovation as part of a national growth strategy.

What can we infer from these findings? First, there is no evidence that the Japanese business community has accepted the characterization of climate change as an existential crisis. In this sense, the government's securitizing effort has had no direct impact on the perception of the business community. This is indeed a significant finding of this study because it suggests that there is a clear divide between those governmental actors, which have become more aware of the existential threat of climate change, and industry which does not seem so concerned with the security risks associated with climate change. Second, the business community has nevertheless decided to take on the challenge of carbon neutrality. This represents a fundamental change on the part of the business community in light of the fact that Keidanren was opposed even to the 80% emission cut target. This therefore raises an intriguing question as to what has motivated the business community to accept the target of decarbonization in the absence of recognition of climate risks. Third, in connection with this question, we can speculate that the driver for this about-face may have stemmed from industry's fear of losing international competitiveness in the emerging "green economy" as well as from the financial sector's aversion to "transitional climate risks" associated with its investment in traditional fossil fuel power generation (Schumacher et al., 2020). The former concern in particular has been reflected in Keidanren's expectation for the government to be actively involved in promoting the innovation for decarbonization. Contrary to the expectation posited at the outset, therefore, the scale-identity asymmetry has worked to promote mitigation rather than constraining it, precisely because it has encouraged inter-state commercial rivalry. Although, due to a lack of space, the METI is not discussed in this article, the analysis of the Energy White Paper of 2020 published by the METI's Agency for Natural Resources and Energy has revealed similar patterns: no appearance of words associated with "risks and threats" and the frequent use of the word "innovation" in association with "green finance" as well as "strategy" (Agency for Natural Resources and Energy, 2020). The only difference is that the term "low carbon" rather than "decarbonization" is more frequently used in the Agency for Natural Resources and Energy document.

Although the analysis above does not allow us to attribute industry's attitudinal change directly to the securitization of climate change, one should be cautious in drawing the conclusion that the securitization of climate change has not affected the business community's decision to endorse the target of carbon neutrality, because industry is, generally, not monolithic particularly in regards to the issue of climate with some industrial sectors being more predisposed than others to behave in the anticipation of regulatory changes. Given the fact that the coalition of governmental actors have been pushing for more stringent regulatory measures to address the climate security threat, it is highly probable that some forward-looking industries such as the auto industry, and the financial sector have become the driving forces for change. The former is increasingly being caught up in the global technological race for electric vehicles, and the latter has the substantial financial risks of being associated with carbon-intensive energy in the would-be decarbonized economy. Put differently, the relationship between the existential threat of climate change and the perceptive and attitudinal change of

industry could be more complex and indirect than this text-mining analysis may suggest.

It is therefore plausible to argue that the coalition of securitizing government actors led by the MOE has been able to create an anticipatory regulatory environment for a decarbonized economy to persuade both the business community and the current administration to adopt a more stringent emission reduction target. In fact, Environmental Minister Koizumi reached out to Keidanren and successfully negotiated an agreement in September 2020 between the ministry and the business federation that defined their respective roles in Japan's effort to meet the challenges of the climate crisis. According to this agreement, Keidanren promised to: (1) vigorously promote the Challenge Zero initiative and collaborate with the MOE with respect to Task Force on Climate-Related Financial Disclosures, Science-Based Targets, and Renewable Energy 100%, aimed at disclosures of climate-related information, setting emission reduction targets in compliance with the Paris Agreement, and the full use of renewables, respectively, toward the realization of a decarbonated society; and also (2) to promote sustainable finance and environmental, social, and corporate governance investment, all in an effort to "redesign our economy and society into a more sustainable and resilient one as we face the twin crises of Covid-19 and climate" (MOE, 2020b). With this agreement in hand, the reappointed environmental minister, Shinjiro Koizumi, strongly urged the newly elected prime minister, Yoshihide Suga, to accept the 2050 target of decarbonization. Prime Minister Suga then moved to persuade Minister of Economy, Trade and Industry Hiroshi Kajiyama to accept the target of decarbonization after rounds of consultation with the vice-ministers of both the MOE and the METI, and most importantly with Chairman of Keidanren Hiroaki Nakanishi. Much to the surprise of the METI, Nakanishi responded to the prime minister's request, albeit in his capacity as a member of the Council of Economic Advisors, with his proposal of a "green growth" strategy aimed at carbon neutrality by 2050 (Shimizu, 2020). This led the way for the prime minister to announce the 2050 target of decarbonization as part of his inauguration speech in the fall of 2020.

Even this cursory process-tracing showing how Prime Minister Suga reached his decision, therefore, lends support to the observation that the pervasiveness of the sense of climate crisis within the government has precipitated industry's acquiescence to decarbonization. The unanimous approval of the Declaration of Climate Emergency in both Houses of the Diet in November 2020 (Okimoto, 2020) is indeed a testimony to how pervasive this sense of crisis was becoming within the government at the time.

4. Conclusion

This article has attempted to tailor the concept of securitization associated with the Copenhagen School to the context of climate policy. In so doing, it has emphasized the "performative" nature of a securitization process leading to a redefinition of priorities characterizing the conventional political order. For climate change, the redefinition of priorities has meant the primacy of climate policy over the conventional energy policy catering to the needs of energy-intensive industries. Moreover, our discussion has focused on two intrinsic features of the climate issue that could militate against successful securitization, namely the source–impact asymmetry, and the scale–identity asymmetry. The former was expected to weaken the incentive of industrialized countries to address the global threat of climate change, and the latter was expected to make it difficult for countries in general to regard the welfare of the global community as their own, thus hampering the mitigation of climate change. Indeed, both of these asymmetries were found to be at work in Japan at least prior to the Paris Agreement, because Japan clearly prioritized the stable supply of low-cost energy from the extensive use of coal-fire power over the development of the renewable energy sources indispensable for effective mitigation.

Against this theoretical and empirical backdrop, the article has set out to see by using a text-mining method how the source–impact asymmetry has been moderated since the Paris Agreement, and how this moderation has affected the Japanese government's decision to upgrade its mitigation policy as well as industry's decision to commit itself to decarbonization. The analysis of industry's perception was considered crucial in this inquiry because business would be the most likely candidate for a veto actor in this political game. Therefore, in light of the fact that Japan made a policy about-face and announced the target of achieving carbon neutrality by 2050, it was initially assumed that the source–impact asymmetry had been lessened to a sufficient level to allow Japan to see climate change as an existential threat to its own security, and that the business community also shared this view. Contrary to this assumption, however, the text-mining analysis performed in this article did not show that industry shared this view, while it did show that the key governmental actors such as the MOE, Ministry of Land, Infrastructure and Transport, and Ministry of Agriculture, Forestry and Fisheries saw the country as becoming increasingly threatened by climate change. This has therefore led to a conundrum as to why industry has accepted the carbon neutrality target without recognizing the existential threat of climate change. This has indeed highlighted the complexity of the causal link between climate security and industry's acceptance of decarbonization.

This article has thus made the following three contributions to the discussion on the issue of climate and security. First, it has modified the theory of securitization to make it more applicable to the issue of climate change by clarifying the expected effects of the securitization of climate. Second, it has isolated two types of asymmetries that may work against addressing climate security and

has then empirically shown through the use of a text-mining method how one of them, namely the source–impact asymmetry, has, after the conclusion of the Paris Agreement, been sufficiently moderated in Japan to germinate the sense of "climate crisis." Third and finally, the analysis of industry's discourses on climate has generated a new theoretical and empirical puzzle regarding the relationship between securitization and mitigation with regards to the business community. The last point, which has, admittedly, not been fully addressed in this article, poses an interesting theoretical question with regards to the effect of securitization, because it suggests that the second type of asymmetry, namely the scale-identity asymmetry, has worked, not as an impediment to the global effort to address the issue of climate, but as a driver for such an effort. A further qualitative study is obviously needed to see how this reversal of its function has occurred. Such a study should open up the "black-box'' of the business community's decision-making process that has led to its acceptance of the government's decarbonization target.

Acknowledgments

This research has been conducted as part of the Fluctuation-Led Governance Transformation Project funded by the Japan Society for the Promotion of Science, to which the author is deeply grateful. It has also been made possible by the operating research grants provided by Nagoya University. The author would also like to thank Haruki Kondo for his assiduous research assistance in collecting and coding the documents analyzed in this article, as well as anonymous reviewers for their extremely constructive comments.

Conflict of Interests

The author declares no conflict of interests.

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Politics and Governance (ISSN: 2183–2463)
2021, Volume 9, Issue 4, Pages 79–90
https://doi.org/10.17645/pag.v9i4.4414

Article

Climate Security and Policy Options in Japan

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Submitted: 27 April 2021 | Accepted: 2 July 2021 | Published: 22 October 2021

Abstract
Climate security has been discussed in both academia and policy documents in the West. A key point that surfaces from these discussions is that the cooperation of non-military organizations is essential for effective responses to climate change-related threats. This overlaps considerably with debates on security in Japan, where the use of force is constitutionally restricted. Therefore, it is possible to localize the concept of climate security to the genealogy of Japan's security policy that, in the 1980s and 1990s, sought a non-traditional security strategy that did not rely solely on military power in the name of "comprehensive security," "environmental security," and "human security." In Japan, the perspective of climate security is rare. However, the introduction of a unique climate security concept into security policy enables the maintenance of national security and environmental conservation. Additionally, struggling with climate change alongside neighboring countries contributes to mutual confidence building and stability in international relations in Northeast Asia. To achieve this objective, we first show that climate security includes many kinds of security concerns by surveying previous studies and comparing Western countries' climate security policies. Second, we follow the evolution of Japan's security policy from 1980 to 2021. Finally, we review Japanese climate security policies and propose policy options.

Keywords
climate change adaptation; climate disasters; comprehensive security; environmental security; human security; violent conflict

Issue
This article is part of the issue "Climate Change and Security" edited by Yasuko Kameyama (National Institute for Environmental Studies, Japan) and Yukari Takamura (University of Tokyo, Japan).

1. Introduction

Climate security is an urgent concern in policymaking and research in the West. A key point that surfaces from the discussions is that the cooperation of non-military organizations is essential for military organizations to respond effectively to climate change-related threats. Climate security, which emphasizes non-military means, is beneficial to Japan, where the use of force is constitutionally restricted, but climate security is not yet an overarching concern (Kameyama & Ono, 2021).

The term "climate security" refers to a line of thought that climate change impacts raise various security threats. Its signature is that these threats are linked to all areas of politics, the economy, and society and could result in violent conflict. However, the meanings of climate security are diverse and multifaceted, as many national and international actors have used this term in their own contexts. Many studies have tried to categorize them to cover the wide range of discourse (Baysal & Karakaş, 2017; Hasui, 2011; Kameyama & Ono, 2021; Kanie, 2007; McDonald, 2013).

To localize the concept of climate security to Japan, we contextualize it within Japanese climate and security policy. We then examine Japanese policymaking since the 1980s and 1990s to investigate a non-traditional security strategy that does not solely rely on military power in the name of "comprehensive

security,'' "environmental security," and "human security." The introduction of a unique climate security concept into Japanese security policy enables both national security and environmental conservation. Further, regional cooperation on climate change improves international relations.

To this end, we first show that climate security includes many kinds of security by surveying previous studies and comparing the climate security policies of Western countries. Second, we follow the evolution of Japanese climate and security policy from 1980 to 2021. Finally, we review Japanese climate security policies and propose policy options.

2. Research and Policy Trends on Climate Security

2.1. Research Trends

Research on climate change and security has become prominent. This trend can be found in statistical research on "climate change and peace." Sharifi et al. (2020) confirm that articles on climate change and negative peace—that is, the absence of physical violence—on the Web of Science have surged since 2007 and 2015, when the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report was first published and the Sustainable Development Goals were adopted by United Nations Member States, respectively. According to the study, the treatises can be divided into four clusters: institutional mechanisms; violent conflict in Africa and the disaster-conflict nexus; migration and adaptation; and resource management and environmental security. The most predominant themes are "war (civil war)," followed by "immigration and conflict" and "risk."

Climate change poses a security threat because it can threaten human security and increase the risk of violent conflict. The logic is that climate change undermines human security by reducing access to and the quality of natural resources that are important for sustaining livelihoods. Climate change can also erode the very ability of states to provide opportunities and services to people for their livelihoods. Thus, the direct and indirect effects of climate change on human security have the potential to increase the risk of violent conflict (Barnett & Adger, 2007). Climate change's status as a security issue is controversial, especially if rising temperatures lead to military conflict. To verify that logic, empirical studies have analyzed the relationship between climate change and the occurrence of violence, resulting in mixed findings.

Among skeptical authors, Gartzke (2012) analyzes the correlation between rising temperatures and the frequency of interstate conflicts since 1800, finding, instead, a fall in conflicts. Buhaug's (2010) study of various violent conflicts in Africa finds that climate change is an inadequate predictor of armed conflict, as it examines the relationship between drought fever and civil war. He states that civil war in Africa can be explained by general structural and contextual conditions such as ethno-political exclusion, poor national economies, and the collapse of the Cold War system. Another study has shown that precipitation deviations are not important and that political, economic, and geographic factors outweigh extreme weather in terms of the location and timing of violence events (O'Loughlin et al., 2014). Gleditsch (2012) argues that few studies have demonstrated a causal link between climate change and conflict and criticizes the recognition of climate change as a security issue, calling it a self-fulfilling prophecy that might lead to a military response.

By contrast, research supporting the link between climate change and conflict shows that temperatures much higher than normal increase the risk of violence (O'Loughlin et al., 2012). Hendrix and Salehyan (2012) highlight that variability in rainfall affects political conflicts and increases the possibility of violence in rainy years. A study of the relationships between climate change, food prices, and violence shows that unusually dry conditions are associated with an increasing frequency of conflict and that reduced precipitation has an indirect effect on conflict through its impact on food prices (Raleigh et al., 2015).

Research on climate security is not only empirical research but also discourse analysis. Critical security theory argues that security policy is not only based on objective facts but also relies on public opinion and the perceptions of policymakers and stakeholders. Proof of the causal relationship through data, experimentation, and policy discourse is important, necessitating a social constructionist approach.

McDonald (2013) argues that climate security discourse can be divided into national, human, international, and ecosystem security. He argues that ecological security is more effective in responding to climate change than climate security. Hayes and Knox-Hayes (2014) conducted a discourse analysis of securitization concerning climate change. They reveal the factors that cause policy differences between the EU and US. While the US emphasizes national security threats in climate security policy, Europe prioritizes economic benefits and a new world order. The authors note that the legitimacy of climate security policy has increased because of the response of traditional security actors to climate change. Ferguson (2019) classifies climate security resilience into four categories: strategic, neoliberal, social, and ecological. As actors who securitize each resilience, strategic resilience includes military organizations and thinktanks; neoliberal resilience comprises international organizations; social resilience includes citizens, non-governmental organizations, and researchers; and ecological resilience includes citizen researchers and the IPCC.

In addition, thinktanks have advocated climate security policies. The Center for Climate and Security recommended that the Japanese government manage comprehensive climate security risks, noting the unpreparedness to climate threats of the Japanese

economy (Conger et al., 2019; Fetzek et al., 2019). Similarly, the Climate Security Expert Network judges the strength of climate security in Europe to be varied, recommending the appointment of a senior adviser/special envoy on climate security to the cabinet of the High Representative of the Union for Foreign Affairs and Security Policy, also known as the EU foreign minister (Brown et al., 2020).

Today, the actors and fields involved have expanded and diversified because of how climate change has evolved from an environmental issue to a security issue. Indeed, climate security now involves more diversified authority and complex governance.

2.2. Climate Security Policies in the West

How do Western countries recognize the threat of climate change? In this section, we investigate this recognition in terms of climate change mitigation and climate security using national reports. The Biden Administration has recommitted the US to the Paris Agreement. In January 2021, Biden issued an executive order stating that the climate crisis is central to US foreign policy and national security (The White House, 2021a). At the Leaders Summit on Climate in April, the US set a course for reducing greenhouse gas emissions by 50–52% of 2005 levels by 2030 and achieving net zero emissions for the entire economy by 2050 at the latest. In addition, the US expressed its commitment to create jobs, promote innovation, and achieve environmental justice by promoting climate change measures (The White House, 2021b). The US Department of Defense (DoD) considers climate change a threat to national security and highly recommends that the US military improve its capacities to adapt. A 2015 Pentagon report recognizes that climate change poses an *immediate,* existential threat. The report especially notes the interactions between conflict dynamics and climate change and states that, in 20 years, most military installations will be vulnerable to the effects of flood, drought, desertification, wildfire, and thawing permafrost (US Department of Defense [DoD], 2015, 2019). The DoD's latest report assesses exposure to climate hazards due to rising temperatures during the century. According to this report, hazards directly related to temperature changes (e.g., heat, droughts, wildfires) have significantly higher exposure than other hazards (e.g., coastal floods, energy demand, land degradation). Drought is a particularly dominant hazard not only in the continental US but also around the world (DoD, 2021).

In 2019, the UK became the first major country to legislate a target of net zero greenhouse gases by 2050 (Department for Business, Energy & Industrial Strategy & The Rt Hon Chris Skidmore MP, 2019). In December 2020, Prime Minister Boris Johnson announced a new plan that aims to reduce greenhouse gas emissions by at least 68% of 1990 levels by the end of the decade. He also stated that this would create and support 250,000 jobs (Department for Business, Energy & Industrial Strategy et al., 2020). The British Ministry of Defense acknowledges that if the environment deteriorates, perhaps through extreme weather, community migration and social instability are inevitable. Acknowledging that climate change will affect agriculture, urban areas, the economy, and transportation, it highlights that the climate-induced disruption of water supplies and impact on agriculture could be used to push individuals to join terrorist or dissident groups (UK Ministry of Defence, 2018).

In 2016, Canada developed the Pan-Canadian Framework on Clean Growth and Climate Change as its first national climate plan, and it released A Healthy Environment and a Healthy Economy, Canada's strengthened climate plan, in December 2020. The plan aims to reduce pollution, create jobs, and support a healthy economy and environment and is a building block for achieving net zero emissions by 2050 (Government of Canada, 2021). The department of National Defence in Canada recognizes that climate change is complicating the global security environment. Canada, for example, points out that melting ice in the Arctic will increase security needs. The report also states that climate change affects the frequency, duration, and intensity of meteorological disasters such as floods, wildfires, and droughts; hence, Canadian defense should be able to respond quickly to disasters and contribute to search and rescue operations (Canadian Department of National Defence, 2020).

In 2015, Australia set a goal of reducing its greenhouse gas emissions by 26–28% of 2005 levels by 2030. Since 2020, the responsibility for domestic climate policy and emission reduction has been transferred to the new Department of Industry, Science, Energy and Resources, while climate change adaptation strategies and climate science activities have been transferred to the Department of Agriculture, Water and the Environment (Australian Government's Department of Industry, Science, Energy and Resources, 2021). The Australian Department of Defence also sees climate change as a key challenge for the next 20 years. Rising sea levels and extreme weather will put pressure on defense activities and natural assets not only of Australia but also of neighboring countries along with such existing challenges as population growth and environmental destruction. Australia therefore states that it will remain a leader in responding to regional demands for humanitarian assistance and disaster relief (Australian Department of Defence, 2016).

New Zealand has stated that it will address climate change through leadership, productivity, sustainability, a climate resilient economy, and a just and inclusive society at home and abroad. By doing so, it aims to become a global leader in combating climate change. In November 2019, the Climate Change Response (Zero Carbon) Amendment Act 2019 legislated new domestic emission reduction targets through 2050. The legislation

stipulates that net emissions of all greenhouse gases should be reduced to zero by 2050 (New Zealand's Ministry for the Environment, 2021). A New Zealand Ministry of Defence report claims that climate change will be one of the greatest security challenges in the coming decades and that Pacific Island nations will be disproportionally affected by global warming: "intensifying impacts of climate change will continue to test community resilience and heighten security challenges across the culturally diverse Pacific region" (New Zealand's Ministry of Defence, 2018, p. 3). The perception is that climate change threatens both individual countries and entire regions, portending cultural loss. The report shows that climate change is linked to security and that weak governance exacerbates this negative influence. Conventional security overlaps and extends human and environmental security. Additionally, climate change policies operate on multiple levels of governance: *nationally*, *regionally*, and *globally* (New Zealand's Ministry of Defence, 2018). New Zealand also follows the progressive view that international cooperation on climate change measures further strengthens national defense.

Research and national documents on climate security have shown that the perception is common that climate change poses a variety of threats. Furthermore, responding to climate change requires activities by various actors and multidimensional governance. However, such perceptions of climate security have not yet become common in Japan. Therefore, in the next section, we investigate the cause by following the transition of Japan's security and climate change policy.

3. Japan's Climate and Security Policy Transition

3.1. Comprehensive Security: 1980s

The tone of Japan's security situation in the 1980s involved the escalation of the East–West confrontation after the Pax Americana and New Cold War era. The Japanese defense relied on the Japan–US Security Treaty because the Japanese Self-Defense Forces (JSDF) have been constitutionally restricted and taken as force used for "defensive defense." The Masayoshi Ohira cabinet saw comprehensive security as a means for expanding the concept of security in Japan.

The most structured arrangement of this security concept is the report of Prime Minister Ohira's policy study group. Based on the recognition that Japan had entered the "era of global society," this report viewed security issues as having a comprehensive character and defined security as "protecting people's lives from various threats" (Cabinet Secretariat, 1980, p. 8). The group divided the government's security efforts into three levels: (a) managing threats domestically, (b) making the international environment partially favorable in solidarity with likeminded countries, and (c) making the international environment holistically favorable to eliminate the threat. While discussing traditional military security issues such as Japan–US relations, strengthening self-defense, and China–Soviet Union relations, this study group also established the groundwork for economic security (e.g., energy and food) and introduced non-military threats (e.g., large-scale earthquakes) into the ambit of the Japanese security concept.

The 1980s was marked by emerging concerns about climate change. The 1985 meeting in Villach, hosted by the UN Environment Programme and others, appealed to the international community to tackle global warming for the first time. In Japan, the World Conference on the Changing Atmosphere in Toronto triggered the establishment of the Study Team on Global Warming Issues at the Air Quality Bureau of the Environment Agency in May 1988, and policy studies officially commenced. The first IPCC meeting in November 1988 was attended by 11 representatives from Japan, including the Environment Agency, the Ministry of Foreign Affairs (MOFA), the Ministry of Agriculture, Forestry and Fisheries, the Ministry of International Trade and Industry, and the Meteorological Agency (Environmental Agency Global Warming Problem Study Group, 1990). Accordingly, a forum for international and domestic discussions on climate change rapidly prevailed in the second half of the 1980s.

3.2. Human and Environmental Security: 1990s

After the Cold War, the threat of the Soviet Union diminished for Japan. Thereafter, the JSDF intensified its active operations, including dispatching the Maritime Self-Defense Force to the Persian Gulf after the 1991 Gulf War and participating in UN peacekeeping operations. Although the Japanese government maintained the JSDF as a "basic defense force" during peacetime, as advocated in the first National Defense Program Guideline (NDPG; Defense Agency, 1976, Chapter 2, Section 4), the new 1995 NDPG based on the post-Cold War era stated that "we will develop defense capabilities that can effectively respond to various situations, and… ensure appropriate elasticity…[to] respond smoothly to changes in situations" (Defense Agency, 1996, Chapter 2, Section 4). The redefinition of the Japan–US alliance led concurrently to the *Japan–US Joint Declaration on Security* (1996) and *Guidelines for Japan–US Defense Cooperation* (1997). This further solidified the Japan–US alliance. Subsequently, the military threat from China and North Korea escalated and the influence of the traditional military view on national security increased.

The House of Councilors Study Group on Foreign Affairs and Comprehensive Security (1992) compiled a report titled *The Role of Japan in the 1990s—Concept of Environment and Security*. It incorporated global environmental issues into comprehensive security to build an environmental security theory. The report covered a broad range of topics from pursuing environmental security to peaceful world order in the new era. It included important ideas that were later realized

as policies, including establishing the Ministry of the Environment (MOE), revitalizing forests, improving food security, and promoting environmental official development assistance and climate science.

While discussions on environmental security emerged in Japan's political arena, for the post-Cold War international community, where developing countries faced newer, non-military existential crises, the UN Development Programme (UNDP) established human development and human security as policy agendas with the Human Development Reports of 1993 and 1994. In a subsequent report, it argued that the "concept of security has for too long been interpreted narrowly" and called for expansion (UN Development Programme [UNDP], 1994, p. 22). The UNDP's new concept of human security included economic, food, health, environmental, personal, community, and political security (UNDP, 1994). The World Commission on Environment and Development's report *Our Common Future* also mentioned environmental and climate security (World Commission on Environment and Development, 1987). Western countries also discussed these concepts (Dabelko & Simmons, 1997; Dalby, 1992; Homer-Dixon, 1994, 1999). This movement later formed the basis of climate security theory.

Instead of the environmental security concept, which was not so widely known at that time, Japan incorporated human security, which included environmental security as a component, into its foreign policy under Foreign Minister Keizo Obuchi (later prime minister) in response to the 1998 Asian financial crisis (Kurusu, 2011). The Japanese government actively engaged in human security diplomacy, including the establishment of the Commission on Human Security, cochaired by Sadako Ogata and Amartya Sen, at the 2000 Millennium Summit. The report stressed "protection" and "empowerment" by states and other actors (Commission on Human Security, 2003). Japan recognized human security as non-military security concept and chose as foreign policy to emphasize freedom from want. This movement accorded with a Japanese tradition that places greater importance on non-military security in the context of, for example, earthquakes or the environment. Japan utilized this concept as official development assistance policies for developing countries to make the international environment holistically favorable, as shown in the comprehensive security policy in the 1980s. This choice is different from that of Canada, which developed a foreign policy centered on freedom from fear, focusing on peacekeeping operations and actively participating in operations on the Balkan Peninsula. Such conceptual flexibility is key to human security (Huliaras & Tzifakis, 2007), allowing it to be localized and incorporated into government policy.

In climate politics in Japan, the Global Environment Department was established at the Environment Agency and the Global Warming Prevention Action Plan was announced in 1990. Thus, the Japanese government's climate change countermeasures were in the implementation stage. However, from the establishment of Japan's Environment Agency in 1971 to the enactment of the Basic Environment Law in 1993, more than 20 years elapsed before environmental policies were integrated into the national legal system. At the time, Japanese environmental diplomacy achieved spectacular results, such as the establishment of and contribution to the UN Environment Programme and negotiations at the IPCC and UN Framework Convention on Climate Change. Until the early 1990s, Japan's climate change diplomacy had only a fragile institutional base. However, at the third Conference of the Parties to the UN Framework Convention on Climate Change in 1997, the then largest international conference ever held in Japan, the Kyoto Protocol was successfully adopted despite internal frictions between the Ministry of International Trade and Industry and Environment Agency (Takeuchi, 1998).

3.3. Emergency Legislation and Climate Security: 2000s

The North Korean launch of Taepodong in August 1998 impressed upon the Japanese people the enormous threat to their military security. The Obuchi cabinet, which adopted human security as a foreign policy, also passed an act to strengthen its military alliance with the US and, at the end of 2003, the JSDF were dispatched to Iraq. The NDPG was revised in 2004 when the government pursued security at three levels, namely, Japan's own efforts, the Japan–US alliance, and cooperation with the international community, along the same line as comprehensive security in the 1980s. Although the Japanese government stated that "the possibility of full-scale aggression against Japan is decreasing" (Defense Agency, 2004), the government aimed to expand the JSDF's capabilities and range of activities on the grounds of the high degree of uncertainty and unpredictability of security situations. In 2007, the Defense Agency became the Ministry of Defense (MOD), when the position of the JSDF's overseas activities changed from secondary to primary missions. The JSDF were deployed to Nepal, Sudan, and the waters off Somalia.

In 2001, Japanese Environment Agency was reorganized and became the MOE. In climate diplomacy, the Kyoto Protocol came into effect in 2005. Since that year, climate change has begun to be discussed seriously in the global political arena in relation to security. British Foreign Secretary, Margaret Beckett, stressed climate security in a remark she made at the 2005 Gleneagles Group of Eight Summit. She emphasized the need for climate security at the 2006 UN General Assembly as well (UN General Assembly, 2006). This was beginning of the international climate security debate.

The MOE moved swiftly to incorporate the climate security concept into its policy agenda. Discussions among policymakers began in February 2007 under the Sub-Committee on International Climate Change Strategy Global Environment Committee, Central

Environment Council. Although the committee specified that the need for the concept had been recognized in Japan after October 2006, mentions of climate security were raised on consecutive occasions.

The possibility of the policy implementation of the climate security concept was discussed three times by the committee and resulted in the 2007 *Climate Security Report* (Ministry of the Environment [MOE], 2007). It defined climate security as focusing on the "fundamental elements of security—that is, *who* must act to protect *what values* from *what threats*, and in *what manner*" (MOE, 2007, p. 17). Nations must act to protect the safety and welfare of citizens from the broad threats of climate change caused by emissions of greenhouse gases in each nation's mitigation and adaptation measures and international cooperation (MOE, 2007). The report highlights that the concept of climate security in Japan was created through (a) international debates on climate security, (b) accelerating climate change, (c) the evolution of the concept of security, and (d) the concept of comprehensive security. The report also recommends the need to respond to climate change as a security issue and highlights the advantages of the climate security concept. Finally, it finalizes climate security policies based on comprehensive security and the contribution to human security as well as Japan's role with respect to climate security to promote building a low-carbon society and reducing greenhouse gases through international negotiation. The report indicates that climate change should be given central attention since it influences other security concerns. The report recommends incorporating climate security into national and international policies. However, it does not specify the positions or methods for national or foreign policies (Hasui, 2011).

Why is climate security struggling to become a major political issue in Japan? From an academic perspective, one reason is the difference in attitude toward environmental security studies between Japan and Western countries. The relationship between climate change and security has been disputed within environmental security studies since the 1990s and positive research published in the US and Europe since the 2000s. However, Japanese scholars tend to maintain a cautious position (Ochiai, 2001; Ohta, 2002; Yamada, 1999).

From a political perspective, one of the biggest obstacles is the absence of dynamism between political parties. Since World War II, the pro-US conservative Liberal Democratic Party (LDP) has often been in power. Due to this absence, Japan has almost no synergistic effect between political parties like the West. In 2009, the center-left Democratic Party of Japan (DPJ) took power from the LDP for the first time. The Yukio Hatoyama cabinet of the DPJ aimed to reduce greenhouse gases by 25% from 1990 levels by 2020, so climate change mitigation policies were also expected to progress. However, Hatoyama resigned owing to unrelated domestic issues in the next year, and the DPJ suffered some confusion in policymaking. Climate security policies were no exception, and they stalled despite a regime change.

3.4. National Security and Proactive Strategies: 2010s

In March 2010, the DPJ submitted a bill named the Basic Law of Global Warming Countermeasures. However, it did not refer to climate security discourse. On the contrary, the LDP, as the opposition party at that time, submitted a bill named the Basic Law of Promoting Building a Low-Carbon Society. The bill stated that "global warming is a security issue that destabilizes the continuing existence of humankind and its prevention is a problem common to all humankind" (House of Representatives, 2010a). Another opposition party, Komeito, submitted another bill named the Basic Law of the Promotion of Climate Change Countermeasures. In its preamble, the bill stated that "climate change is recognized as a threat that destabilizes human existence. From this viewpoint of climate security, under international cooperation, the mitigation and adaptation of climate change is one of the biggest issues of humankind" (House of Representatives, 2010b). Thus, debate on climate change and security heated up in the Japanese Diet. However, the bills did not pass during the sessions in the Diet and were scrapped.

Around the same time, bills on climate security were submitted to Congress in the US, but they too were abandoned. These were the Climate Security Act of 2007, known as the Lieberman-Warner bill, and the American Clean Energy and Security Act of 2009, known as the Waxman-Markey bill. Both insisted that climate change posed serious security threats to humanity. However, as a result of the intentions of the business community and political dynamics of Congress and the Diet, neither Japan nor the US passed a law that embodies climate security.

In March 2011, the Great East Japan Earthquake forced all nuclear power plants in Japan to shut down. According to an ex-MOFA bureaucrat, Takehiro Kano, the Great Earthquake made it clear that a major review of nuclear energy policy was required. Nuclear power policy and Japan's climate change countermeasures, which had been two sides of the same coin, became difficult to manage. It also became difficult to allocate human resources to climate change policy owing to the earthquake disaster and nuclear accident, which subsequently influenced climate change negotiations (Kano, 2013). Nuclear power accounted for 11.3% of Japan's primary energy supply in 2010 (Agency for Natural Resources and Energy, 2012); it was unclear whether this could be compensated for by energy saving or renewable energy, preventing carbon emission increases (Kano, 2013). As a result, Japan did not participate in the extended Kyoto Protocol.

In 2012, the LDP regained power and Komeito joined as a coalition party. The cabinet of Shinzo Abe, which emphasized the Japan–US alliance and military capability, established the National Security Council (NSC) modeled on the US' NSC and formulated the National Security

Strategy for the first time in Japan in 2013. In this document, the section "Challenges to Human Security" insists that "Japan needs to promote necessary measures based on the principle of human security" (National Security Council [NSC], 2013, p. 10). The "Global Economy and Its Risk" section refers to "the aggravating environmental problems arising from climate change," which entail the risk of "crunches in global supply and demand as well as temporary shortages of supply in food and water" (NSC, 2013, p. 11).

In December 2017, Japan held the meeting of the UN Security Council (UNSC) with 42 non-member states to discuss the maintenance of international peace and security. In this meeting, Secretary General António Guterres stated that "climate change has emerged as a threat multiplier" (UN Security Council [UNSC], 2017, p. 2). The representative of Japan, Koro Bessho, pointed out "the rise in complex contemporary challenges to international peace and security" (UNSC, 2017, p. 3). He stated the need to adopt a more comprehensive and integrated approach, enhance cooperation with other organs within and outside the United Nations, and reform the UN. Many states, including Japan itself, stressed the importance of the security threat of climate change. This was a major achievement of the Abe administration. Despite limited Japanese academic research, this is a notable piece of recent Japanese climate diplomacy.

These political movements indicate that in the 2010s, the Abe administration attempted to rebalance Japan's security policy toward a more traditional military policy. However, Abe maintained some aspects of comprehensive security until the end of his administration.

3.5. Current Countermeasures on Climate Change and Security

This section examines the trend in policy documents over the last few years. Despite the debate in the UNSC in 2017, the Japanese government recognizes climate change as an economic rather than a security issue. At the Leaders Summit on Climate in April 2021, the Japanese prime minister, Suga, stated that:

> [Our effort to address climate change] will be the driving force of the long-term dynamic growth of not only Japan's economy, but also the global economy. With this vision in mind, in the fall of last year, immediately after assuming the office of Prime Minister, I declared that Japan will aim for net-zero by 2050. (Ministry of Foreign Affairs [MOFA], 2021, p. 1)

His statement shows that the Japanese government is planning to link the realization of a carbon-free society to economic growth. However, there is no vision for structuring regional order, such as cooperation with neighboring countries through climate security and multi-level governance, as advocated in New Zealand.

On the contrary, the MOE's highest priority is climate change. It is predicted that the risk of meteorological disasters will increase because of global warming, and therefore, the current problem is shifting to a climate crisis. In response to such risks, the MOE is implementing policies aimed at social change for disaster prevention. It is also seeking to support developing countries, especially through the Asia-Pacific Climate Change Adaptation Information Platform (MOE, 2020a).

The MOD, whose primary mission is military security, has not yet substantially addressed climate change countermeasures. The JSDF also seek to shift to renewable energy to the extent possible. Unrelated to climate change, the JSDF propose activities to manage disaster relief, including lifesaving, emergency recovery, and life support. Internationally, the MOD is working to strengthen humanitarian assistance and disaster relief (HA/DR) cooperation, however, primarily with South Asian and ASEAN countries. In fact, two C-130Hs were dispatched as international emergency relief in response to the recent fires in Australia (Ministry of Defense [MOD], 2020).

Thus, although Japan's climate change policies are diverse, they are neither based on nor integrated into the idea of climate security. However, political interest in climate security has begun to emerge. The 2020 *Climate Change Impact Assessment Report (Review)* states that "climate security is a relatively new perspective, and although the number of studies and surveys is limited, it is also very important for taking international climate change countermeasures, and it is necessary to enhance knowledge of it" (MOE, 2020b, p. 70). In addition, new movement can be seen in 2021. In the Leaders Summit on Climate, the minister of defense defined climate change as a "linkage risk," remarking that it creates a harsh environment, destabilizes societies, and becomes a source of conflict that causes further environmental degradation (MOD, 2021).

4. Conclusion

We summarize the implications from the research trends and policy documents on climate security as follows. The concept of climate security recognizes the following basic course of events. Extreme weather events caused by climate change lead to economic and social instability and violent conflict, while political conflicts and climate disasters are likely to produce refugees, resource depletion, and economic stagnation, involving the need for complex responses. Therefore, when dealing with climate-related conflicts and post-conflict peacebuilding, the influence of climate change should be accounted for.

Concerns about climate security are so diverse that climate security cannot be grasped within the framework of conventional resource management aiming to secure water, food, energy, or "traditional security," relying heavily on military power. It needs close cooperation between military and non-military organizations for

a holistic response to climate security issues. For example, the military, an organization that can operate in harsh environments, responds to HA/DR and violent conflict, whereas international organizations and non-governmental organizations respond to economic and social issues. Together, they can mitigate the impacts of climate change, thereby allowing the affected countries to adapt. Furthermore, the effects of climate change transcend national borders; international cooperation is essential for climate security policies. We confirm that improving governance capacity is important for the realization of adaptation policies that reduce the disasters caused by climate change.

These characteristics of climate security considerably overlap with the transition of Japan's security policy. Comprehensive security presented a framework in which not only military but also non-military threats should be considered as security issues. Human security has become an international norm, shifting the subject of security from nation to human. Regarding climate security, the momentum for policymaking increased within the MOE around 2007 when the report was published. A bill was also submitted by the DPJ, the LDP, and Komeito. However, the Great East Japan Earthquake and two changes of government forced the government to alter its climate policy, which relies on the operation of nuclear power plants. After that, the Abe administration, emphasizing economic growth and a return to traditional security policies, achieved the longest administration. These factors failed to turn climate security into a concrete policy. Figure 1 shows the transition of Japan's climate and security policy. Since the 1980s, various security concepts have accumulated as layers rather than discontinuous polices. Climate security stagnated in the 2010s but could once again become central to Japan's security after the 2020s.

Finally, we present some recommendations to the Japanese government based on the above findings. To catch up with the world trends of climate security, Japan should position climate security as a core strategy. Although the possibility that climate change may have a security impact is mentioned in the NDPG (Security Council and Cabinet, 2010, p. 3), the National Security Strategy only mentions "climate change and other environmental issues" along with social inequality and infectious diseases under "human security" in Section III-1–(5). On the contrary, "ensuring maritime security" is listed in IV-1–(4). We thus recommend that climate security be listed at the same or higher level than human or maritime security. To create an organization tasked with the management of climate security issues in an integrated manner, the MOE should also participate in the NSC.

For effective and common policies on climate security, it is essential to cooperate with neighboring countries. If cooperating countries are actively concerned

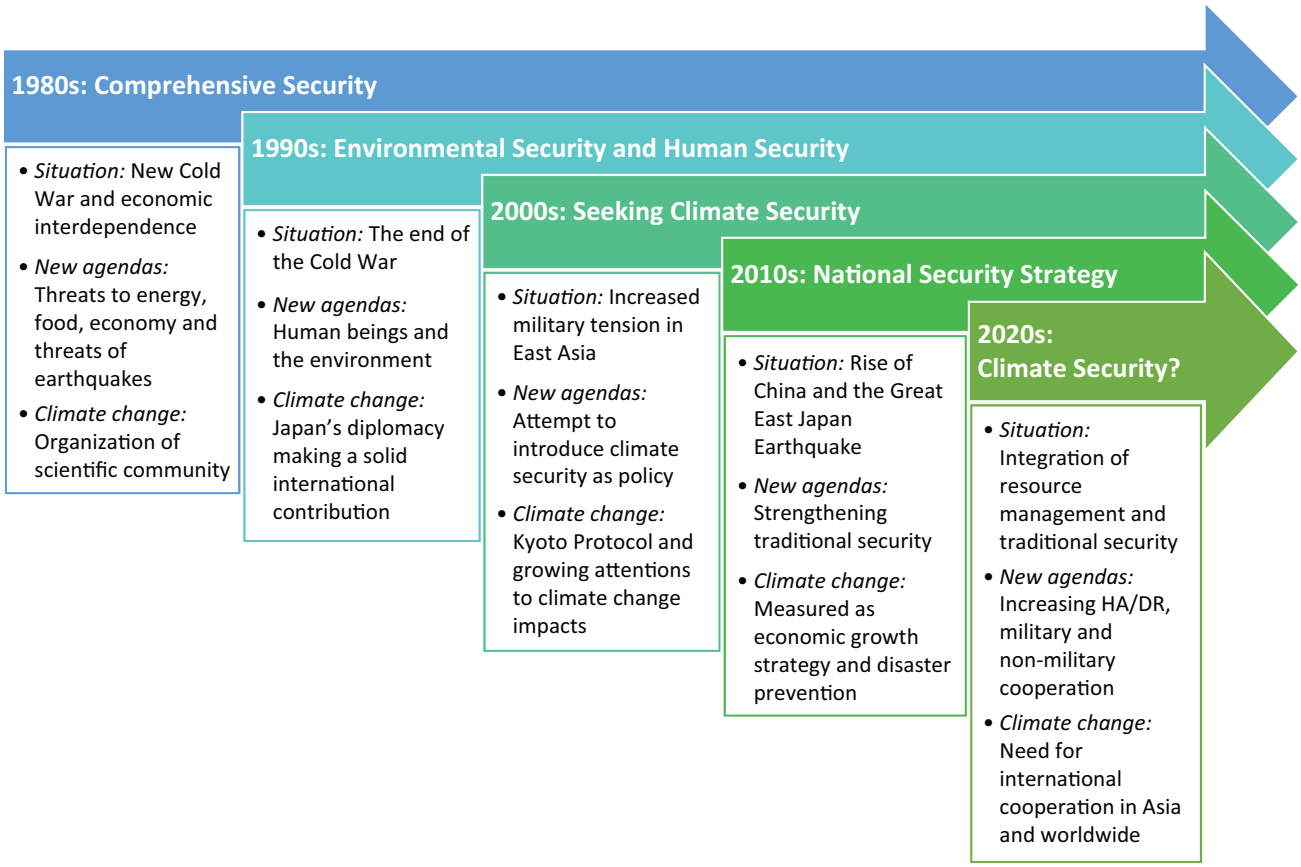

Figure 1. Transition of Japan's climate and security policies.

about climate change issues as security problems, this could contribute to the formation of a new international/regional order. If the Japanese government can play a leading role, as it did in the UN open debate in 2017, this will build trust at the global level. However, although efforts toward self-help and a favorable international environment are strongly stated in current climate change policy, endeavors in East Asia are weak. To overcome this weakness, it is necessary to have an organization/institution with a bird's-eye view of the risks to security caused by climate change in East Asia and Japan. The Japanese government has launched the Asia-Pacific Climate Change Adaptation Information Platform and upholds the basic measures, namely, "securing a system for collecting, organizing, analyzing, and providing information" (MOE, 2018, p. 9). If actively reinforced, these measures will contribute greatly to cooperation by standardizing policy. For this purpose, domestic policy and foreign aid linked to the improvement of governance are also required, as shown in Basic Strategy 4 and 6 of the Climate Change Adaptation Plan (MOE, 2018).

The JSDF should have operations based on climate security. This works in a similar fashion to rescue operations for typhoons, heavy rain, and peacekeeping operations. These experiences may yield good practices. However, the JSDF have little experience of collaborating with other institutions, and larger institutional issues exist. According to Basic Strategy 1 of the Climate Change Adaptation Plan, the connection between security and climate change policies should not be hindered. However, Japan does not yet have an organization that integrates all policies to monitor, identify, and respond to these issues. Emphasis on climate security leads to the recognition that existing conflict deterrence measures alone are inadequate and costly. If so, Japan would prefer addressing climate change as conflict prevention.

While Japan's military security policy has been based on the Japan–US alliance, the country previously tried to establish non-military security policies. In light of the climate crisis, it is important to discuss climate security within the scope of the MOE alongside international discourse. This argument may make it appropriate to graft climate security to Japan's New Comprehensive Security policy. Along the lines of the Comprehensive Security effort, introducing the concept of climate security into Japan's non-military security policy can promote the security of the Japanese people and conservation of territory as management threats domestically (self-help). Further, common climate security policies among neighboring countries will build confidence and improve regional stability, thus making the international environment partially favorable in solidarity with like-minded countries. Lastly, with the pillar of human security, climate security will build another pillar of Japanese diplomacy in the UN and other multilateral arenas, such as the Leaders Summit on Climate. This would make the international environment holistically favorable to eliminating the threat. To this end, Japan must conduct climate diplomacy motivated by the security of each nation. The remaining academic challenge is to analyze the similarities and differences between the climate security policies of neighboring countries and Japan. Revealing the similarities and differences would help make as many nations as possible understand the concept and benefits of climate security and standardize climate security policies.

Acknowledgments

This research was performed by the Environment Research and Technology Development Fund (JPMEERF20182001) of the Environmental Restoration and Conservation Agency of Japan.

Conflict of Interests

The authors declare no conflict of interests.

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COGITATIO

Politics and Governance (ISSN: 2183–2463)
2021, Volume 9, Issue 4, Pages 91–101
https://doi.org/10.17645/pag.v9i4.4389

Article

Comprehensive Security: The Opportunities and Challenges of Incorporating Environmental Threats in Security Policy

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Submitted: 23 April 2021 | Accepted: 24 June 2021 | Published: 22 October 2021

Abstract
In security and foreign policy discourse, environmental issues have been discussed increasingly as security threats that require immediate action. Yet, as the traditional security sector does not provide straightforward means to deal with climate change and other environmental issues, this has prompted concerns over undue securitisation and ill-placed extreme measures. We argue that an effective policy to address foreseeable environmental security threats can only be developed and maintained by ensuring that it remains resolutely within the domain of civil society. In this article, we consider the case of Finland, where the policy concept of comprehensive security has been presented as the official guideline for security and preparedness activities in different sectors. Comprehensive security aims to safeguard the vital functions of society through cooperation between authorities, business operators, organisations, and citizens. We analyse the opportunities and challenges of Finland's comprehensive security policy in addressing environmental changes through a three-level framework of local, geopolitical and structural security impacts. Our empirical evidence is based on a set of expert interviews (n = 40) that represent a wide range of fields relevant to unconventional security issues. We find that the Finnish comprehensive security model provides an example of a wide and inclusive perspective to security which would allow for taking into account environmental security concerns. However, due to major challenges in the implementation of the model, it does not fully incorporate the long-term, cross-sectoral, and cascading aspects of environmental threats. This weakens Finland's preparedness against climate change which currently poses some of the most urgent environmental security problems.

Keywords
climate change; comprehensive security; environmental policy; environmental security; security policy

Issue
This article is part of the issue "Climate Change and Security" edited by Yasuko Kameyama (National Institute for Environmental Studies, Japan) and Yukari Takamura (University of Tokyo, Japan).

1. Introduction

Global environmental deterioration and resource depletion have for decades been recognized as increasingly central considerations in security policy (e.g., U.S. Council on Environmental Quality and Department of State, 1982), and the issue has gained international recognition, including several debates at the United Nations Security Council (Scott, 2015). Research suggests that environmental change affects security through

its impacts on conflicts (Mach et al., 2019), livelihood and food security (Adger, 2000), health (Price-Smith, 2002), forced migration (Adger & de Campos, 2020; Warner et al., 2010), or international power relations and geopolitics (Dalby, 2020; Selby & Hoffmann, 2014), among others. Increasing evidence in recent years of climate-induced natural catastrophes indicates the Earth has entered an era of chronic environmental crises (e.g., Intergovernmental Panel on Climate Change, 2018). Yet concrete environmental security policies have not emerged in a systematic way (Hakala et al., 2019a). At the same time, concerns have been expressed about the securitisation of environmental policy as it may restrict democratic processes and lead to exceptional measures (Aradau, 2004; Buzan et al., 1998). We share these concerns but argue that for policy to be effective in addressing the foreseeable environmental security threats, it needs to remain resolutely within the domain of civil society.

In this article, we use Finland as a case study to show that the concept of comprehensive security, which currently guides the country's preparedness activities in different sectors of the civil society, offers a promising policy model for addressing environmental threats without hard securitisation. Most importantly, as it is based on the idea of wide cooperation among different sectors, comprehensive security takes a broad and inclusive perspective on security. The concept can be thought to represent an ongoing attempt to widen the range of security actors in Finland. Previous analyses have suggested that the field of security may need to open to new issues, actors, and practices in order to deal with environmental threats (e.g., Floyd, 2016; Oels, 2012; Trombetta, 2010). We therefore undertake a critical diagnosis of the Finnish comprehensive security model in light of earlier theorizations of widening security. While our analysis identifies several opportunities of the model, we also find challenges in its implementation. The lessons we draw from the Finnish case have wider interest as the concept of comprehensive security could be applied in other countries.

Comprehensive security is a policy concept that has become a key feature of Finnish security policy during the 2010s. It forms the basis for national preparedness efforts and for taking necessary actions in the event of disruptions. The comprehensive security model is detailed in the Security Strategy for Society (Prime Minister's Office, 2017), where it is defined as a cross-sectoral cooperation model which aims to ensure the vital functions of society, bringing the authorities, the business community, organisations, and citizens to work together. The vital functions are identified as follows: leadership; international and EU activities; defence capability; internal security; economy, infrastructure and security of supply; functional capacity of the population and services; and psychological resilience (Prime Minister's Office, 2017). Cooperation within the model ensures that "actors share and analyse security information, prepare joint plans, as well as train and work together" (Prime Minister's Office, 2017, p. 5). Each administrative branch is responsible for implementing the strategy within its competence (Prime Minister's Office, 2017, p. 1). In emergency situations, "only minimum changes" to the lines of authority, organisation, and the division of responsibilities can be made (Prime Minister's Office, 2017, p. 11).

The Security Strategy for Society emphasises that rapid change in Finland's security environment has brought about new dynamic, transboundary threats that need to be countered with "new operating approaches and broad-based cooperation" (Prime Minister's Office, 2017, p. 6). Therefore, we interpret that the starting point of the Strategy is to provide a model for identifying new kinds of security threats. For example, hybrid influencing, which refers to multiple complementary methods aimed at exploiting the weaknesses of a targeted community, has emerged as a topic of interest (see National Defence Courses, 2018). Regarding the environment, the Strategy explicitly considers environmental emergency response, detection of environmental changes, and flood risk management (Prime Minister's Office, 2017, pp. 50, 70, 75). Previous research has considered the Finnish comprehensive security model from the perspectives of cyber security (Griffith, 2018), multi-actor implementation and co-creation (Keskinen et al., 2017), and, for example, political viability and administrative operability (Branders, 2016). Analysis of implementing environmental measures within the model remain sparse.

According to the Security Strategy for Society (Prime Minister's Office, 2017, p. 28), the principles of comprehensive security can be summarized as follows:

- Comprehensive security is based on the principles of representative democracy and the rule of law.
- Lines of authority are based on statutory tasks and the responsibilities of competent authorities.
- Vital functions are secured by efficient and comprehensive use of society's resources, which is based on wide cooperation between the authorities, business operators, organisations, and citizens.
- Competent authorities' contingency and preparedness planning is supported by broad-based cooperation forums at different administrative levels.
- Comprehensive preparedness arrangements allow risks to be more effectively anticipated and resources to be used in a flexible manner. Planning of the recovery process ensures better resilience and preparedness.
- Preparedness has a European and international dimension.
- Preparedness is monitored and developed systematically, with the support of research information.
- Security information is widely disseminated.

Environmental security research has typically concentrated on policy documents. Yet our aim here is to

analyse how environmental policies are put in practice, how the comprehensive security model is implemented, and how environmental change is acknowledged in the everyday of experts working on unconventional security issues. The implementation of the model is not straightforward but potentially frictional and interspersed within multiple levels and sectors of society. Furthermore, in their everyday work the experts face challenges in embedding environmental change in the comprehensive security model, and vice versa. To grasp these issues in detail, we analyse a data corpus of expert interviews (n = 40) that represent a wide range of fields relevant to unconventional security issues vis-à-vis environmental change. To address the multifaceted character of environmental security, we utilize a three-level framework developed by Hakala et al. (2019b) as an analytical tool. The framework differentiates between local impacts that directly affect individuals and communities; geopolitical impacts that are combined with transboundary and political factors; and structural impacts of mitigating and adapting to environmental change.

In the following sections, we first present analytical approaches to environmental security and introduce the three-level framework of environmental security impacts. After that we describe our materials and methods, and then proceed to the analysis, which is divided into four sections. First, we analyse the Finnish model of comprehensive security, and then deal with local, geopolitical, and structural environmental security impacts. We end with a concluding discussion.

2. Analytical Approaches to Environmental Security

The concept of environmental security has come to incorporate various topics and perspectives, but its overarching focus is on the interaction of threats between environmental change and society (e.g., Dalby, 2002). A considerable strand of the literature has analysed the role of environmental issues like resource scarcity and drought in the onset of conflicts (e.g., Diehl & Gleditsch, 2001; Homer-Dixon, 1994), but emphasis has also been given to linkages between environmental change and human security, such as health, welfare, livelihoods, and food (e.g., Adger, 2000; Matthew et al., 2010; Sygna et al., 2013). Many of these analyses stress the importance of the societal context in which environmental security impacts take place. For example, environmental change is rarely the sole cause of conflict, but may increase its risk in combination with other socio-economic factors (Mach et al., 2019). The importance of contextualisation has also highlighted the need for country-specific or regional case studies (Selby & Hoffmann, 2014). So far, cases have tended to focus on large countries or particularly vulnerable regions, suggesting that wider geographic coverage is useful.

The security impacts of environmental change may take place at various levels from the local to the global, occur suddenly or gradually, and affect individuals or entire societies. Their comprehensive character makes them difficult to anticipate or prevent coherently. As noted by Buzan et al. (1998), the traditional security sector does not provide the means to deal with environmental threats. This has prompted concerns over harmful securitisation which may lead to ill-placed extreme measures and de-politicization without necessarily offering effective solutions to environmental problems (e.g., Bettini, 2013). Securitisation—the linkage of new issues to security—has often been considered harmful because it may restrict democratic process and lead to exceptional and exclusionary courses of action (e.g., Aradau, 2004; Buzan et al., 1998). Yet environmental change does appear to have security consequences that cannot simply be disregarded (e.g., Dalby, 2020). Scholars like Trombetta (2010) and Oels (2012) have suggested that environmental issues could oblige the security sector to adopt new practices and a more inclusive cooperation with a wider group of actors. From this perspective, the crucial question is not merely whether environment should be linked to security but whether the linkage generates worthwhile measures to anticipate and prepare for new risks.

However, any effort to constructively build preparedness requires an understanding of the varied and comprehensive character of environmental threats. To address this, Hakala et al. (2019a, 2019b) suggest a framework that categorises environmental security into three levels of impacts: local, geopolitical, and structural. Local impacts are caused by environmental factors, such as extreme weather. They may impact human wellbeing both directly and through critical functions of society. Geopolitical impacts occur when political and international factors are coupled with environmental changes. These are indirect impacts that result from chains of events or cascading effects. For example, local impacts in one place can have consequences elsewhere through geopolitical or economic linkages (e.g., Challinor et al., 2018; Lawrence et al., 2020). Lastly, structural impacts result from the measures that are taken to mitigate and adapt to environmental change itself. It is assumed that in order to achieve sustainable and secure societies, wide structural changes in the economic and political systems are needed. For example, the energy system needs to be restructured in a way that allows for a comprehensive utilization of sustainable sources (see Chapin et al., 2011; Steffen et al., 2018). Such societal transformations are likely to challenge, for example, democratic decision-making and bring forward questions of socially just transition. Although urgent decarbonisation is vitally necessary, it may also have security impacts either locally or through international relations (Mirumachi et al., 2020; Selby, 2014).

Hakala et al. have used the three-level framework to analyse central Finnish security policy documents and state-commissioned research papers to see how different environmental security impacts are covered. They found that some linkages have been recognised at

strategic level, but mostly, these have not been implemented in policy. Especially the lack of policies for geopolitical and structural security impacts reflects a wider gap in international policymaking and research on this topic (Hakala et al., 2019a, 2019b). Here, we analyse whether the Finnish model of comprehensive security has the potential to address these gaps.

3. Materials and Methods

In this article, we broaden the perspective of previous analyses of policy documents (Hakala et al., 2019a, 2019b) with extensive interview material to identify how environmental security impacts are being acknowledged and integrated into the Finnish model of comprehensive security. Additionally, to examine the potential of the model, we analysed the central policy document, the Security Strategy for Society (Prime Minister's Office, 2017). We assume that whereas policy documents in general guide the work of practitioners, the implementation of policies is not straightforward but potentially frictional as local modes of knowledge and experts' hands-on skills and practices do not match seamlessly with the policies. Although previous research has analysed the corpus of central security policy documents (Hakala et al., 2019a, 2019b), their implementation, concerning especially the environment, has not been studied in depth. Therefore, we posit that the detailed interview material is essential for nuanced understanding of the challenges and opportunities of incorporating environmental issues in security policy.

Our study is based on a corpus of interview material which was collected during the years 2018–2019 for the purpose of a larger multi-disciplinary research consortium focusing on the governance of wicked socio-environmental disruption). The semi-structured interviews (n = 40) were conducted by the consortium researchers and the interviewees (n = 44) were selected to represent the diversity of Finland's resilience and adaptation infrastructure against disruptions. Therefore, experts and officials from diverse sectors, such as public authorities from different administrative branches, researchers from different disciplines, and representatives of private companies, were recruited to the final interviews (see the Supplementary File). All interviews were recorded and transcribed verbatim. The rich interview material has been widely used by the consortium researchers, for instance to trace the movement of climate knowledge in municipal organisations (Virtanen et al., 2021) and to identify specific organizational rhythmic discordances as barriers to climate change actions (Reinekoski et al., 2021).

For the specific purposes of this study, the interview material allowed the analysis of a range of security concerns beyond the traditional security field. Our analysis focused on environmental threats and risks in the experts' own field and measures taken to counter them. Informants' responsibilities, knowledge, and cooperation with other sectors were also studied in order to better understand the possible widening of the security field.

As a research method we employed content analysis, structured around the three-level framework of environmental security impacts (Hakala et al., 2019b) to systematise our qualitative work. The analysis was conducted in four interconnected phases: We first developed a coding system of different environmental security impacts based on the three-level framework, and then coded the raw data by employing the classification of impacts. During the analysis, quotations pertaining to each impact were also compiled. To verify the coding process, two of the authors performed the analysis work together. This stage of analysis helped us to identify successes and gaps in threat recognition. In the third phase, aided by previous research (Hakala et al., 2019b), we analysed the central policy document on comprehensive security (Prime Minister's Office, 2017) to identify the opportunities for integrating environmental issues in security policy. In the fourth and more interpretive phase of the analysis, we thematised the interview material to find recurrent challenges in the implementation of the comprehensive security model.

4. Analysis

4.1. The Finnish Model of Comprehensive Security

Analysing the Security Strategy for Society (Prime Minister's Office, 2017), we find several opportunities supporting the integration of environmental issues into security policymaking. First, all actors "taking part in coordinated security work" (Prime Minister's Office, 2017, p. 7) or closely supporting it are considered security actors. This is a broad definition, as security work is understood as preparedness activities like contingency planning, continuity management, advance preparations, training, and preparedness exercises (Prime Minister's Office, 2017, pp. 7–9). Second, the strategy calls for proactive instead of reactive preparedness. This requires coordination between foresight methods, research findings, and monitoring of changes in the operating environment (Prime Minister's Office, 2017, p. 10). Third, the implementation of comprehensive security is expected to take place through cross-sectoral cooperation between different administrative branches, authorities, and the business community, monitored by the multi-sectoral Security Committee (Prime Minister's Office, 2017, p. 11). Fourth, the model is expected to support all actors in their practical security work, also at the regional and local level (Prime Minister's Office, 2017, p. 27). In other words, the opportunities of the comprehensive security model can be summarised as a wide understanding of security actors, proactive outlook, cross-sectoral approach, and applicability at multiple levels.

Based on the interview material, some aspects of these opportunities have been realized. The interviewees acknowledge that preparedness and security

practices have changed during recent decades to better tackle more "complicated and complex problems" like hybrid and cyber threats and climate change. Some of the experts who explicitly discuss the comprehensive security model appreciate it for including a wide range of actors, such as citizens and non-governmental organizations. To some extent, the cross-sectoral aspect of the model has been implemented: Several interviewees state that security and preparedness cooperation between authorities has improved on different governmental levels.

However, the interviews indicate that many opportunities of the comprehensive security model remain unused. Several interviewees recognise that interagency cooperation should be more extensive; hard and soft security sectors in particular should collaborate more. For example, an expert mentions that there is a gap between the security community and other sectors. Another expert further describes the challenges in incorporating environmental issues into the model as follows:

> It is not discussed where the emphasis should be within comprehensive security….Cyber security and hybrid influencing have been perhaps given particular importance. I think the way climate change is considered now is that it may increase extreme weather events … but it is a whole other scene where that issue is dealt with.

This suggests that even in the comprehensive security model, environmental threats are mainly considered from a narrow perspective on climate change induced extreme weather events. These are short-term disruptions with direct causes, while indirect or structural security impacts of environmental change appear to be harder to acknowledge. However, the comprehensive security model has been more successful in recognising *some* complex, indirect impacts like hybrid influencing. One explanation for this may lie in the gap between hard security and other sectors. This echoes previous research which points out that it is mainly the traditional security actors and security researchers who discuss comprehensive security as a concept and consider what it might entail (Keskinen et al., 2017). Even though the Security Committee includes representatives from different ministries, including the Ministry of the Environment, it still seems that harder security threats get more attention.

Furthermore, Keskinen et al. (2017) suggest that the narrow conceptual focus might hinder the integration of a wide field of actors into the model in practice or it might misdirect their actions. In our material, those interviewees who explicitly refer to the comprehensive security model are either from the national level of administration or from some of the core security- or preparedness-related organizations, such as the Finnish Border Guard, the Rescue Services and the Finnish National Rescue Association. In contrast, many of the local level environmental actors see security as something separate from their work and related only to the functions of the police or rescue services. This indicates that the concept of comprehensive security has not been widely adopted. It appears mainly to be the central authorities or traditional security actors who have a sense of ownership of the comprehensive security model—not the wider range of actors whom it, by definition, aims to integrate. As one expert contemplates: "[Comprehensive security] is such a top-level activity that, to a large extent, the concreteness of it is left for the practitioners and their networks."

In sum, it appears that the comprehensive security model is still largely dominated by the principles and organizations of hard security. This ties the environmental aspects of comprehensive security in a paralyzing bind between principle and practice: On one hand, environmental issues are largely absent from the comprehensive security model because the hard security organizations fail to see the practical relevance of environmental issues to security; on the other hand, the very absence of environmental issues from the model makes it impractical and abstract for the soft security organizations. This bind challenges many aspects of the opportunities of broad participation, proactive preparedness, cross-sectoral cooperation, and multi-level governance in comprehensive security. At the same time, our analysis indicates that the bind does not fully preclude environmental security impacts. Therefore, using the three-level framework of environmental security, we analyse how the opportunities of the comprehensive security model have been realised.

4.2. Local Impacts

Local environmental security impacts, particularly extreme weather events, are widely recognised in the interviews, and many experts expect more of them in the near future. They discuss storms, forest fires, heat waves, extreme winters, and floods as events that can affect critical infrastructure. Furthermore, the interviewees expect climate change to bring new pests, invasive species, and diseases, and they explicate that these may harm forestry and agriculture and pose direct health threats to humans. When it comes to implementation, the interviewees describe an extensive set of climate change mitigation measures and some explicitly link them to threats.

We argue that it has been the wide understanding of security actors which has made the extensive recognition of local impacts possible. As all sectors are obliged to engage in preparedness, risks are identified also beyond hard security issues. Extreme weather events are matched with more frequent and extensive preparedness actions in the fields of urban planning and environmental protection, for example. In other words, here a widening of the field of security actors, as suggested for example by Trombetta (2010), appears to enable more effective security planning in practice. However, according to the interviews, the implementation of the

comprehensive security model at multiple levels suffers from the varying availability of resources in different municipalities. Additionally, there is diversity in whether adaptation or mitigation gets more attention.

The proactive outlook is notable in the way some fields have adapted to the changing environment in the long term. For example, warmer and wetter climate is changing infrastructure maintenance practices. However, according to several interviewees, there are still trade-offs between short-term and long-term thinking, caused by the tendency to consider climate change mitigation and adaptation separately. Short-term goals are largely prioritised over a more long-term perspective, whereas effective mitigation action today could reduce the need for increasing adaptation in the future. In practice, it appears to be difficult to set sectoral practices to a more comprehensive temporal context and to devise measures that would be consistent with both the need to mitigate climate change and to adapt to its inevitable impacts.

To summarize, the comprehensive security model seems not to have supported cross-sectoral coordination or proactive outlook to the extent it has been envisioned to. Particularly, as several interviewees recognize the need for more extensive cooperation between the adaptation experts and the mitigation experts, the cross-sectoral aspect appears to not have been fully realised. The interviews echo the findings of previous research (Prime Minister's Office, 2016) which suggests that climate risks are not always followed systematically, and that measures to prevent them often lack resources or coordination. In other words, while environmental issues appear to be introduced into the comprehensive security and preparedness model, they are not cross-sectorally and proactively integrated in a way that would allow for purposeful implementation.

4.3. Geopolitical Impacts

Geopolitical environmental impacts are considered in about half of the interviews. The proactive outlook appears to be visible in the way the interviewees consider the global risk potential of environmental change. National-level experts in particular raise issues related to deteriorating international relations. According to the ministry-level experts, climate change is acknowledged as a "risk multiplier," increasingly seen as "one of the underlying factors" in conflicts and global migration. This is a clear recognition of wider international discussion about climate change as a threat multiplier, prompted particularly by actors in the traditional security field in the United States (e.g., CNA, 2007). For example, climate change can further erode volatile economic, political, and environmental conditions in already fragile areas (CNA, 2007, p. 44). In addition, the interviewees emphasize the role of a rules-based international order and multilateralism in the fight against climate change, but also remark that "in the current geopolitical circumstances it cannot be taken for granted that everyone is committed to the same cause." For example, new international environmental projects involving Russia are not funded due to the sanctions imposed by the EU. Overall, there appears to be an understanding that climate change affects geopolitics and that geopolitics in turn have an impact on the way climate change can be mitigated. However, the proactive outlook alone does not lead to a highly detailed analysis of risks. For example, the Arctic area is not discussed extensively in the interviews, except for one expert who reflects how the relevance of the area "has increased tremendously." This contrasts with previous research suggesting that growing interest in the Arctic region can increase geopolitical risks for Finland (Käpylä & Mikkola, 2016).

The cross-sectoral approach to geopolitical impacts is not that evident in the material, with some exceptions. For example, only the representatives of a shipping company consider how extreme winters—with demanding icebreaking conditions—might pose "a problem for the security of supply" of industries. Others do not consider security of supply even though it is an important topic in Finnish foreign and security policy which emphasises Finland's reliance on global resource flows and supply chains (see Hakala et al., 2019a).

The way some experts discuss energy security implies that there is some cross-sectoral recognition of how energy transition can contribute to geopolitical goals. One expert points out that Finland should not be "politically naïve" when it comes to ongoing international gas pipe projects: They should be seen not only as environmental but security issues as well. This view can be supported by research suggesting that gas pipelines can be used as an instrument of geostrategic influence (see Laine, 2018). However, elsewhere in the material, as in Finnish policy discourse more generally (Laine, 2018), the impact of gas pipelines is seen as strictly environmental and separate from security or geopolitics. This reflects the kind of narrow understanding of security associated with the paralyzing bind discussed earlier, suggesting that a wider view of security actors has not emerged.

Traces of cross-sectoral, proactive, and multi-level perspectives are noticeable in the recognition of some cascading effects regarding health threats and migration. For example, a regional environmental health officer says that long-term preparedness with a global perspective must consider climate change and health threats, as global food supply chains, migration, and the warming climate make new pathogens possible in Finland. Several interviewees, especially from the municipal and regional level, make a passing reference to the potential of climate change to increase global migration. The tendency of these experts to consider the impacts of health and migration can be seen as an example of multi-level perspective. However, some still express the need for further action: "It would be beneficial for the municipalities too to recognize the global dimension—that's where significant threats lie, after all."

Yet despite some application of the opportunities of the comprehensive security model, there is a lack of long-term thinking and acknowledgement of cascading effects. Therefore, the geopolitical environmental impacts are mainly seen in a sector-specific way and chains of events are not widely discussed. Impacts originating outside Finnish borders are not broadly considered. This appears to be another occurrence of the aforementioned paralyzing bind, as the broader, geopolitical aspects of environmental change are not fully conveyed into the security field. Meanwhile, the lack of dialogue with security actors may also hinder the ability of experts from other fields to identify impacts and developments that would be relevant for building preparedness. This also suggests that the recognition of environmental issues within the comprehensive security model has not led to the integration of the issue into the practice of security. Therefore, the model appears to fall short of so-called "climatisation" of the security field, proposed by Oels (2012), where security practices would be applied to climate change and climate professionals would participate in their application.

4.4. Structural Impacts

About half of the interviewees discuss structural change in some way. However, the majority only considers some aspects of the challenges that hinder wide societal transformation without addressing the consequences of the changes. The short-sightedness of decision-making appears to be a prominent problem, showing that there are challenges with the proactive outlook. For example, one expert describes how, little by little, "the saving potential of reducing energy consumption" has been internalized in their municipality, but if the reduction "requires making an investment first, it's not yet very clearly considered to save in the long run." Some national-level experts suggest climate models should be better utilized in the economic sector to anticipate future trends—especially if Finland wishes to secure its competitive advantage. Overall, some experts do recognize the need to consider structural changes in the long-term, but the material implies that this perspective has not been incorporated strongly into policymaking. Short-term economic goals tend to be prioritized over long-term ecological sustainability. This is short-sighted in light of research showing that without strong mitigation measures environmental change will lead to severe impacts on the global and therefore also on the Finnish economy (see Hakala et al., 2019b).

Several experts point out challenges in proactive thinking regarding the cultural and behavioural changes that are still needed and note that necessary measures are often deemed unpleasant. For example, they describe that "it is a lot easier to get people involved" in protecting the biodiversity of a local forest area than in acting against the more abstract threat of climate change through behavioural changes. Many of the experts underline the role of politicians and identify problems related to governance. They emphasise the importance of democratic participation but also argue that the readiness of the society to structural change depends on "political courage." However, the way in which severe environmental changes might affect democracy is not discussed, even though it can be expected that the transition is going to test democratic decision-making (Hakala et al., 2019b).

Furthermore, the material shows that the opportunities of the comprehensive security model have not been utilized to integrate environmental expertise into decision-making and governance. Some interviewees note that the tendency to ignore environmental change in decision-making may lead to unwanted path-dependencies, which suggests a lack of proactive thinking. The cross-sectoral and multi-level perspective of the comprehensive security model seems to be missed at the local level as, in some municipalities, environmental experts struggle to "get into the right tables and discussions" despite their willingness (see also Virtanen et al., 2021).

The lack of proactive and cross-sectoral thinking hinders the ability to see how present choices may lead to new threats in the future. Although some experts identify long-term developments in their own sector, such views do not appear to be adequately considered in strategic planning overall. For example, in the energy sector, experts note that the higher demand for battery technology may take a heavier toll on nature and that extreme winters pose "the biggest challenge for increasing renewable energy sources." Some interviewees acknowledge that the lack of anticipation in the forest sector, for example concerning future climate mitigation policies, might make heavy investments in wood-based bioeconomy misguided. The experts also point out that the tendency to neglect biodiversity issues in forestry means that "some sort of catastrophe is way more likely to happen" in the long run. These statements are related to the heated debate over forest management in Finland: The country's bioeconomy strategies are based on increasing forest harvest size while reaching climate mitigation targets would require forests to function as carbon sinks (see Toivanen, 2021).

There seem to be clear difficulties in applying the opportunities of the comprehensive security model to tackle structural impacts. Particularly, there appears to be a lack of widely shared proactive thinking, recognizing how the mitigation of environmental change will affect preparedness and security. Environmental experts are not included in the wide understanding of security actors, which serves to maintain the paralyzing bind.

5. Concluding Discussion

According to the interview and the document material, the comprehensive security model provides opportunities for integrating environmental issues into security

policymaking—namely, its cross-sectoral approach, the proactive outlook, the wide understanding of security actors, and the applicability at multiple levels. The model has helped to organize a wide set of actors to answer complex, indirect threats like hybrid influencing. However, according to our analysis, the model has not been fully realized in practice, which hinders the actual integration of environmental threats. In the interview material overall, security seems to be understood in a rather conventional way and related to hard security actors. As the model stems largely from within the security sector, environmental aspects end up in a paralyzing bind between principle and practice. In our view, an actual widening of the security discussion has not taken place in the sense that the security sector would have adopted perspectives from other fields, as suggested in previous research (e.g., Oels, 2012; Trombetta, 2010).

Apart from the narrow understanding of security, we find that the main challenges for incorporating environmental issues into security policy are related to their long-term, cross-sectoral, and cascading character. The interviewees seem to hold a relatively static view of economic and societal systems. This does not enable an understanding needed to effectively address the roots and impacts of environmental change. There is a tendency to focus on the present-day implications of policymaking while ignoring their long-term impacts and the ability to adapt to future change. Although some of the interviewees do themselves point out the need to take into account the long-term, it is not fully incorporated into policymaking. Yet previous research (e.g., Chapin et al., 2011) shows that the mitigation of and adaptation to environmental change require major structural changes which need to be considered already in present-day decision-making. However, it seems that there is no widespread discussion among the interviewees about changing the way they plan for or make decisions about the unknowable future. This suggests that, contrary to the principles professed in the Strategy outlining comprehensive security, the ability to take into account the long-term in a proactive way is limited.

The comprehensive security model seems not to have supported cross-sectoral coordination to the extent intended. In particular, the failure to integrate environmental expertise into decision-making and governance at the municipal level means that there are challenges in positioning sectoral practices in a more comprehensive context. Effective coordination would be needed to devise measures that are consistent with both the need to mitigate climate change and to adapt to its inevitable impacts. However, the level of coordination varies greatly across municipalities. This suggests that, despite the stated aim of comprehensive security to work at multiple levels, there is no shared model for implementing cross-sectoral collaboration at different levels of governance.

There is a tendency to see the impacts of environmental change as local, sector-specific, and resulting from direct causes, whereas it seems to be more difficult to acknowledge that threats outside Finland could have strong local effects through chains of events. These challenges reflect the fact that there is little research on specific chains of events and their impacts. Yet recent literature shows that such cascading effects are increasingly important to consider (Challinor et al., 2018). In the Finnish case, the various indirect impacts may be more significant compared to direct local impacts.

Comprehensive security as a policy model gives rise to questions related to security theory, particularly securitisation. Rather than imposing ill-placed and exclusionary measures (as in Aradau, 2004; Bettini, 2013; Buzan et al., 1998), the model specifically aims to promote preparedness in order to maintain the prerequisites of democracy and safeguard the rights of the individuals. Even in emergency situations, the measures should adhere to the principle of the rule of law (Prime Minister's Office, 2017). In this sense, the model seems to support the kind of widening of security that takes place within the sphere of democratic decision-making (see also Hakala, 2020). In particular, this seems to coincide with Floyd's (2016) view that securitisation does not only take place through undemocratic exceptional measures but may also occur, for example, through new legislation or when a state's existing security apparatus is employed to deal with new issues. In other words, as Trombetta (2010) suggests, politicisation and securitisation can be simultaneous, non-exclusionary processes.

Meanwhile, there is no indication that the security sector would have attempted to take over civil society functions, as the comprehensive security model has not fully integrated actors beyond the traditional security field. However, it has also not been open to interaction with outside perspectives and practices that would be crucial for dealing with new kinds of threats. Similar observations have been made regarding the Finnish response to the multi-sectoral Covid-19 crisis (Mörttinen, 2021). This distance between the security sector and civil society remains a major obstacle to creating an effective environmental security policy.

In their present form, the society and its institutions are inadequately equipped to deal with environmental change. As evidenced by the paralyzing bind, societal structures may rather hinder than support the prevention of environmental threats. The hard security organizations that have tended to take control of the comprehensive security model acknowledge the principle of environmental security but fail to see its practical relevance, which only serves to alienate the more peripheral soft security organizations from the model. Although our task here is not to delineate potential remedies, we do see a need for institutional empowerment in the distributed model of comprehensive security. Adaptation to complex operational environments demands a feedback between shared situational awareness and empowered execution among the participating organizations (McChrystal et al., 2015). Applying this principle to the

comprehensive security model, the hard security organizations should make better use of the existing cooperation forums, as described in Section 1, to ensure that all participating organizations share the same situational awareness. At the same time, the hard security organizations should accept decentralized managerial authority over environmental security across the relevant actors of comprehensive security. As our interviews indicate, the soft security organizations are after all the experts of environmental security.

Acknowledgments

The authors would like to thank two anonymous reviewers for their valuable comments. Funding from Academy of Finland grant 338553, 338558 and Academy of Finland's Strategic Research Council grants 312623, 312624 and 336253, and from Kone Foundation is gratefully acknowledged.

Conflict of Interests

The authors declare no conflict of interests.

Supplementary Material

Supplementary material for this article is available online in the format provided by the author (unedited).

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Politics and Governance (ISSN: 2183–2463)
2021, Volume 9, Issue 4, Pages 102–113
https://doi.org/10.17645/pag.v9i4.4420

Article

Governance Challenges for Implementing Nature-Based Solutions in the Asian Region

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Submitted: 28 April 2021 | Accepted: 24 June 2021 | Published: 22 October 2021

Abstract
Nature-based solutions (NbS) are recognized under the United Nations Framework Convention on Climate Change and the Convention on Biological Diversity. This relatively new concept has become a key element in strategies for green recovery from the Covid-19 pandemic. NbS consist of a range of measures that address various societal challenges, including climate change, natural disasters, and water security, by combining human well-being and biodiversity benefits. Although the importance of NbS has been widely recognized, existing studies on aspects of their governance are limited and mainly focus on NbS in European countries. There is little relevant research in other regions, including Asia. This study aimed to explore challenges for NbS governance by analyzing the development and implementation of NbS in Asia. We focused on NbS in the fields of climate change mitigation and adaptation, disaster risk reduction, and infrastructure. In these three fields, NbS are linked to climate security issues and have been widely implemented in Asian countries. This analysis identified the challenges for NbS governance for countries at different stages of economic development, and for developing measures for NbS with different institutions and actors. It recognizes the importance of a framework that matches the need for NbS with relevant institutions and actors at various scales and in various sectors. Guidelines are required to integrate NbS into strategies and policies at national and local levels and also into international cooperation.

Keywords
Asia; climate change adaptation; climate change mitigation; Convention on Biological Diversity; disaster risk reduction; governance; infrastructure; nature-based solutions; United Nations Framework Convention on Climate Change

Issue
This article is part of the issue "Climate Change and Security" edited by Yasuko Kameyama (National Institute for Environmental Studies, Japan) and Yukari Takamura (University of Tokyo, Japan).

1. Introduction

Nature-based solutions (NbS) are a relatively new concept and consist of a range of measures that address various societal challenges, including climate change, natural disasters, food security, human health, water security, and economic and social development, by bringing together human well-being and biodiversity benefits. The increasing importance of NbS has been recognized under the United Nations Framework Convention on Climate Change (UNFCCC) and the Convention on Biological Diversity (CBD). In addition, NbS are a key element in strategies for green recovery from the Covid-19 pandemic. In its immediate response framework to Covid-19, the UN states that it will include advice on NbS for development, including for small and medium-sized enterprises (UN, 2020).

The NbS concept was originally developed through the International Union for Conservation of Nature (IUCN) in relation to climate change mitigation and

adaptation, and biodiversity conservation and management; it was then reconceptualized by the European Commission (EC) to explain social and economic goals more explicitly (Dorst et al., 2019; Nesshöver et al., 2017). The IUCN defines NbS as "actions to protect, sustainably manage, and restore natural or modified ecosystems, that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits" (Cohen-Shacham et al., 2016). The EC defines NbS as "solutions that are inspired and supported by nature, which are cost-effective, simultaneously provide environmental, social and economic benefits and help build resilience" (European Commission [EC], 2021a). The IUCN's definition is more focused on nature, whereas the EC's definition is focused on humans, and related to the economy and markets (Mendes et al., 2020).

NbS include ecosystem restoration approaches, issue-specific ecosystem-related approaches (e.g., ecosystem-based mitigation and adaptation, and ecosystem-based disaster risk reduction [Eco-DRR]), infrastructure-related approaches (e.g., green infrastructure), ecosystem-based management approaches, and ecosystem protection approaches (Cohen-Shacham et al., 2016). Although NbS are a relatively new concept, the approaches used for NbS, including those relating to climate change mitigation and adaptation and forest management, are not considered new (Morello et al., 2018; Springgay, 2019).

Although the importance of NbS has been widely recognized around the world, there have been limited studies on the governance aspects of NbS (Albert et al., 2019; Nelson et al., 2020; Nesshöver et al., 2017). The majority of existing studies focus on possible plans for NbS in European countries (Faivre et al., 2017; Frantzeskaki, 2019; Nesshöver et al., 2017), especially in the urban context. Existing studies also focus on the contribution of NbS to achieving more sustainable and resilient urban areas or cities, and the conditions or frameworks that guide the implementation of NbS (Dorst et al., 2019; Frantzeskaki et al., 2019; Raymond et al., 2017). The European Union (EU) is an important promotor of NbS, adopting the concept in its early stages and providing financial support for both NbS-related academic research and implementation in cities (Mendes et al., 2020). The EU has considered NbS broadly in terms of cross-sectoral governance including financing at a regional level (which is between national and global levels) by linking NbS with the European Green Deal and green recovery from the Covid-19 pandemic (Science for Environment Policy, 2021). In Europe, there are links also between various actors and NbS, through the publication of the European Investment Bank's guide to financing NbS projects and the "EU Business @ Biodiversity Platform," which provides a forum for dialogue and policy development on the connections between business and biodiversity at the EU level (EC, 2021b; European Investment Bank, 2018). Other regions, including Asia, lack studies on the governance aspects of NbS (Lechner et al., 2020). In Asia, there is no regional strategy on NbS, and there is limited discussion on the relationships between NbS and cross-sectoral national and local governance which could promote NbS more widely. There is also limited connectivity between NbS and green recovery strategies in Asia. Because there are many developing countries in Asia, not only national and local governance, but also governance of international cooperation is crucial for NbS.

This study aimed to explore challenges for NbS governance by analyzing the development and implementation of NbS in the East, Southeast, and South Asian regions. In this analysis, governance included national and local governance as well as governance related to international cooperation for Asian countries. We focused on NbS in the fields of climate change mitigation and adaptation, disaster risk reduction (DRR), and infrastructure because these are the fields that were not originally referred to as NbS but have been widely implemented in Asian countries. NbS in these three fields are linked to climate security issues. Although climate security does not have an agreed definition, in this article climate security refers to threats caused by climate change to national, human, international, and ecological security (McDonald, 2013). Measures to increase climate security include those for climate change mitigation and adaptation, and for building resilience (Kameyama & Ono, 2021). Compared with discourse on national, human, and international security, the ecological security discourse has had limited impact on policy or academic debates (McDonald, 2013). NbS in the three fields shown above could provide approaches for a wide range of discourses on climate security, including ecological security.

2. Exploring Governance Challenges for Nature-Based Solutions

2.1. Governance for Nature-Based Solutions

The literature on governance for NbS remains limited, as noted above. Most NbS studies highlight the novelty of the NbS concept and its establishment in the European urban context (Hanson et al., 2020). Although current governance-related discussions on NbS mainly focus on urban sustainability, NbS involve multiple actions that are implemented over a broad range of landscapes and seascapes, and across jurisdictional boundaries (Seddon, Chausson, et al., 2020). NbS governance requires active cooperation and coordinated action between multiple actors whose priorities, interests, or values may not be coordinated, and may even conflict (Dale et al., 2019; Seddon, Chausson, et al., 2020). The NbS literature generally promotes a comprehensive governance approach that coordinates the different policies, regulations, and finance related to the different functions of NbS (Dorst et al., 2019; Frantzeskaki, 2019; Xing et al., 2017).

Studies concerning the implementation of NbS in Asia are particularly limited. Hanson et al. (2020) conducted a qualitative review of 112 scientific peer-reviewed publications that use the term NbS and found that only around 14% of publications concerned Asian contexts. A study by Lechner et al. (2020) is one of the few that discusses the application of NbS in Southeast and East Asia, where urban blue (i.e., water) and green (i.e., vegetation) spaces are increasingly being degraded and lost because of rapid urbanization. They assessed the socio-ecological challenges to the application of NbS in Southeast and East Asia and showed that South–South and North–South collaboration should be a priority for government, planners, and academics.

2.2. Analytical Framework and Scope

We identified the governance challenges for NbS that need to be addressed in Asia by analyzing how the existing types of NbS have been developed and implemented in the region, and by identifying the governance challenges for NbS that tend to vary between the developed and developing countries in Asia. As noted earlier, we focused on NbS in the fields of climate change mitigation and adaptation, DRR, and infrastructure. Although the concept of NbS is relatively new and the term NbS is not yet widely used in Asia, the components of NbS, such as ecosystem-based mitigation and adaptation, Eco-DRR, and green infrastructure are already being implemented. In our analysis, we use the term "green infrastructure" as a concept that includes both green and blue infrastructure and spaces because the term is often used as a broad concept in Asian countries.

Much of the literature on NbS (including the literature that does not explicitly use the term NbS) in the region is written in the relevant native language. In our analysis we only used studies and data written in English to ensure consistency among countries. Owing to the limited information and data on NbS published in English, this article did not attempt to provide comprehensive coverage of all NbS measures in all sectors over time. We used both academic and nonacademic studies and data. The cases that we used in this article included both developed and developing countries in the East, Southeast, and South Asian regions.

3. Nature-Based Solutions in the Three Areas

3.1. Nature-Based Solutions for Climate Change Mitigation and Adaptation

This section identifies how NbS for mitigation and adaptation have been implemented in Asian countries. We show that NbS for mitigation are quite well established in national strategies and policies, as well as in the international financial mechanisms and among donors. In contrast, recognition of and funding for NbS for adaptation are more sporadic and less well established in the national strategies and policies and financial mechanisms. As mentioned above, although the links between NbS and strategies for green recovery from the Covid-19 pandemic are being discussed in the EU, their links with cross-sectoral strategies are not discussed much in Asian countries.

3.1.1. Definition and Background of Nature-Based Solutions for Mitigation and Adaptation

NbS have the potential to enhance climate change mitigation and climate resilience. As described above, the NbS concept was originally developed in relation to climate change mitigation and adaptation as well as biodiversity conservation and management, and there is a wide range of literature on these topics (Chausson et al., 2020; Griscom et al., 2017, 2020; Seddon, Daniels, et al., 2020). NbS for mitigation are also referred to as natural climate solutions (NCS; Griscom et al., 2020). NCS are a set of protection, restoration, and improved land management pathways that produce climate change mitigation outcomes (Griscom et al., 2020). They can reduce and reverse emissions from agriculture, forestry, and other land use (AFOLU) sectors, and are capable of covering around one third of the mitigation required by 2030 to achieve the goals of the Paris Agreement of the UNFCCC (Griscom et al., 2017, 2020).

NbS for adaptation are widely referred to using the term ecosystem-based adaptation (EbA), which uses "biodiversity and ecosystem services as part of an overall adaptation strategy to help people to adapt to the adverse effects of climate change" (Secretariat of the Convention on Biological Diversity, 2009). Thus, EbA measures form a part of NbS (Cohen-Shacham et al., 2016). Over the last two decades, there has been a significant increase in the implementation of NbS for adaptation (UN Environment Programme [UNEP], 2021).

At the international level, the contribution of NbS to mitigation and adaptation was emphasized when all parties to the Paris Agreement were called on to recognize "the importance of the conservation and enhancement, as appropriate, of sinks and reservoirs of the greenhouse gases," and to note "the importance of ensuring the integrity of all ecosystems, including oceans, and the protection of biodiversity" (UN, 2015). The Agreement also refers to ecosystems, forests, and natural resources in its articles, including the article regarding "reducing emissions from deforestation and forest degradation, and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries (REDD+)" (Seddon, Daniels, et al., 2020; Seddon et al., 2019).

REDD+, which can be an NbS or NCS, is a framework that aims to contribute to climate change mitigation and may produce co-benefits such as climate change adaptation and biodiversity conservation (Morita & Matsumoto, 2018). The AFOLU sectors' contribution to mitigation, including through REDD+, has been an

important part of the agenda within the UNFCCC. REDD+ has received international attention from various actors because it may substantially contribute to mitigation and provide benefits to both developed and developing countries. Developed countries could reduce emissions at a relatively low cost by supporting REDD+ (Stern, 2007), while REDD+ provides financial incentives for developing countries to reduce emissions in the forest sector. Compared with other NbS, the REDD+ framework and approaches are considered to be more developed in terms of fitting clearly into international conventions and having established rules (e.g., national forest monitoring systems, safeguards, and results-based finance under the Warsaw Framework for REDD+), as well as clear links to international cooperation mechanisms (including public and private finance sources). Asian countries that are implementing REDD+ have links with various donors, such as Norway's Climate and Forest Partnership with Indonesia, the Green Climate Fund (GCF) REDD+ support to Indonesia, and Japan's REDD+ support to Indonesia, Vietnam, Cambodia, and Lao PDR. However, REDD+ still has various governance challenges to overcome. Its current governance suffers from fragmentation, which requires coordination among institutions and actors from international to local levels, and there are issues relating to the effectiveness and performance of REDD+ that need to be addressed (Arts et al., 2019; Dong-hwan Kim et al., 2020; Korhonen-Kurki et al., 2019). The governance challenges include coordination between donors/financial sources and recipients.

EbA was touched on in the discussion on adaptation within the UNFCCC (Morita & Matsumoto, 2015). The UNFCCC created an EbA database on its website (currently included in the Adaptation Knowledge Portal of the UNFCCC website), and a technical workshop on EbA was held in 2013. Some topics of discussion under the UNFCCC, including REDD+ safeguards and EbA, were also discussed under the CBD (Morita & Matsumoto, 2015, 2018).

The UN Environment Programme (UNEP) is among the organizations that have promoted NbS for mitigation and adaptation internationally, through the UN-REDD Programme (working with the Food and Agriculture Organization of the UN [FAO] and the UN Development Programme [UNDP]) which supports Asian countries such as Vietnam, and through EbA projects in Asian countries such as Cambodia (UNEP, 2020). At the national level, NbS are recognized in nationally determined contributions (NDCs), which are the efforts by each country to reduce national emissions and adapt to climate change impacts under the UNFCCC (United Nations Framework Convention on Climate Change [UNFCCC], 2021b). Seddon et al. (2019) show that the majority of NDCs include NbS; at least 66% of the Paris Agreement signatories include NbS actions or targets as a part of their mitigation and/or adaptation components, although more concrete and evidence-based targets for NbS are required. Laurans et al. (2016) analyzed NbS in the intended nationally determined contributions (INDCs) and found that NbS were clearly visible in 28% of INDCs. NbS are commonly used in Africa and South America/the Caribbean, but much less so in Asia (excluding China) and in Europe (Laurans et al., 2016). China and Mexico highlight NbS in their INDCs. Among developed countries, Japan and New Zealand have the most detailed INDCs, which include detailed measures regarding mitigation through land use, whereas the EU mainly spells out the results that need to be achieved (Laurans et al., 2016).

3.1.2. Nature-Based Solutions for Mitigation in Asian Countries

In regard to NbS for mitigation, as described above, Japan submitted a detailed INDC in 2015 describing NbS (Laurans et al., 2016). Japan's INDC set a target of a 26% reduction in greenhouse gas emissions by fiscal year (FY) 2030 compared with FY 2013 levels, including a target for removals by the land use, land use change, and forestry sector (approximately 37 million t-CO_2; UNFCCC, 2021a). South Korea, in its updated NDC submitted in 2020, provided a target of a 24% reduction in greenhouse gas emissions below 2017 levels, but did not identify the target of removals (UNFCCC, 2021a).

The most prominent support provided by donors in developed countries to Asian developing countries for NbS is through REDD+. Japan was the second largest donor of the total REDD+ funds committed between 2006 and 2015 (the total funding committed by all donors was 16.7 billion USD; Do-hun Kim et al., 2019).

Among all the REDD+ recipient countries, Indonesia, India, and China received the second, third, and fifth largest amounts of funding, respectively, from the total REDD+ funds between 2006 and 2015 (total funds received by all recipients [excluding funds received by donors from other donors] were 9.69 billion USD; Do-hun Kim et al., 2019). Nepal, Vietnam, Lao PDR, and the Philippines were also major recipient countries in Asia (Do-hun Kim et al., 2019).

3.1.3. Nature-Based Solutions for Adaptation in Asian Countries

In terms of NbS for adaptation, at the international level, the Asian countries in the G20—Japan, South Korea, China, India, and Indonesia—have already indicated the importance of implementing EbA as well as DRR (see Section 3.2; Prabhakar et al., 2019). The G20 Osaka Leader's Declaration, adopted under Japan's presidency in 2019, includes references to ecosystem-based approaches and NbS, and there were increased references to EbA and DRR at the G20 Summit in Japan (Ministry of the Environment, 2020; Warren, 2020). There has been recognition of the importance of integrating ecosystem-based approaches into national adaptation plans by both Japan and South Korea (Prabhakar

et al., 2019). In particular, Japan's national strategies, including the national adaptation plan, specify ecosystem-based approaches (Prabhakar et al., 2019).

China is one of the few Asian developing countries that highlights NbS in its INDC (Laurans et al., 2016). The Chinese NDC states that "climate change has significant impacts on global natural ecosystems" (UNFCCC, 2021a). Other developing countries that emphasized NbS for adaptation in their NDCs include Mongolia, Vietnam, and Nepal (Seddon et al., 2019). More recently, a number of countries including Thailand, Brunei Darussalam, Cambodia, and the Maldives, highlighted NbS for adaptation when they updated their NDCs in 2020 (UNFCCC, 2021a).

The amount of public international funding provided to NbS for adaptation is only 3.8–8.7 billion USD, or around 0.6%–1.4% of total climate finance flows in 2018 (Swann et al., 2021). Overall funding for NbS for adaptation in 2018 was supported by a small number of major bilateral donors, including Germany, the United Kingdom, Japan, and Sweden, and major multilateral donors, including the EU, the Asian Development Bank (ADB), the GCF, and the International Fund for Agricultural Development (Swann et al., 2021). Around a half of the total public funding for NbS for adaptation was allocated to countries in Sub-Saharan Africa and South and Central Asia (Swann et al., 2021).

Compared with REDD+, NbS for adaptation, such as EbA, have not yet been clearly identified in the international finance and donor-funded programs and projects. As mentioned above, the amount of public international funding provided to NbS for adaptation is comparatively small (Swann et al., 2021). Major international finance mechanisms/multilateral donors that have supported NbS for adaptation implementation in Asian countries are the Global Environment Facility (GEF), Adaptation Fund, GCF, and the ADB. In 2020, the GEF, Adaptation Fund, and GCF submitted inputs on finance for NbS to the Forum of the Standing Committee on Finance, which provides a platform for a wide range of actors to discuss climate finance topics (UNFCCC, 2020).

The GEF provides funding to support developing countries to achieve the objectives of international environmental conventions and serves as the financial mechanism for five conventions, including the UNFCCC and the CBD (Global Environment Facility [GEF], 2021b). It has supported a number of programs and projects such as building climate resilience of urban systems through EbA (Bhutan, Cambodia, Lao PDR, and Myanmar) and EbA for climate-resilient development (Nepal). The GEF's NbS-related programs/projects have been implemented by agencies including the UNEP and UNDP, and projects have been executed mainly by the governments of recipient countries. Because the GEF currently aims to prioritize integrated programs and projects that address more than one global environmental problem (GEF, 2021a), NbS, which can produce multiple benefits, are likely to align with the GEF strategy.

The Adaptation Fund under the Kyoto Protocol of the UNFCCC has supported programs/projects such as enhancing climate resilience in the Mekong subregion through EbA (Thailand and Vietnam). As with GEF funding, the programs/projects have been implemented by agencies including the UNEP and UNDP and executed mainly by recipient governments. The GCF, established under the UNFCCC, has supported programs/projects on NbS for adaptation, including building a resilient Churia region (Nepal). The ADB has supported more infrastructure-related programs/projects such as building climate change resilience in Asian coastal cities (South and Southeast Asia).

3.2. Ecosystem-Based Disaster Risk Reduction

Compared with NbS for mitigation and adaptation, the amount and status of international finance flows to Eco-DRR is not clear. Existing programs/projects funded by international finance mechanisms/multilateral donors do not explicitly highlight Eco-DRR, and there is a lack of clarity over whether EbA-related programs/projects include Eco-DRR elements.

3.2.1. Definition and Background of Ecosystem-Based Disaster Risk Reduction

Eco-DRR is "the sustainable management, conservation and restoration of ecosystems to reduce disaster risk, with the aim of achieving sustainable and resilient development" (Estrella & Saalismaa, 2013, p. 30). Eco-DRR is often discussed with EbA, as both are important elements of overall climate change adaptation and DRR strategies (Secretariat of the Convention on Biological Diversity, 2019). The Secretariat of the CBD has developed overarching considerations for EbA and Eco-DRR design and implementation, and a stepwise approach for their effective design and implementation (Secretariat of the Convention on Biological Diversity, 2019).

At the international level, the Sendai Framework for Disaster Risk Reduction 2015–2030, which was adopted at the Third UN World Conference on DRR in 2015 (hosted by Japan and with the UN Office for Disaster Risk Reduction [UNDRR, previously UNISDR] serving as coordinating body), calls for the implementation of ecosystem-based approaches for shared resources (e.g., within river basins and along coastlines) to build resilience and reduce disaster risk through transboundary cooperation. The UNDRR is key for the promotion of Eco-DRR. For example, it provides suggestions on ways to exploit the growing evidence base to enhance the integration of Eco-DRR and other NbS (such as EbA) into DRR strategies and national development plans using good practices from Asia and other regions (UN Office for Disaster Risk Reduction [UNDRR], 2020). In addition, it has published a guide providing practical information on establishing and implementing NbS, especially in relation to DRR and climate change adaptation, and on helping

to implement the Sendai Framework (UNDRR, 2021). Although linkages between Eco-DRR and other measures, as well as among strategies and plans, are broadly discussed in the existing literature, there are limited studies on Eco-DRR from a governance perspective (Triyanti & Chu, 2018; Wickramasinghe, 2021). The lack of discussion on Eco-DRR from a governance perspective is considered to be partly because Eco-DRR studies are still dominated by the natural sciences (Triyanti & Chu, 2018). The challenges related to governance for Eco-DRR include limited visibility to policy makers as a potential solution, the invisibility of benefits from Eco-DRR measures, and inadequate financial incentives to invest in Eco-DRR (Wickramasinghe, 2021).

3.2.2. Ecosystem-Based Disaster Risk Reduction in Asian Countries

Among the developed countries in Asia, Japan is considered to be a key promoter of Eco-DRR, with its government proactively advocating for it (Japan International Cooperation Agency, 2021; Wickramasinghe, 2021). In 2016, the Ministry of the Environment in Japan published a handbook for practitioners on Eco-DRR, which introduced some Eco-DRR approaches and key points for their adoption (Ministry of the Environment, 2016). In addition, Eco-DRR is clearly integrated into national plans in Japan. For example, the Fundamental Plan for National Resilience in 2018 refers to the importance of implementing and promoting the concepts of Eco-DRR and green infrastructure to enhance resilience (Cabinet Secretariat, 2018). Japan has experience in integrating ecosystem perspectives into water related DRR (e.g., river and coastal DRR), and the existing literature identifies good practices and case studies for Eco-DRR in Japan (Furuta & Shimatani, 2018; Kato & Huang, 2021; Mabon, 2019), although discussion on integrating those case studies to national and local governance is limited. The literature on Eco-DRR in Asia is largely centered on Japan. In South Korea, although there are studies on ecosystems and DRR, such as the links between forest management and DRR, few existing studies directly discuss Eco-DRR (Lee et al., 2018). As for donors, the Japan International Cooperation Agency has broadly supported Eco-DRR in developing countries, including in Myanmar and China (Japan International Cooperation Agency, 2021), and integration of Eco-DRR and Japanese bilateral cooperation is observed. However, Eco-DRR is not clearly earmarked in multilateral and bilateral cooperation for developing countries in Asia.

There are few studies that comprehensively examine Eco-DRR implementation in developing countries (UNDRR, 2020). The UNDRR (2020) examined various case studies in the Asia-Pacific, including Eco-DRR measures in river/flood plains (India), ecologically friendly alternatives to traditional flood defenses and drainage systems in cities (China), and participatory approaches to hydraulic engineering challenges that use and create ecosystem services to benefit society (Indonesia). The case studies show that there are good examples of integrating NbS into DRR strategies. For example, the National Disaster Management Plan of India in 2019 included the implementation of ecosystem-based approaches for river basins, mountainous regions, and coastlines (UNDRR, 2020). The Myanmar National Framework for Community Disaster Resilience in 2017 adopted an inclusive planning process to identify and implement measures that are structural, ecosystem-based and nonstructural at the household level and community level, to reduce disaster risk, and the Myanmar Action Plan on Disaster Risk Reduction in 2017 set out techniques for integrating disaster and climate risk into village development planning and implementation to apply Eco-DRR measures as one of the priorities (UNDRR, 2020). These examples indicate that in some developing countries in Asia, the Eco-DRR is integrated to national strategies on DRR. However, because Eco-DRR is not fully integrated into international cooperation, one challenge for developing countries is the lack of a link between Eco-DRR implementation and financial and technical support.

3.3. Green Infrastructure

Because the definition of green infrastructure in Asia is incomplete, identifying the governance challenges of green infrastructure under NbS is difficult compared with the other NbS areas analyzed above. Furthermore, compared with NbS for mitigation and adaptation and Eco-DRR, green infrastructure lacks formal links with international frameworks, such as the UNFCCC, CBD, and UNDRR-related frameworks. The understanding and implementation of green infrastructure also varies among countries.

3.3.1. Definition and Background of Green Infrastructure

Although green infrastructure is categorized under NbS, it does not have a widely accepted definition. Benedict and McMahon (2002, p. 12) defined green infrastructure as an "interconnected network of green space that conserves natural ecosystem values and functions and provides associated benefits to human populations," and the EU uses a similar definition (EC, 2019; Escobedo et al., 2019). However, in Asia, there is no common definition for green infrastructure. For example, the Japanese government recognizes that green infrastructure aims to use the natural environment's diverse functions and obtains diverse effects, such as improving the local aesthetics and living environment and preventing or reducing disasters (Ministry of Land, Infrastructure, Transport and Tourism, 2019). In China, green infrastructure in cities is placed under the umbrella of urban greening (Escobedo et al., 2019). Furthermore, the term "green infrastructure" is used differently in the context of green finance and investment, which uses a pragmatic definition of

green infrastructure that places sectors and technologies that qualify as "green" under sustainable finance taxonomies, including renewable energy, sustainable transport, and sustainable waste management (OECD, 2020).

3.3.2. Green Infrastructure in Asian Countries

The Japanese government emphasizes the role of green infrastructure and Eco-DRR, and promotes green infrastructure like Eco-DRR (Ministry of the Environment, 2016). In Japan, the concept of green infrastructure has been highlighted especially within the literature of infrastructure and disaster management (Ministry of Land, Infrastructure, Transport and Tourism, 2019), while the concept of Eco-DRR has been mainly promoted within the literature relating to ecosystem services (Ministry of the Environment, 2016; Wickramasinghe, 2021). Furthermore, in 2020, the Green Infrastructure Public-Private Partnership Platform was started, led by the Ministry of Land, Infrastructure, Transport and Tourism of Japan. This links actors such as national government, local governments, the private sector, and academia to contribute to designing and implementing comprehensive green infrastructure solutions (Dewit, 2020). In South Korea, there are also some case studies such as green infrastructure within NbS practices in the Cheonggyecheon River in Seoul (Asian Development Bank [ADB], 2016), hubs and links of green infrastructure in the Seoul metropolis (Kang & Kim, 2015), and green infrastructure network planning for a coastal urban area in Busan (Jeong et al., 2021). The importance of green infrastructure has been recognized in both countries, and a platform such as the Japanese Green Infrastructure Public-Private Partnership Platform has the potential to link relevant institutions and actors. However, similar to Eco-DRR, the integration of local actions with national and local governance faces challenges. Furthermore, green infrastructure under NbS is not clearly identified in the multilateral and bilateral cooperation for developing countries in Asia. This may be partially because of the different definitions of green infrastructure.

Among developing countries in Asia, China has an active academic dialogue regarding green infrastructure (Hu et al., 2020). China has not issued any national green infrastructure guidance policy; however, eco-environmental guidelines recently announced in the country reflect the functional necessity of green infrastructure, ecosystem services, and biodiversity conservation (Hu et al., 2020). The ideology of "ecological civilization" is catalyzing the promotion of green infrastructure plans and thinking in China (Hu et al., 2020). In India, green infrastructure is not clearly integrated into the national strategies and policies, although the Centre for Science and Environment, supported by the Ministry of Housing and Urban Affairs of India, published *Green Infrastructure: A Practitioner's Guide* in 2017, which introduced methods and strategies for water sensitive urban design and planning (Rohilla et al., 2017). In addition, green infrastructure initiatives are seen in city level, such as Blue-Green Masterplans in Delhi and Bhopal (Udas-Mankikar & Driver, 2021). Although the green infrastructure concept is not widely used in developing countries in Asia, the ADB (2016) has developed principles for applying green infrastructure to build resilience in Mekong towns, including that green infrastructure needs to be a strategically planned and interconnected network that is included in town master plans, and that it needs to involve all relevant local actors. It has also developed 10 strategies for green infrastructure and NbS for Mekong town development, such as greening of core urban areas, and greening of towns on rivers and coasts. Furthermore, the ADB provides case studies of green infrastructure implementation, such as landslide slope stabilization (Nepal), river cleanup and restoration (Philippines), and wetland construction (Malaysia; ADB, 2016). The GEF has published a study on good practice for green infrastructure such as NbS for erosion control in a GEF-supported climate resilient rural infrastructure project (Vietnam), which was implemented by the ADB and UNDP (GEF, 2020). In developing countries in Asia, green infrastructure is not yet clearly linked to national governance or international cooperation, including finance.

4. Discussion and Conclusions

In this article, we analyzed the development and implementation of the three existing types of NbS—NbS for climate change mitigation and adaptation, Eco-DRR, and green infrastructure—in Asia. We also attempted to understand common and specific governance challenges for NbS in Asian countries.

It is difficult to analyze the development and implementation of NbS in Asia comprehensively, in both periodical and sectorial terms, because of the limited literature and data published in English. However, we found that, although the current literature on NbS is mainly focused on the European context, many Asian countries have developed and implemented NbS in their own national contexts, and several countries have already included NbS in their national strategies or plans. Because many of the Asian countries are developing countries, NbS governance discussion in Asia includes governance related to international cooperation.

We found that there is a need to coordinate fragmented institutions and actors to move forward with the implementation of NbS in Asia. In addition, there is a need to use the experience and lessons learned from the past, including from programs/projects and measures that are not necessarily referred to as NbS. The fragmentation of institutions and actors is evident in the different types of NbS and each type has unique challenges. REDD+ and EbA are linked to the UNFCCC and the CBD, while Eco-DRR is linked to the UNDRR-related framework. Green infrastructure lacks a formal link with any international framework. This fragmentation makes

it difficult to compare different types of NbS in each country. Particularly for developing countries, the different types of NbS are supported by various actors (including international finance mechanisms and donors), making it more difficult for these countries to coordinate NbS implementation and to integrate NbS into their national strategies and plans. Furthermore, compared with Europe, in Asia, the links between NbS and strategies for a green recovery from the Covid-19 pandemic are limited. There is also a limited framework to link the various actors (including private sector and financial institutions) and NbS in both developed and developing countries.

This article mainly focused on the three areas of NbS noted above, which already include both practical and academic discussion, and could provide approaches for a wide range of discourses on climate security (i.e., national, human, international, and ecological security). It is notable that NbS approaches, which directly contribute to the resilience of ecosystems, could contribute to the ecological security discourses under climate security that currently have less impact on policy or academic debates. It should be noted that NbS also include solutions addressing other societal issues, such as food security and human health, which have limited discussion compared with the three areas discussed in this article. In 2021, the FAO and The Nature Conservancy published three reports on NbS in agriculture (The Nature Conservancy, 2021). The FAO considers agricultural NbS as an effective, long-term, cost efficient approach to address sustainable land and water resources management and climate change (Food and Agriculture Organization of the UN, 2021). In addition, in 2021, the World Health Organization and IUCN established a new "Expert Working Group on Biodiversity, Climate, One Health and Nature-based Solutions," which aims to develop guidance and tools to support the implementation of One Health approaches (combining human, animal, and environmental health) and NbS (World Health Organization, 2021). Such NbS approaches will be also important in Asia and require both practical and academic dialogue. Because it is likely that NbS will encompass a wide range of issues and measures, it is essential to link the needs for NbS with relevant institutions and actors not only within countries but also across countries including in the relationships between developed and developing countries. As one solution to overcome the governance challenges, we suggest building a national and regional framework that matches the need for NbS with relevant institutions and actors at various scales and sectors and creates guidelines to integrate NbS into strategies and policies at national and local levels and also into international cooperation that promotes measures for NbS.

Acknowledgments

This research is supported by JSPS KAKENHI grant numbers 19K12467, 18H03428, 18K11800, 19H04340, the Environment Research and Technology Development Fund (JPMEERF20181001) of the Environmental Restoration and Conservation Agency of Japan, Research Institute for Humanity and Nature: Feasibility Project 14200158, the Diversity Promotion Office Fund of Forestry and Forest Products Research Institute, and the Integrated Research Program for Advancing Climate Models (TOUGOU program) grant number JPMXD0717935715 of the Ministry of Education, Culture, Sports, Science and Technology of Japan. We thank Amanda Fitzgibbons, PhD, and Leonie Seabrook, PhD, from Edanz (https://jp.edanz.com/ac) for editing a draft of this manuscript.

Conflict of Interests

The authors declare no conflict of interests.

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Politics and Governance (ISSN: 2183-2463)

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