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Shedding Light On Climate Change as A Threat to Multi-Dimensional Security: Case study of Thailand

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Abstract

This study investigated how Thai stakeholders perceive climate change as a threat to security, aiming to answer the research question: "How do key stakeholders in Thailand perceive climate change-induced threats to security, and are the current climate governance and policy responses sufficient to address the multifaceted impacts of climate change?" Perceptions were gathered from key informants, including representatives of government authorities, scholars, NGO officers, and staff from international agencies. Data were collected through semi-structured interviews and analysed using qualitative content analysis via MAXQDA software. The responses of 12 interviewees were examined using a framework for climate security discourse: who are the referent objects, what is the nature of threats, who are the agents to take action to solve the issues, and how to respond to or address those threats? The findings revealed a wide range of referent objects, the nature of threats, agents, and responses specific to Thailand, providing a comprehensive understanding of the complexities of climate change. Climate change is primarily considered a threat to human security. Additionally, the study found that some Thai government responses and efforts to address climate change have been misguided, thereby creating further threats to climate security. A clear understanding of the multifaceted impacts of climate change is essential for designing sound public policies and educating the actors leading the responses.

Keywords Climate Change, Threats, Security, Discourse, Thailand

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1. Introduction

Amid the global COVID-19 pandemic, the Intergovernmental Panel on Climate Change (IPCC) published the first part of its Sixth Assessment Report on August 9, 2021, emphasizing that "the climate crisis is unequivocally caused by human activities and is unequivocally affecting every corner of the planet's land, air and sea already" (IPCC, 2021). Climate-induced disasters ranging from heatwaves in Greece and western North America to floods in Germany, Japan, Malaysia, and China were headlines throughout 2021. Such incidents raise awareness that climate change is a "planetary threat" and add empirical evidence to the debate on the relationship between climate change and security (Buhaug, 2022; Gleick, 2021).

Kameyama and Takamura (2021) pointed out that existing literature on climate change and security needs to be more balanced because the scholars and case studies are mostly from Europe and North America. Cases from other regions vulnerable to climate change, e.g., Asia and Africa, have yet to be reported. Although studies from Asia, such as those from Japan (Hasui & Kamatsu, 2021; Koppenborg & Hannssen, 2021; Yamada, 2021) have recently been published, the authors concluded that the notion of climate change and security was unfamiliar to Japanese policymakers, business people, and politicians. This lack of understanding weakens Japanese public support for climate actions, especially emission reduction efforts (Kameyama and Takamura, 2021).

According to the Global Climate Risk Index 2021 (Eckstein et al., 2021), Thailand ranked ninth in the countries most affected by extreme weather events between 2000 and 2019. Climate change impacts in Thailand have been well observed and recorded. A longitudinal study analyzed data collected between 1970 and 2009 and concluded that the average temperature in Thailand increased by 0.92 °C, whereas the annual global temperature from 2000 to 2009 was 0.61 °C (Osborn, 2021). The number of rainy days and the level of precipitation have declined over the last 50 years. Moreover, extreme precipitation events, e.g., flooding, are predicted to be more severe and more frequent (Ponpang-Nga & Techamahasaranont, 2016; Shrestha & Lohpaisankrit, 2017). Bangkok, Thailand's capital, faces rising sea levels, sinking land, and cyclone-induced storm surges. Consequently, the city sinks lower yearly and could be submerged by 2050 (Asian Development Bank, 2021). Climate migrants from neighboring countries, such as Myanmar and Cambodia, are expected to increase due to storms and drought. This influx of climate-induced migrants could arguably increase the risks of transnational and local crimes, illegal drugs, drug trafficking, human trafficking, and communicable diseases (Marks, 2011). Lastly, decreasing water resources in the Mekong River due to climate change could trigger tension and conflicts among Viet Nam, Thailand, Myanmar, Laos, Cambodia, China, and the US (Kittikhoun & Staubli, 2018; Lebel & Lebel, 2018).

Climate change impacts in Thailand include slow-onset events like sea-level rise, extreme weather events, i.e., drought and flooding, socio-economic problems such as health and livelihood, and transnational issues such as climate migrants, conflicts over water resources, and PM 2.5 pollution. The situation with PM 2.5 pollution has worsened, particularly in urban areas. According to recent reports, air quality in Thailand, especially in Bangkok and northern regions, frequently exceeds the safe levels set by the World Health Organization. This has been attributed to a combination of vehicular emissions, industrial activities, and seasonal agricultural burning. The persistent haze has significant health implications, increasing the incidence of respiratory and cardiovascular diseases among the population (World Bank, 2023; Nature, 2023). Climate change is an environmental problem and a threat multiplier because it exacerbates conflicts and fragility's social, political, and economic drivers, causing negative impacts on peace, stability, and security (UNDP, 2020a)

Thus, climate change poses security risks for humans, nation-states, the international community, and the environment (Mobjörk, Gustafsson, Sonnsjö, Van Baalen, Dellmuth, & Bremberg, 2016). However, whether Thailand has sufficiently sound climate governance and policy responses to address multifaceted climate impacts is questionable. This study is the first to investigate climate change in Thailand through the security lens. It aims to show how key stakeholders view climate change-induced threats undermining the security of various entities. Insightful perceptions were obtained from 12 interviewees from the government, academia, NGOs, and international agencies. The research applied qualitative content analysis to interviewing transcripts using the analytical framework of climate security discourse analysis proposed by McDonald (2013). The findings provide a comprehensive understanding of the complexities of climate change. Climate change not only directly impacts extreme weather or slow-onset processes but also multiplies pre-existing socio-economic and political problems, exacerbating the vulnerability of particular populations. More importantly, the study found that some Thai government responses and efforts to address climate change are counterproductive, creating further security threats. Understanding the multifaceted nature of climate impacts is essential for designing sound public policies and encouraging appropriate actors to lead these responses.

2. A literature review on climate change as a threat to security in various dimensions

The study of climate change as a security issue has evolved significantly over the past few decades. Initially, the concept was explored in the early 2000s with foundational works like Barnett (2003), who examined the broader implications of environmental change on global security. Subsequent research by

authors such as Trombetta (2008) and Hsiang, Meng, and Cane (2011) provided empirical evidence linking climate variability to conflict and migration. The idea gained further traction with studies like those by Black, Adger, Arnell, Dercon, Geddes, and Thomas (2011) and Busby (2021), which emphasized climate change as a threat multiplier, exacerbating existing social, economic, and political vulnerabilities. Existing research identifies four main dimensions of climate security: human security, national security, international security, and ecological security. The following paragraphs will describe each type and highlight relevant studies.

Human Security: Climate change is often described as a threat multiplier affecting human security. For example, Mason (2013) and Busby (2021) discuss how climate change exacerbates existing vulnerabilities and creates new ones. Hsiang et al. (2011) found that El Niño/Southern Oscillation changes could have influenced several civil unrests in the second half of the 20th century, opening the door to further study of the empirical evidence of causal mechanisms between climatic changes and conflicts. Climate change's impact on human settlements and forced migrations has attracted increasing attention. Black et al. (2011) highlighted the need to consider environmental change as a direct and indirect cause for the decision to migrate nationally and internationally. Climate change induces rural-urban migrations, which could happen between cities in one country or different countries. The latter would exemplify how climate change threatens the international community's security. Although challenging to validate with historical data, an increase in urban violence may lead to shanty-town development in peri-urban areas and stimulate much-needed reflection on the consequences of rural-area abandonment (Buhaug & Urdal, 2013). In addition, job losses and forced migration caused by climate change could lead to human trafficking and slavery (Bales & Sovacool, 2021).

National Security: Climate change can also threaten countries' national security and sovereignty. Some authors, such as Boas (2014), Boas and Rothe (2016), and Selby, Dahi, Fröhlich, and Hulme, (2017), caution against using climate change to explain all modern conflicts. However, military and defense organizations are showing increasing concern about climate change. While countries like the United States have a long history of incorporating climate change into the defense agenda (Stricof, 2021), others like Japan have only recently adopted climate emergency declarations, and the securitization of climate change is still "a new minor discourse" (Koppenborg and Hanssen, 2021). In 2003, climate change was mentioned as a threat to national security in a report commissioned by the United States Pentagon (Schwartz & Randall, 2003). In general, the militaries of superpowers are addressing the domestic effects of climate change at various levels (Brzoska, 2012). Military alliances such as NATO have considered climate change a non-traditional threat multiplier (Causevic, 2017). This has opened a debate on whether the United Nations

Security Council (UNSC) should have a role in the climate change agenda (Cousins, 2013; Scott, 2015), considering the relevance to all its agencies and programs (Conca, 2018). Indeed, this has been a long-debated issue (Maertens, 2021). In December 2021, the UNSC failed to adopt a resolution integrating climate-related security risks into conflict prevention strategies (UN, 2021).

The trend toward considering climate change as a military issue has raised concerns about the risk of treating it as a sovereignty matter rather than a global common problem (Barnett, 2003; Buxton, 2021). There are also unintended or unexpected negative consequences from using this frame. Similarly, the term "climate emergency" can trigger action but can also lead to the marginalization of specific stakeholders and the development of placebo solutions (McHugh et al., 2021). Furthermore, the securitization of climate change could unexpectedly promote militarization and increase state authority over citizens (Detraz and Betsill, 2009; Deudney, 1991; Hartmann, 2010). Floyd (2015) even stated that climate change must be de-securitized or that climate change must be detached from security issues.

International Security: Climate change also threatens international security. Studies such as those by Black et al. (2011) highlight the role of environmental change in driving migration both within and between countries. This can lead to increased tensions and conflicts over resources, as discussed by Buhaug and Urdal (2013). Additionally, the influx of climate-induced migrants can lead to transnational issues such as human trafficking and illegal activities (Bales & Sovacool, 2021). The debate on the United Nations Security Council's role in addressing climate change (Cousins, 2013; Scott, 2015) underscores the international community's concern about the broader implications of climate-induced security risks.

Ecological Security: Finally, emerging literature highlights climate change as a threat to ecological security, impacting vulnerable populations, other living creatures, and future generations (Trombetta, 2008; McDonald, 2013; Mitchell, 2014). McDonald (2018) focuses on ecosystem resilience and the rights and needs of the most vulnerable groups, including impoverished populations in developing countries, future generations, and other living beings across different times and places (p. 155). The Anthropocene concept, which contests the separation of humans and nature, provides a foundation for this idea. Steffen, Grinevald, Crutzen, and McNeill (2004) pointed out the profound and invasive effects of humans and their activities that can interrupt the whole Earth system and radically threaten every component: human beings, other living creatures, and non-living beings. Approaching climate change from the perspective of ecological security means moving beyond humans or communities of humans (nation-states, international community) by considering "ecosystems" and their interdependence with human beings and other living creatures. However, the notion faces moral and pragmatic criticism. Counter-arguments include the uncertainty about how

and to what extent climate change affects the non-human world, the difficulty of knowing what future generations think and want, and the limited constituency in global politics to promote such notions (Palmer, 2011).

3. Research methods

3.1 Data collection

The study used semi-structured interviews and a qualitative content analysis approach with abductive reasoning to address the research questions. From January to April 2021, 12 semi-structured interviews in English with experts (from civil society, government, academia, and international agencies) whose work was related to climate change were conducted. Accessing interviewees in Thailand proved challenging, as researchers employed a snowball approach to request interviews, yet few individuals were available or agreed to participate in online interviews. Government officers were very busy, and the research team lacked the authority to compel participation. Additionally, the interviews were conducted in English because the researchers were from Western country and Thailand, making it challenging to find interviewees, especially government officials, who could speak English fluently. Each interview required approximately 1.5 hours and involved asking participants to review and provide feedback on Thailand's climate change policy beforehand, further discouraging participation due to the significant time commitment.

The interviews were conducted through the Zoom application and transcribed. Table 1 presents the interviewee affiliations and the names used for reference in this paper. The interview questions were designed to be structured but open enough to encourage free expression. They were: (1) How do you perceive the climate change problem? Is climate change a threat? If yes, whose security is threatened, and how? If not, why do you disagree? (2) How do you understand the term climate security? (3) How do you evaluate the climate security of Thailand based on what you understand the term? (4) How do you view Thailand's Climate Change Master Plan (2015–2050)? Do you want to add to or improve any issues in the plan? Each interview took 1–1.5 hours to complete and was transcribed into English text for the following analysis step.

Table 1: Interviewees and their affiliations

No	Affiliations	Referred to in this paper as
1	Governmental officer, Royal Irrigation Department, Ministry of Agriculture and Cooperatives	Government-A
2	Governmental officer, Climate Change Management and Coordination Division, Office of Natural Resources and Environmental Policy and Planning, Ministry of Natural Resources and Environment	Government-B
3	Environmental Activist, WWF, Climate Strike Thailand	NGO
4	Sustainability senior researcher at Unit for Social and Environmental Research, Department of Social Science and Development, Faculty of Social Sciences, Chiang Mai University	Scholar-A
5	Professor in Reef Biology Research, Department of Marine Science, Faculty of Science	Scholar-B
6	Lecturer from the Department of Geography, Faculty of Social Sciences	Scholar-C
7	Associate Professor from the Department of Forest Ecology, Faculty of Science	Scholar-D
8	Associate Professor specializing in Climate Adaptation plan, Faculty of Science	Scholar-E
9	Expert in Natural Sciences, UNESCO Bangkok Office	UN Agency-A
10	Policy Specialist, Climate and Security Risk, Conflict Prevention, Peacebuilding &Responsive Institutions Team, UNDP New York	UN Agency-B
11	Project manager at UNDP Thailand Office	UN Agency-C
12	Principal Climate Change Specialist and Climate Change Focal Point for Southeast Asia, Asian Development Bank	ADB

Source: The authors' self-compiled list of interviewees.

3.2 Data analysis

The literature review suggested climate change affected security across many dimensions. To understand climate change as a security issue in Thailand, the present study adopted the analytical framework proposed by McDonald (2013). The framework comprises four analytical questions to extract referent objects, the nature of the threats, agents to respond, and responses to threats. The questions are (1) whose security is at stake? (2) who is responsible for or able to respond to the threat, (3) how is the nature of the threat defined, and (4) what responses are suggested for dealing with that threat? As a result, four discourses were identified concerning different referent objects (needing protection): human security for people, national security for nations, international security for the international community, and ecological security for ecosystems. Each discourse highlights different ideas of the nature of the threats, possible responses, and the actors expected to lead these responses, as shown in Table 2.

Table 2: Four conceptions of climate security discourse

Discourse	Referent objects	Nature of threats	Agents	Responses
National security	Nation-state	Conflict, sovereignty, economic interests	State	Adaptation
Human security	People	Life and livelihood, core values and practices	States, NGOs, the international community, and communities themselves	Mitigation
International security	International society	Conflict, global stability	International organizations	Mitigation and adaptation
Ecological security	Ecosystem	Challenges to equilibrium associated with the contemporary political, social, and economic structure	People, changing political consciousness	Fundamental reorientation of societal patterns and behaviors

Source: Adapted from McDonald (2013)

Interview transcripts were analyzed using a framework based on these four questions with the help of MAXQDA software. Code segments were coded under each question and labeled with words or phrases to inform the key ideas. During coding, the researchers adopted grounded theory to identify and record all referent objects, threats, agents, and responses mentioned by interviewees. As shown in Figure 1 (in the Results and Discussion section) the study detected many new referent objects, the nature of threats, agents, and responses peculiar to Thailand. These new items were then thematically classified and aggregated. In the following section, the paper illustrates the analysis of 12 interview transcripts against an analytical framework, as presented in Table 2. The essential contribution is that the paper identified more types of nature of the threats in addition to what was proposed by McDonald (2013).

4. Results and Discussion

Based on the framework described in the data analysis method section, the study ran analyses on 12 interview transcripts and identified code segments answering each of the four questions. The results are visualized by MAXQDA software, as shown in Figure 1. Square symbols represent the frequency with which segments are coded. A bigger square represents a higher frequency. Colors correspond to the size of squares, with red for bigger squares and blue for smaller squares. It is noted that the frequency could imply that the code segments were perceived as necessary by the interviewees. However, it also happened that the

interviewees spoke more on a particular topic because they were asked for further clarification. When the findings of the present research from Thailand, shown in Figure 1, are compared with those of McDonald (2013), established in Table 1, several new referent objects, threats, agents, and responses are found. This section discusses critical findings on the four questions.

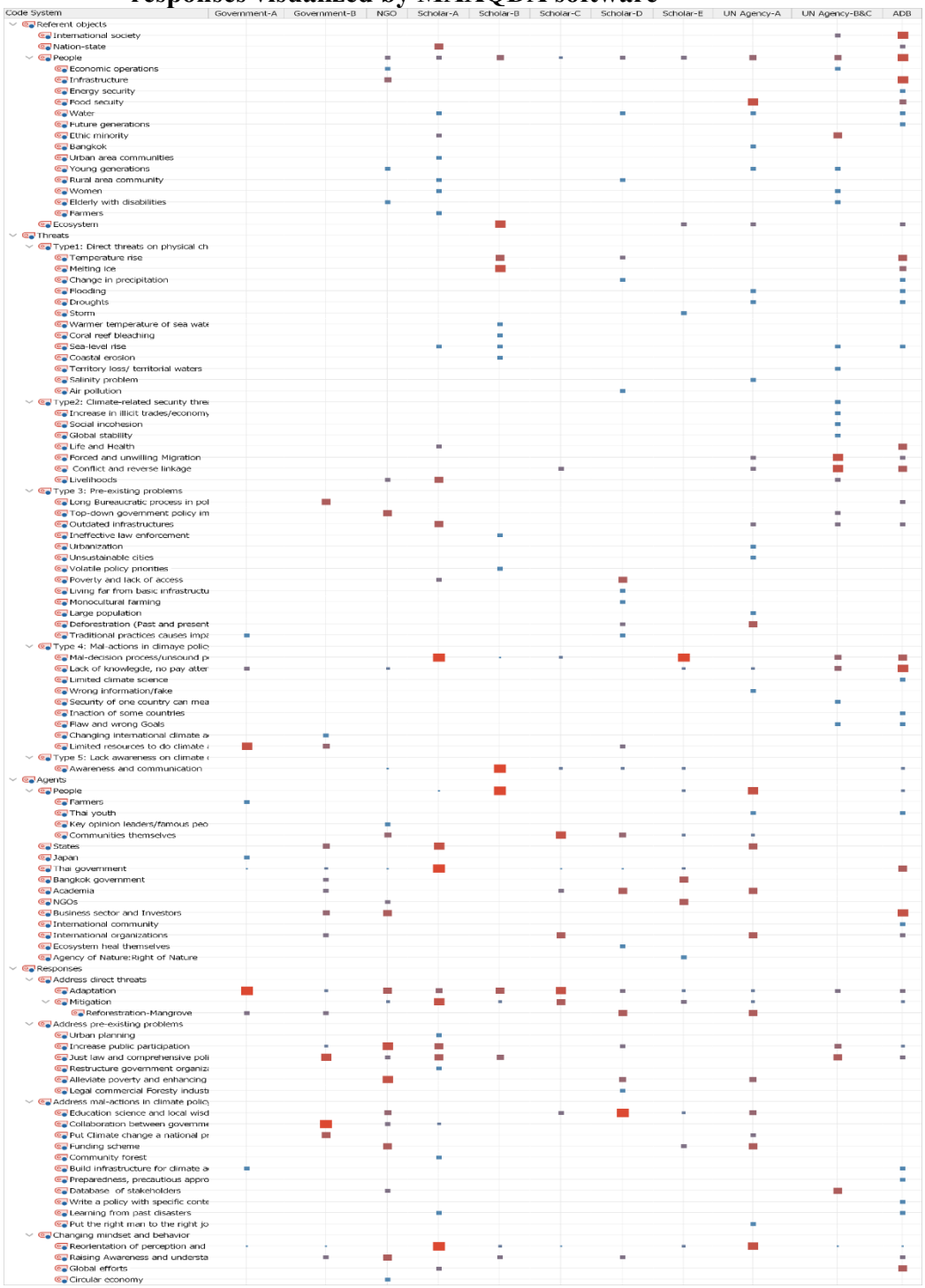
4.1 Referent objects

The four main referent objects mentioned by Thai interviewees were people, the nation-state, the international community, and the ecosystem. "People" was the most frequently coded word, followed by "ecosystem." Interviewees perceived that climate change affected human security the most. However, people are not equally affected by climate change. Vulnerable groups, such as farmers, women, children, older people with disabilities, rural communities, and the urban poor in Bangkok, were perceived as being left behind relative to the country's development in general and climate change policy.

An ADB interviewee highlighted the interconnection between the international community and nation-states. He stated, "what one country did, has an implication for the security of other countries. Chiang Mai, Thailand, cannot survive alone. If Cambodia is burning, Laos is burning, and Myanmar is burning. It is important to recognize that the whole idea of security should be ideally thought in the bigger picture for transboundary security. Even though you do your best, even if you do the maximum, like reducing to zero-emission… tomorrow Thailand becomes a net zero emitter. Still, it does not mean climate change impact will not happen in Thailand" (ADB interviewee, personal communication, 7 April 2021).

Climate change as a security issue thus cannot be understood as a single country's responsibility whereby all climate risks will be removed. Instead, it must be an ongoing effort at local, national, and international levels to cope with evolving and changing climates. The interviewees' ideas imply that a division of referent objects of climate change may not be optimal because climate change affects all, and no one can be entirely shielded from the impact.

Figure 1: Coding results on referent objects, nature of threats, agents, and responses visualized by MAXQDA software



Source: The authors' own analysis, conducted using MAXQDA software.

The concept of the "ecosystem" as a referent object of climate change was mentioned by various interviewees (Scholar-B and E, UN Agency-A, and ADB). All interviewees believe that the ecosystem has profound implications for the human-nature relationship. Scholar-E stated, "You have to accept that nature has its own right to be here, not to serve humans only. Although I mentioned the term ecosystem services before, that service is for human use. At the same time, environmental components should have their own right to exist in the world. And you don't have to think of them in terms of what value they can give to humans." (Scholar-E, personal communication, 28 January 2021). She also highlighted education as a means for people to realize and accept the "right of nature." Furthermore, the concept of a "sufficiency economy," along with the teachings of all major religions—Judaism, Christianity, Islam, Buddhism, Hinduism, Taoism, Confucianism (UN Agency-A), and Thai culture and Buddhism (ADB interviewee)—is perceived to promote coexistence and a sustainable relationship between humans and nature.

4.2 The nature of threats

Concerning the premise that climate change is a threat multiplier exacerbating social, political, and economic drivers of conflicts and fragility (UNDP, 2020a), the study found that the threats are multi-layered. With open coding on interview transcripts, threats can be grouped into five types. They are: 1) the direct threat from climate change, 2) climate-related security threats, 3) pre-existing socio-economic and political problems, 4) erroneous actions in climate policies, and 5) limited awareness, indifference, and ignorance about climate change.

4.2.1 Direct threats

The direct physical and biophysical threats of climate change have been well-covered by the IPCC report on the physical science basis of climate change (IPCC, 2013). Interviewees in the study referred to the physical impacts of climate change in Thailand, for example, natural disasters, namely, flooding, droughts, change in precipitation, temperature rise, coral reef bleaching, air pollution, the salinity problem in low-lying coastal areas such as Bangkok, and coastal erosion due to sea-level rise causing the loss of territory and having implications for territorial waters. The key messages from the interviews concerning direct threats from climate change to Thailand include the referent objects or those affected by the threats. The interviewee's comment on climate change in Thailand revealed that the urban poor are excluded from the national climate policy. Critically reviewing Thailand's Climate Change Master Plan (2015–2050), Scholar-A pointed out that people living in urban areas are vulnerable to climate change impacts such as flooding and heat waves. However, the CCMP (2015–2050) does not acknowledge these risks for urban populations but points out that climate change is an environmental problem for people in rural areas (Scholar-A, personal

communication, 20 January 2021). Besides, women and younger generations are not mentioned by the CCMP, meaning that the national climate master plan lacks gender and inter-generational perspectives. An ADB interviewee proposed that each region of Thailand should have its own plan because not all parts of Thailand are equally vulnerable, and not all have equal opportunities to mitigate greenhouse gas emissions (ADB interviewee, personal communication, 7 April 2021).

4.2.2 Climate-related security threats

The second type of threat was mentioned by interviewees UN-Agency A, B, and C, but with less emphasis on the severity for Thailand. Climate-related security risks are based on the concept that climate change or climate variability causes conflict between groups of people or nation-states over scarce resources. They are understood as "the adverse impacts of climate change on human security-the freedom from fear and want, but also as they relate to the security of the state, and the maintenance of international peace and security, under the United Nations Charter" (UNDP, 2020b). UN Secretary-General Ban Ki-moon, the United Nations Environment Program, and the Stern Review on the Economics of Climate Change supported by the UK government claimed that climate change causes competition between states over scarce resources and leads to tensions and even violent conflicts, mass displacement or migration intra-and inter-states, posing threats to regional and international stability (Stern, 2006; UNEP 2007). Infamous examples are the civil war in Syria and the ethnic armed conflict in Darfur (dubbed the "first climate war") (Mazo, 2009; Gleick, 2014). Those conflicts had knock-on effects on other regions as many displaced people sought refuge in Europe, causing crises of climate migrants or climate refugees (Baker, 2015). However, some studies challenge a linear and direct connection between climate change and conflict, stating that violence has multiple causes and it is impossible to isolate any of them as being the most influential (Hangen & Kaiser, 2011, Adger et al., 2014).

An interview with UN Agency-C on 2 February 2021 revealed that up to the present, she had not seen Thailand experience mass migration caused by climate change and that Thailand does not have internal clashes between people from two different provinces due to (im)migration. UN Agency-A commented that Bangkok, Thailand's capital city, located a few meters above sea level, could see massive climate migration due to sea-level rise, salinity water, flooding, air pollution, and food insecurity in the next few decades (UN Agency-A, personal communication, 30 January 2021). This prospective climate migration is of concern given that Thailand has recorded migration from rural areas to cities, especially Bangkok, for decades. Marks (2011) found that climate stress caused average rice yields to fall by around 45%, causing farmers to lose a substantial proportion of their income and forcing them to migrate to cities for work. A number of young adults with higher education have moved from rural areas to big cities like Bangkok to find better-paid jobs, while many have gone abroad to work

in more developed countries such as East Asia, Europe, the Middle East, and the US (Marks, 2011).

UN Agency-B expressed the opinion that for Thailand, the impact of climate-related security risks may not be violent domestic conflicts among migrants and host populations but a long-term mobility trend with an increase in illicit economic activity and social incoherence. He further explained, “we must consider other manifestations, not just violent conflict. If you lose climate-sensitive livelihoods, there are other cases of illicit livelihoods, and we may see an increase in those as well. Blue economy-based livelihoods, tourism, and, in another context, we see illicit crop production, and there is a whole economy around that as well. My point here is probably the kind of conflict that is not necessarily violent. However, it would still impact social cohesion and illicit economies, which I think might be important here in Thailand as well. Human mobility is also a kind of broad umbrella concept like security” (UN Agency-B, personal communication, 2 February 2021). That Thai people migrate to big cities or abroad to adapt to climate change impacts on their livelihood aligns with the argument that climate-related drought or scarcity of natural resources alone cannot lead to conflicts and violence (Selby et al., 2017; Sunga, 2011; Verhoeven, 2011). Instead, conflicts are attributed to weak state capacity in distributing resources, absence of reliable dispute resolution mechanism, social inequality due to the systematic exclusion of some groups, lack of the rule of law, poverty, and even high population density (Hagan & Kaiser, 2011; Sunga, 2011; Adger et al., 2014). UN-Agency B pointed out that climate change does not always induce conflict. This interviewee cited conflict between an ethnic minority and a local authority due to an attempt to reduce greenhouse gas emissions by increasing a forest area. Another example they cited was the forced relocation of villages due to development projects related to water resources and energy (i.e., dam construction). Moreover, natural resource scarcity only sometimes threatens security. Scholar-A proposed that the decreasing water supply in Mekong River, critical for the Greater Mekong Sub-region (GMS), i.e., China, Thailand, Laos, Myanmar, Vietnam, and Cambodia, creates opportunities for more rather than less cooperation. “Countries in GMS have a shared threat which is climate change. The countries have thus mutual benefits and seek cooperation to manage diminishing water resources resulting from climate change. This includes sharing information about water release from upstream dams to downstream ones, reducing hydropower capacity of upstream dams so that the countries downstream can have sufficient water and countries participating in energy trades”, said Scholar-A (personal communication, 20 January 2021).

4.2.3 Pre-existing socio-economic and political problems

The third type of threat originates from existing socio-economic and political challenges that heighten the vulnerability of specific populations. Harrison et al. (2015) indicated that non-climatic pressures might contribute more to uncertainty than climate change. Therefore, policymakers should consider these non-climatic pressures and cross-sectoral interactions to fully understand and address climate change's impacts.

The interviewees emphasized a wide range of pre-existing non-climatic problems in Thailand requiring comprehensive policy solutions. Scholar-C gave an opinion on this issue, "… just one thing that I'd like to stress is that whatever you call this idea of climate policy, it needs to be more than climate. Understood? It needs to be wider than just addressing climate issues. Wider than, I mean more than just about reducing greenhouse gases. More than carbon trading. Climate policy is perhaps more modern–another version of sustainable development. It must address the issue of inequality. It needs to address the issues of rights, property, access, and even capitalism. And that are the root causes of unsustainable developments" (Scholar-C, personal communication, 27 January 2021).

Poverty caused by deficiencies in capital, social, financial, and natural resources is perceived as a fundamental cause of vulnerability (Scholar-A, C, and D). Inequality due to economic status, gender, race, and ethnicity causes specific populations to be more vulnerable than others. UN Agency-A said that population growth jeopardizing the planet's carrying capacity was another demographic contributing to vulnerability.

UN Agency-A interviewee stated, "Of course, climate change exists. But the reality is that they have resource issues or issues of providing food. The population dynamics are at least equally as important as the climate change issues. We exceeded 7.8 billion in June 2020 and are aiming at 10.9 billion by 2050. Especially here in the Pacific, most countries will continue to grow significantly until 2085. Thailand is an exception, as are China and Sri Lanka. However, most countries will still grow, meaning the population will become younger. Additionally, there is a trend of urbanization. People will move into the cities, consuming more products and becoming more wasteful" (UN Agency-A, personal communication, 30 January 2021). Besides socio-economic problems, political factors are critical. Many interviewees commented on government practices as the most influential factor for vulnerability. One major problem concerns the "red tape" in the state administration and legislation. For example, Government-B, who works in the department in charge of climate policy planning, explained the process of revising the Climate Change Master Plan (CCMP:2015–2050), "we are in the process of drafting and revising, we invite line ministries, stakeholders from education, from academia, from the private sector, from the expert, the national expert, local expert to involve in the drafting and revising process. Then, after the

first draft was done, we went to five regions to hold a public participatory meeting to introduce and present the draft revision. Then, we collect feedback and comments. Then, we submit it to the sub-national board committees for their approval. After it gets approved by the sub-national committees, we submit it to the National Committee on Climate Change. The sub-national one is chaired by our permanent secretariat. Then, the national one was chaired by the Prime Minister. Now, the process I described is already over. Now, it is in line with the cabinet consideration. We have had it since, like, a couple of months ago. However, since the committee has many issues to be considered, we hope that within this month or next, it will be overturned for the revised master plan to be considered by the cabinet" (Government-B, personal communication, 5 April 2021).

Apart from the red tape issue, which causes delayed action in essential matters, the NGO interviewee, UN Agency-B, Scholar-A, and Scholar-C also mentioned other problems. These included insufficiently inclusive policy-making processes, for instance, stakeholders' lack of public participation in policy design and an overly top-down approach to policy implementation. Scholar-A suggested that introducing a level of deliberative democracy where the government brings data and evidence to present to multi-stakeholders for collective discussion on policy options would help achieve more just and sustainable public policies.

4.2.4 Erroneous actions in climate policy

The fourth type of threat is erroneous actions in climate policy responses. Government practices and attempts to address climate change are perceived as a significant cause of vulnerability and can become a threat. The Climate Change Master Plan (2015-2050) is the national climate policy that provides overarching goals for mitigation, adaptation, and enabling the environment for climate actions. Figure 2 presents a summary of goals, which are divided into three phases: short-term (2015–2016), medium-term (2017–2020), and long-term (2021–2050). Interviewees were asked to comment on the CCMP (2015–2050) during the interview in April 2021. The government office that issued the CCMP should be appreciative of its effort in drafting the first Thailand master plan on climate change, said the ADB interviewee. However, he suggested that Thailand's revised CCMP should set more specific actions applicable to Thailand. He believes the current CCMP goals are too general and could be applied by any country with slightly different target numbers.

Figure 2: Summary of goals of Thailand Climate Change Master Plan 2015–2050

Source: adapted from ONEP (2015)

Regarding the claim that Thailand's CCMP is not country-specific, this could be because the country needs international funding for climate actions. Government-B said the CCMP was released before the Paris Agreement was approved (Government-B, personal communication, 2 April 2021). Consequently, some indicators and measures might not be current, and many features have changed, such as the Monitoring, Reporting and Verification (MRV) system and the Green Climate Fund (GCF). In his perspective, they aim to ensure that their measures within the master plan align with international agreements, as this alignment facilitates access to funding from international sources. Additionally, the country's key priorities for development will be reflected in its master plan. It should be noted that the Paris Agreement allows parties to submit their Nationally Determined Contributions (NDCs) every five years starting in 2020 (UNFCCC, 2015). However, because Thailand requires international funding, climate actions must be aligned with funders' requirements.

Nearly all interviewees commented that the CCMP had yet to meet various goals in the short-term and even the medium-term phases. The missed goals include: "all stakeholders must develop their own implementation strategies for climate change," create a "national fund for climate change," "increase

consumption of renewable energy in the national energy grid," and institute a "climate-based agricultural insurance scheme." One CCMP goal deemed erroneous was the target to increase the forest area to 40% of Thailand's total land area (Scholar-A and E and UN Agency-C). Scholar-A pointed out that this has been a problem in Thailand for 30–40 years. Thai farmers lose their land rights due to claims that their holdings are forested land under the management of the Royal Forest Department. Such practices have created forced relocation and are thus a cause of insecurity.

Several interviewees acknowledged that climate change is difficult to understand, predict, and cope with (ADB, Scholar-A, Government-A). One major cause of faulty government policy on climate change is the need for more knowledge and understanding. Government-A said that he did not know how climate change would affect water resources in Thailand and could not predict how the country's water resources would change. He explained that, when building irrigation systems, his office received technical assistance from the Japanese government to run water-forecast models. Thai government officials who are occupied with full-time work cannot do research and need assistance from external actors. Scholar-A explained during an interview on 20 January 2021 that addressing climate change requires long-term predictions of greenhouse gas emissions in the next 30–40 years. In his view, Thailand shares a problem with its neighbors regarding uncertain futures, "even senior bureaucrats with much experience in dealing with macroeconomic trends and trade relations and things like that still struggle with the idea of projections versus forecasts of climate change" (Scholar-A, personal communication, 20 January 2021)

Scholar-B pointed out that policymakers must rely on climate science to make sound climate policy. However, a challenge arises when scientists are required to provide definitive answers. According to her, scientists are trained to offer conclusive responses only when the data demonstrates more than 95% significance. She stated, "And I think that is the big point. When scientists do not affirm that something should be a certain way, policymakers are left seeking definitive answers. They want scientists to say yes or no. Unfortunately, many scientists cannot provide such clear-cut answers, which leaves policymakers unable to make decisions and prevents others from moving forward." (Scholar-B, personal communication, 23 January 2021).

4.2.5 Limited awareness, indifference, and ignorance about climate change

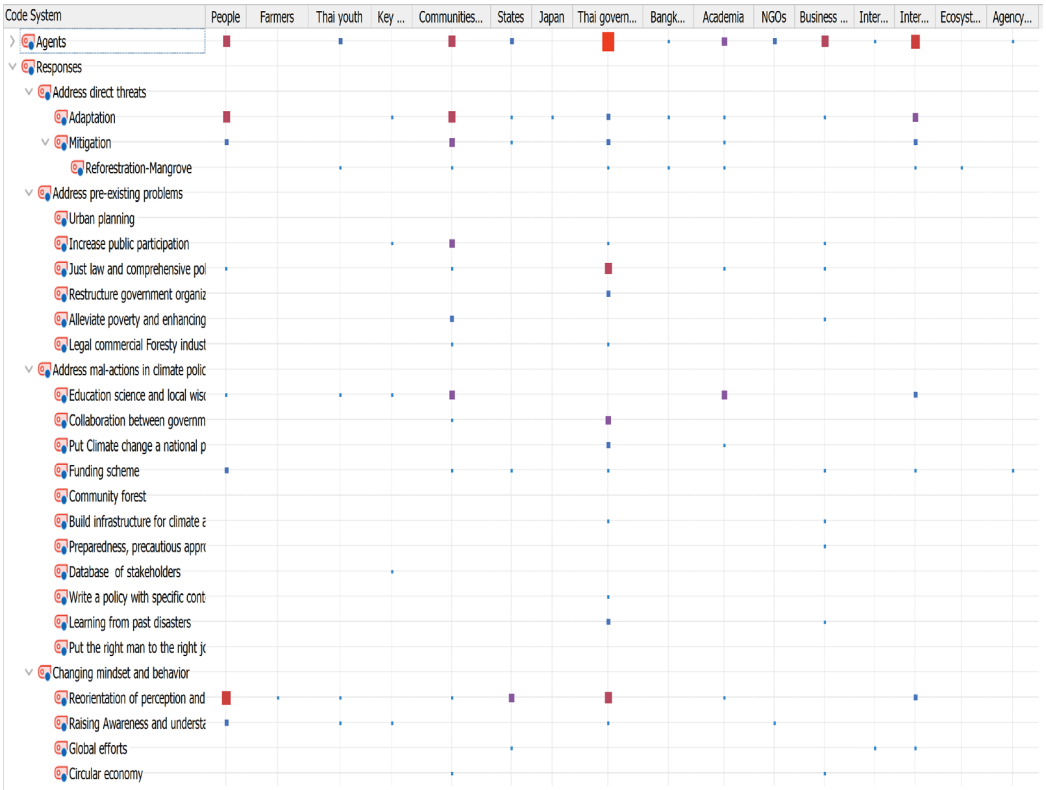
Limited awareness, indifference, and ignorance about climate change are threats. Almost all interviewees voiced concerns about low public awareness and perception of climate change (NGO, ADB, Scholar-B, C, D, and E). Scholar-B explained that human nature dictates that people only consider the risks before them. Nowadays, the COVID-19 pandemic is a clear threat, but not climate change. Scholar-A shared his experience teaching undergraduate students and

found that more than half thought only about polar bears and melting ice when hearing the term "climate change." The students could not name examples of climate change impacts in Thailand or nearby countries. Moreover, Thailand suffers from coastal erosion caused by changes in water currents and sea-level rise due to sea-ice melting. However, according to Scholar-B, people in Thailand do not link this coastal erosion with climate change as they think this problem happens naturally. The ADB interviewee said that throughout his work at the ADB, he has seen that many countries have limited awareness of climate change, which is a fundamental constraint on climate actions. Furthermore, he commented that few businesses had integrated climate risks into their decision-making and strategic planning (ADB interviewee, personal communication, 7 April 2021). The findings of this research revealed that limited awareness occurs in two ways; 1) people do not know that they are victims, and 2) that they are also the cause of climate change. Scholar-D commented that local villagers must know that some of their traditional agricultural practices contribute to climate change. The harmful practices include, for example, burning forests in the northern provinces to harvest mushrooms, slashing and burning agricultural waste to clear land for new crops, and growing rice in wet paddy fields.

4.3 Agents and Responses

The interviewees' perceptions varied concerning the agents responsible for climate change actions and the responses those agents should make. This was because there are multiple climate-related threats to security. Figure 3 presents the code relation browser result portraying interviewees' perceptions of the agents that should be involved in the various responses. The figure is visualized by MAXQDA software, with a square symbol representing the relationship between agents and responses. The size of the square relates to the point where the relationship is found in the transcripts. Blank spaces without squares exist because the interviewees have not mentioned agents when discussing responses. The study identified various responses and categorized them as solutions to threats, as shown in Figure 3. It is noted that responses to direct threats, pre-existing problems, errors in climate policy, and limited awareness are beneficial in addressing climate-related security risks. Thus, the study does not explicitly categorize responses to these threats.

Figure 3: Code relation browser presents the relation between agents and responses, visualized by MAXQDA software



Source: The authors' own analysis, conducted using MAXQDA software.

According to Figure 3, agents recognized as critical actors in climate responses are the Thai government, people, communities, academia, business sector, and international organizations. The Thai government was perceived to be responsible for or at least should be involved in resolving all threats identified in this research. It was perceived that the most critical role for communities was in adaptation. Thus, the interviewees widely acknowledged community-based adaptation. Moreover, it was generally agreed that reorientating public perception and behavior is a vital response to climate change-related problems. The challenge is raising awareness that climate change issues are part of their daily lives. The NGO interviewee asserted that public awareness is vital to create bottom-up change, "once you have that kind of awareness, hopefully, we can garner support, energy from like a mass public, to pressure governments and businesses to do their part." (NGO interviewee, personal communication, 27 January 2021).

Scholar-C explained that through his work with local villagers, he found that they do not know what climate change means scientifically but can tell how their communities and the surrounding environment have changed during their

lives. He observed that most international and local NGO missions and governmental climate education projects failed once they showed villagers "graphs and diagrams of incoming and outgoing radiation. …At the end of the presentation, the villagers had no idea what they talked about. And that doesn't make climate change, and that's not a good education. It doesn't translate to better decision-making or responsibility at all." (Scholar-C, personal communication, 27 January 2021). Scholar-B proposed during the interview on 23 January 2021 that the scientific community must have more contact with the public and tell people what they discover. In her opinion, writing excellent journal papers is not the best form of public engagement.

Interviewees suggested inclusive policymaking through deliberative democracy as a promising way to address pre-existing socio-economic and political problems. This approach would enhance public participation at all stages of the policy cycle. Poverty alleviation was perceived as another critical response. Scholar-D stated on 27 January 2021 that local villages with better livelihoods are usually more willing to participate in climate change-related projects than those struggling to meet basic needs. UN Agency-A highlighted the necessity for an economic and political system that would integrate the concept of peace and human togetherness in development policies and leave no one behind. The NGO interviewee suggested education and birth control as solutions to overpopulation, which is one cause of poverty.

Regarding the responses to erroneous climate policies, the interviewees mostly agreed on combining climate science and scientific evidence with local wisdom to achieve progressive and inclusive climate action. Scholar-D commented that the CCMP (2015–2050) did not integrate traditional knowledge into the plan. In his opinion, villagers have traditional knowledge of the best use of natural resources. Thus, the government should combine local knowledge with scientific knowledge to make policies and practices more sustainable. Collaboration among all government departments and ministries is another way to avoid inappropriate climate policies. However, this must be done alongside an agenda that makes climate change a national priority. Government-B described recent progress on mainstreaming climate policy into all ministries and administrative levels. In his view, "it's a good start to integrate into the Social Development Plan at a national level since the NESDP or national social and economic development plan for Thailand is the keystone for the country. So, all ministries and administrative level at all level have to follow once it got approved by the cabinet. If the ministry follows or refers its work to the NESDP, it will be certain that it will get funded by the national budget. ... So, our idea is to integrate into other ministerial, national, or local plan actions and activities to make sure that the continuity of the work." (Government-B, personal communication, 2 April 2021)

5. Conclusion

The present study adopted an analytical framework for climate security discourse proposed by McDonald (2013) to investigate Thailand's climate change and security issues. The findings reveal that climate change is complex as it causes not only direct threats but also multiplies pre-existing socio-economic and political problems that exacerbate the vulnerability of some populations. The study uncovered five natures of the threats specific to Thailand: direct threats, climate-related security risks, pre-existing problems, erroneous climate policies, and limited awareness of, indifference to, and ignorance about climate change. The referent objects, agents, and responses varied accordingly. Understanding the climatic and non-climatic factors that account for the security of all entities would facilitate sound and inclusive policymaking.

Given the multifaceted threats posed by climate change to Thailand's security, the Thai government must adopt a comprehensive and integrated approach to climate governance. To effectively address these diverse security threats, the following policy recommendations are proposed for implementation:

Human Security: Enhancing public awareness and education is crucial, particularly focusing on vulnerable populations such as farmers, women, children, the elderly, and the urban poor. Integrating climate change education into school curriculums will help build a climate-literate future generation. Strengthening healthcare infrastructure to cope with climate-induced health issues, promoting climate-resilient agricultural practices, and developing alternative livelihoods will ensure economic stability and reduce vulnerability. An integrated climate security task force should be established to coordinate efforts across all levels of government and sectors and streamline bureaucratic processes to expedite the implementation of climate policies and actions.

National Security: The government should invest in disaster preparedness and response, including resilient infrastructure, early warning systems, and comprehensive disaster response plans. Regular training and simulation exercises will ensure effective disaster management for government officials and communities.

International Security: Strengthening regional cooperation and diplomatic relations with neighboring countries is essential to address transboundary climate issues like water resource management in the Mekong River basin. Aligning national climate policies with international frameworks such as the Paris Agreement will facilitate access to global funding and technical support. Active participation in regional climate initiatives and international forums will allow Thailand to advocate for climate security and share best practices.

Ecological Security: Protecting and restoring critical ecosystems is vital for ecological security. Policies should be implemented to safeguard forests, wetlands, and coastal areas, promoting reforestation and community-driven

conservation efforts. Integrating traditional ecological knowledge with modern scientific research will develop sustainable environmental management practices.

Lastly, the study had limited access to some interviewees, particularly government officials whose roles are critical in implementing climate policy. These include officials from the Department of Forestry, Department of Lands, Department of Disaster Prevention and Mitigation, Office of National Security Council, and Ministry of Social Development and Human Security. One significant limitation was the language barrier, as the interviews were conducted in English. This deterred many potential participants, especially government officials, due to the difficulty in finding officials with proficient English-speaking skills. Consequently, the number of government official interviewees was small. For future research, finding a suitable translator to assist with interviews or conducting them in Thai to improve participation rates is recommended. An increased number of interviewees would greatly benefit the identification of recurring themes regarding climate change as a security issue. Moreover, the authors propose that further research using this approach should be conducted in other countries or in collaboration with Thailand. Comparative studies between countries vulnerable to climate change will illuminate the complexity of climate change and security, emphasizing the necessity of considering all types of threats when designing climate policy.

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