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What makes people adapt together? An empirically grounded conceptual model on the enablers and barriers of collective climate change adaptation

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Coping with and adapting to climate change impacts are collective action problems that require broad joint efforts to reduce current and future risks. This is most obvious for highly vulnerable and exposed individuals, whose capacities to adapt to recurrent environmental threats are mostly bound in their ability to work together – not only in the immediate disaster situation but also in the long-term to secure their livelihoods. While there are explanatory models for collective action in the context of climate change, there is still a need to validate them further for vulnerable residents in high-risk contexts that prioritize cultural values of collective self-understanding, mutual support, and reciprocity. Additionally, the identified factors that facilitate collective climate action are currently quite abstract and may not be very useful for practical application and policy development. Addressing these gaps, we build on existing collective action models and a qualitative analysis of empirical data from kampung cooperatives in Jakarta to develop a conceptual framework explaining what triggers individuals to start acting collectively and which factors motivate them to keep being engaged in long-term collective adaptation action. It highlights the need to differentiate between what we will call initial triggers and long-term motivators to better understand and advance collective adaptation efforts in high-risk contexts. This novel differentiation of motivation factors enhances our conceptual understanding of collective adaptation. Furthermore, the findings may inform practice and policy-making toward enhancing and maintaining collective adaptation initiatives.

KEYWORDS

activation of collective action, long-term collective engagement, collective adaptation to climate change, cooperatives, Jakarta

Introduction

Climate change is a collective action problem; accordingly, the Intergovernmental Panel on Climate Change (Pörtner et al., 2022) highlights in its most recent report that addressing climate change requires actions across scales and collective efforts of various actors to face increasingly frequent and intense climate change impacts. This holds particularly true for populations at the frontline of climate change, such as highly vulnerable residents of exposed coastal cities in the Global South.

Collective action is a popular research field that originates from the assessment of protest movements. It is by now widely applied across disciplines such as psychology (e.g., van Zomeren et al., 2008; Jost et al., 2017; Badaan et al., 2022; Galesic et al., 2022), political sciences (e.g., Ostrom, 1990, 2009; Jagers et al., 2020), sociology (e.g.,

Oberschall, 2004), and more recently also climate change research. For the latter, collective action and social identity theories are used to explain, among others, protests for climate protection (e.g., Schmitt et al., 2019; Fernandes-Jesus et al., 2020), pro-environmental behavior and activism (e.g., Masson and Fritsche, 2014; Carmona-Moya et al., 2021; Castiglione et al., 2022), disaster preparedness (Paton, 2019), collective adaptation (Adger, 2003; Ireland and Thomalla, 2011; Petzold and Ratter, 2015; Wannewitz and Garschagen, 2023) and disaster resilience more broadly (Aldrich and Meyer, 2015; Babicky and Seebauer, 2020). While these studies showcase the utility of collective action and social identity theories for analyzing the role of collective action in the context of climate change, there is little deeper conceptual engagement with the mechanisms behind the actual mobilization of individuals for collective adaptation.

As of today, a few explanatory models and perspectives have been used within climate change research to assess collective climate action. Most prominently, social capital theory (e.g., Adger, 2003; Ling and Dale, 2014) and the concept of community-based adaptation (e.g., Forsyth, 2013; Ensor et al., 2018) have identified various factors influencing group dynamics and capacities in the climate change adaptation context. While they explain structural and social factors influencing collective climate action, they do not yet sufficiently consider the underlying psychological aspects that motivate or hinder individuals from engaging in collective climate action—and in particular long-term and sustained collective climate action. Recent approaches to integrate socio-psychological considerations are the Social-Identity Model of Pro-Environmental Action (SIMPEA) (Fritsche et al., 2018; Masson and Fritsche, 2021) and the Environmental Identity Model of Environmental Collective Action (EIMECA) (Carmona-Moya et al., 2021) which both tailor the Social Identity Model of Collective Action (SIMCA) to the climate context. Moreover, Wannewitz and Garschagen (2023) provide a conceptual model for the interaction of collectively adapting groups in socio-culturally heterogeneous settings. These examples illustrate how the transfer and abstraction of social identity and collective action theories to the climate change context can help to explain broader social behavioral changes toward collective climate actions. We aim at complementing Wannewitz and Garschagen (2023). While that paper focuses on the formation of and identification with collectives and their potential interactions, this study here empirically analyzes and conceptualizes whether and how individuals identifying with a group decide to actually engage in collective adaptation. With this, we address four specific gaps in research around collective action in the context of climate change adaptation.

First, there is little empirical validation of the above-mentioned models in places considered to be climate change hot spots; that is, locations with high exposure to hazards and environmental threats which are inhabited by vulnerable residents with limited coping and adaptive capacities (IPCC, 2014). Many examples can be found in the Global South, where levels of exposure and vulnerability are comparably high. In such locations, the capacities of the vulnerable inhabitants are mostly bound in their ability and motivation to work together toward risk reduction (Adger, 2003). While there is empirical evidence of collective activities of highly vulnerable groups in high-risk contexts (e.g., Surtiari et al., 2017; Hagedoorn et al., 2019), explanatory frameworks or

specific conceptualizations of collective behavior to reduce or adapt to abstract future risks strategically are largely missing. Taking the example of Southeast Asia, we would moreover argue that it is essential to take into account cultural differences such as a more dominant collective self-understanding and reciprocity, proverbially known as collectivist cultural traits¹, which may require adjustments of existing conceptual frameworks explaining collective climate actions.

Second, current applications of social identity and collective action theories in climate change research predominately focus on climate activism, such as protests or pro-environmental behavior/mitigation, while climate change adaptation has been less considered. However, significant differences between short-term actions (protest movements) and more long-term climate change adaptation and mitigation movements (Castiglione et al., 2022; Wannewitz and Garschagen, 2023) require a close assessment of the transferability of existing knowledge.

Third, the majority of studies transferring social identity and collective action theories to the climate change context assess and explain the capacity and intent to engage in climate action, not the actual engagement. Considering the intention-behavior gap (Sheeran and Webb, 2016), they may predict intention and potential to act collectively but not necessarily actual collective engagement. In addition, assessing the willingness to engage can be influenced by response effects such as social desirability (Bogner and Landrock, 2016).

Finally, neither SIMCA nor SIMPEA clearly differentiates between initiating and moderating factors of collective climate action. This is problematic regarding the practical usability of the conceptual frameworks, for example, for policy design targeting long-term collective action. We argue that it is worthwhile to differentiate between triggers that initiate the first decision to change from individual to collective engagement and long-term motivators that keep individuals willing to engage in collective actions over time. Distinguishing these two factors is particularly important for the context of collective adaptation to climate change, as it requires a long-term perspective and planning; and for more transformative approaches also deeper structural, institutional, and behavioral changes to be implemented over a long period of time with results not being visible immediately (Wannewitz and Garschagen, 2023). Furthermore, there is a lack of understanding of how collective action is purposefully mobilized for climate change adaptation, as opposed to incidentally contributing to community resilience (Pelling and High, 2005). Along the same lines, we need to understand which exact factors hinder individuals to start acting collectively, and which ones lead to them becoming passive members of a movement after initial activation.

Against this background, this study addresses the following research questions:

RQ 1: Which factors trigger individuals to start acting collectively?

1 Overall, we refrain from distinguishing *per se* between individualist and collectivist countries, considering sub-national and small-scale differences in self-representations, beliefs and values (Brewer and Chen, 2007) which make it difficult to generally classify a country as a whole as individualist or collectivist.

RQ 2: What are the barriers for individuals to engage in collective action?

RQ 3: What long-term motivators keep individuals engaged in collective action over time?

Based on an empirical example, this study develops a conceptual model addressing the three research questions, which we suggest to be applicable to other societies and/or groups in which collective self-understanding, reciprocity, and mutual support are strong social norms and part of their respective culture. We use the example of kampung cooperatives in Jakarta because they can be considered institutionalized forms of collective action in the city’s low-income neighborhoods, which are often exposed to multiple hazards, including flooding. The cooperatives act collectively to reduce their livelihood risks and advocate for their members’ interests in urban development processes with the aim of reducing background stressors, such as evictions. Also other, more informal, and small-scale, collective activities among vulnerable residents in Jakarta exist that contribute to adaptation. However, we deliberately focus exclusively on kampung cooperatives to be able to identify distinct triggers and motivators for engagement. The study used triangulated data from semi-structured interviews and a representative survey of cooperative members to assess which factors triggered kampung residents to become active members of the cooperatives and which factors hindered them from either becoming members or making them turn passive over time.

Before describing the methods, we will introduce the conceptual considerations underlying this study by bringing together insights into collective action enablers and barriers from different research fields. Subsequently, we provide a brief introduction to the study site and why examining and differentiating different types of enablers of collective adaptation is relevant before coming to the methods used in this research. Afterwards, we present our results. The discussion summarizes the findings and discusses them against the background of the limitations of this study.

Conceptual considerations about the motivators for collective adaptation

Motivators for collective action

The literature on collective action across various fields suggests a wide range of factors that facilitate or inhibit collective action, which can be broadly understood as a “number of people working together voluntarily to achieve some common objective” (IPCC, 2022b; p. 809).

Two of the most popular models, the dual pathway model (Stürmer et al., 2003), and SIMCA (van Zomeren et al., 2008) provide the fundamentals for collective actions by drawing on social identity theories. Building on in-depth studies and earlier models (van Zomeren et al., 2008, 2011, 2018), van Zomeren (2013, 2019) identifies four “core social-psychological motivations” that make individuals act collectively; namely, social identification, perceived group efficacy, group-based anger due to violated moral convictions and/or feelings of being treated unjustly as well as politicized identities.

TABLE 1 Core motivators and influencing factors for collective action (for references see [Supplementary material 1](#)).

Core motivators	Indirect motivation factors	Enabling conditions
Perceived injustice	Group-based deprivation	Quality of formal local institutions and governance Physical community layout/built structure Targeted mobilization Hazard experience Freedom to enter or exit group
Violation of moral convictions	(Protection of) norms and moral convictions	
Social identification	Shared emotions like anger and/or (social) hope	
	Existing networks and flows of information between individuals/meaningful exchange (social capital)	
	Engagement of government and/or NGO and/or religious actors to inspire and support collective action	
	Shared social beliefs	
Belief in group efficacy	(trusted) group leaders	
	Trust in group members	
	Engagement of government and/or NGO and/or religious actors to inspire and support collective action	
	Prior experience in (successful) collective action	

Adopting SIMCA, many studies from various research fields have identified factors that influence individual motivation to act collectively; however, most of them can be seen as indirect motivation factors as they influence the core motivators identified by van Zomeren (2013). Such indirect motivation factors are important to consider because they are highly context-specific and their interactions may change over the course of collective engagement (Hartwich et al., 2022). Accordingly, the indirect motivation factors have a meaningful and dynamically changing influence on the emergence of collective action. Enabling conditions are context settings that influence both, indirect motivation factors as well as core motivators. Table 1 provides a synthesized overview of factors identified in social psychology research as well as in collective action and climate change research that influence the four core motivators.

While the presented factors show which aspects need to be taken into account for understanding the emergence of collective action, it remains unclear which of them initially motivate individuals to engage in collective action in the first place and which factors keep them engaged over time. Only a few conceptual frameworks dedicate more attention to the initiation phase, for instance, by including two distinct appraisal processes in an individual’s decision to engage in a collective coping exercise. The assessment of feedback loops between the appraisals indicate that positive feelings and collective successes can influence aspects such as trust in other group members, belief in group efficacy, social identification, and meaningful exchange. Negative experiences may lead to the opposite. This in turn, influences

the willingness to engage in collective action (Becker and Tausch, 2015; Bou Zeineddine and Leach, 2021). This example showcases a multi-layered decision-making process, which is in line with the argumentation of this paper.

Conceptualizing collective adaptation

In the climate change adaptation context, collective adaptation has often been called for but it has rarely been defined and assessed in detail as of today. Who exactly is supposed to adapt collectively? The most vulnerable themselves in the form of autonomous collective initiatives? Actors across scales, requiring widespread collaboration? Political actors so far acting in silos? How should such actions be initiated and maintained?

We follow the IPCC's definition of adaptation describing it as a "process of adjustment to actual or expected climate and its effects, in order to moderate harm or exploit beneficial opportunities" (IPCC, 2022a; p. 2898), and adopt a working definition of collective adaptation to climate change, understanding it as "actions of a group of individuals or subcultures collaborating according to shared rules to reduce their climate risk, exploit climate change opportunities and/or achieve additional common development objectives adopting a long-term perspective. The adaptation outcome they achieve collectively represents a common good that can be either exclusively for the group's benefit or for the wider public. Collective adaptation can refer to joint efforts within as well as across social groups or subcultures" (Wannowitz and Garschagen, 2023; p. 2).

The review of empirical climate change research suggests that the general set of core motivators for collective action (see Table 1) is broadly transferable to the context of collective climate actions for mitigation and adaptation. Regarding the violation of moral convictions, studies showcase how climate change is an increasingly political issue, opening up the possibility to use it for politicization, that is, the polarization of individuals through local or political leaders or the alignment of political positions with climate change beliefs (Bliuc et al., 2015; Fielding and Hornsey, 2016). Vestergren et al. (2022) demonstrate that more frequent and intense disasters can increase feelings of injustice, mobilizing people through shared fate. Other studies confirm that the identification with other people at risk in one particularly exposed area creates strong, risk-based social identities and social memories (Ratter, 2013) that solidify with increasing frequency and intensity of hazards (Barnett et al., 2021), facilitating collective responses. Jugert et al. (2016) show that increasing individuals' belief in group efficacy can amplify their intentions to engage in pro-environmental behavior. Furthermore, research on the mobilization of social capital for adaptation addresses the indirect motivation factors for collective adaptation, such as social identification in the form of communities of place and communities of practice (Pelling and High, 2005) or directly mentions aspects like the feeling of injustice and belief in group efficacy as motivators to act collectively (Petzold, 2017). In contrast to the core motivators, indirect motivation factors may vary depending on the context, which is what we assess through empirical data from our case study site Jakarta.

Various factors can also hinder collective action. One of the most often discussed problems is free-riding, meaning that a group member receives individual and/or collective benefits without engaging in collective action. This is particularly likely in bigger groups with higher anonymity among group members. Free-riding, or the conjecture that group members may free-ride, reduces the willingness to engage in collective action actively (Mancur, 1971; Jagers et al., 2020). Similarly, various forms of heterogeneity, for instance, in terms of types and levels of knowledge, perspectives, and social behaviors (Patterson, 2017; Tajima et al., 2018) but also regarding the socio-economic status, power asymmetries, traditions, and beliefs (Pearson et al., 2016; Jagers et al., 2020) within the group are described to potentially inhibit collective action. Besides this, the absence or weak social norms for cooperation (Boon-Falleur et al., 2022) and system justification (Jost et al., 2017; van Zomeren and Louis, 2017) decrease individuals' motivation to engage in collective action.

In the context of climate change, additional barriers have been identified, such as the feeling of powerlessness in the face of the large-scale problem of climate change (Thaker et al., 2015; Pearson and Schuldt, 2018), uncertainty about the long-term effects of climate change (Pearson and Schuldt, 2018), hopelessness (Badaan et al., 2022) and also the fading out of shared social identity after disasters (Drury et al., 2019). In particular cases, some motivators may also turn into barriers. For instance, when external support structures suppress local collective action capacities (Meyer, 2018) or individuals think that engagement in collective action is not needed anymore due to external support (Petzold, 2017).

This overview of core motivators, indirect motivating factors, enabling conditions, and barriers of collective action and their link to the climate change contexts showcases their utility for explaining collective climate action. While the rather abstract core motivators are directly transferable to the climate change context, we assume that the indirect motivation factors and their interplay as well as the barriers differ depending on the particular context of collective adaptation to climate change. They are subject to socio-culturally as well as geographically specific settings, especially when it comes to climate-related hazard risks. Therefore, a context-sensitive assessment is needed that considers cultural aspects such as collective self-understanding and reciprocity, since such social norms, values and beliefs may fundamentally influence individual motivators to engage in collective activities. This study uses an inductive approach to identify indirect motivation factors for the case of flood-exposed residents in Jakarta.

Study site and relevance

Our case study city is Jakarta, a highly exposed and vulnerable city in Southeast Asia. It presents a valuable example given its high risk and long history in dealing with natural hazards such as flooding. The city's at-risk population, that is, residents who live in highly exposed areas and who are at the same time very vulnerable to flood impacts given their high sensitivity and limited adaptive capacities, have rich experience in coping with flooding and other livelihood struggles. Hence, assessing their collective

adaptation action to understand triggers that initiate the change from individual to collective behavior, motivating factors that keep them engaged in collective activities over a longer time, and inhibiting factors can provide valuable insights which can potentially be transferred to other contexts.

Jakarta is a low-lying city located on the north coast of the island of Java. Beyond other natural hazards, Jakarta faces frequent flooding due to four interacting natural and human processes which are expected to intensify due to climate change: First, increasing sea levels and more intense and frequent storm surges lead to coastal flooding (Budiyono et al., 2016; Januriyadi et al., 2018). Second, high-intensity rainfall events in the catchment area of the city's rivers cause massive pluvial flooding (Budiyono et al., 2016; Januriyadi et al., 2018). Third, groundwater extraction, soil compaction, tectonic activities, and the high weight of the dense city contribute to increasing land subsidence (Abidin et al., 2015), with varying sinking rates across the city, so that the anyhow low-lying urban area becomes even more prone to inundations (Salim et al., 2019; Bott et al., 2021). And lastly, river clogging and a general lack of drainage due to the narrowing of waterways reinforce and prolong urban flooding (Mathewson, 2018). In situations where multiple flood drivers interact, severe flood events occur, impacting up to 60% of the city like the flood in 2013 showcased (Garschagen et al., 2018).

Accordingly, the residents as well as the city administration have long experience in protecting against and dealing with flooding. Flood management approaches and policies were and remain infrastructural for the most part (Colven, 2017; Octavianti and Charles, 2019), with a focus on three key strategies. First, the widening of rivers and clearance of riverbanks. Second, the expansion of water reservoirs. Both measures aim at increasing the city's drainage capacities. Lastly, a coastal flood protection plan [the latest version is called National Capital Integrated Coastal Development (NCICD)] tries to marry coastal protection with urban development. One major element of the plan is a giant flood wall, the so-called Great Garuda—A much-contested flood protection measure to be implemented within the next years (Colven, 2017; Garschagen et al., 2018; Salim et al., 2019). All of these strategies are linked to the resettlement and partly forceful eviction of poor urban residents along the rivers, the reservoirs, and the coast, with severe consequences for their livelihoods and social networks (Padawangi and Douglass, 2015; Hellman et al., 2018; Ichwatus Sholihah and Shaojun, 2018).

Against this background, the most exposed and vulnerable populations in Jakarta face at least two daunting threats at the same time: the risk of being frequently flooded and the risk of being forcefully evicted from their exposed neighborhoods in the name of flood protection. For many, the latter represents a more severe threat to their livelihood and security than flooding (van Voorst and Hellman, 2015). To organize resistance against evictions and increase attention to unjust treatment, affected neighborhoods started to organize themselves with the help of powerful local civil society organizations such as the Urban Poor Network, JRMK, and Ciliwung Merdeka. Their leadership, network, and facilitation of bottom-up initiatives increased local capacities to voice their needs and get heard by

local politicians. Nonetheless, threats continued emerging in the course of urban development processes (especially after changes in government which set established links to local, city, and national government representatives back to zero), so the locally rooted civil society organizations pushed the idea to form neighborhood-based cooperatives.

Today, there are 26 kampung cooperatives in the North, East, and West of Jakarta; one of the first ones along the Ciliwung River ceased after the forceful eviction of Kampung Pulo. According to Indonesian Law, cooperatives are suitable local representations of the residents and hence officially recognized, legal entities that can act on their members' behalf (The President of the Republic of Indonesia, 1992). The cooperatives are led by dual leadership; members have to pay membership fees, possess a Jakarta ID card, and have assets at their disposal. Accordingly, they are not the poorest of the poor but low-income residents that considerably contribute to the urban economy while at the same time being very prone to fall into poverty. Renters and non-permanent residents are only able to join under an extraordinary membership regulation in some of the cooperatives. Guided by JRMK and UPC, each cooperative develops a vision and a plan for how to achieve it based on its members' needs and desires. Depending on the required support, technical or social assistance can be obtained through UPC's network of external partners; however, the cooperative remains in the driving seat. In Jakarta, cooperatives are an example of how collectives enable otherwise excluded members of the society to voice and claim their position and needs in urban development processes (e.g., change land zoning, land consolidation).

Building on Pelling and High (2005), we understand cooperatives to be purposefully developed, institutionalized forms of collective action aiming at implementing both material as well as structural and/or institutional changes to reduce stressors. In the case of kampung cooperatives, this does not necessarily mean that they directly pursue collective adaptation to climate change and its impacts. Rather, they take a broader collective approach to improving local livelihoods which in turn increases their members' coping and adaptive capacities.

Data and methods

This study builds on a non-structured literature review and empirical data collection and analysis. We implemented predominantly qualitative methods for both data collection and analysis to fully penetrate the engagement process leading to collective adaptation among vulnerable individuals in high-risk, "collectivist" contexts.

We reviewed the literature on social identity and collective action theories and their applications in various fields in a deductive manner to understand and collect potential factors that may influence engagement in collective adaptation. The empirical data was used to inductively identify those influencing factors that were of importance for the specific case study context and differentiate them by considering their influence along the temporal progression of collective action. For this purpose, we focus on a selected number

of interviews with highly knowledgeable and representative key informants rather than applying a large-N quantitative empirical studies approach.

Empirical data was collected during a 1-month field visit in Jakarta in November 2022. During the stay, multiple methods were used during various trips to different locations in the city to collect impressions and data that allowed for getting a comprehensive picture of kampung life and engagement in collective adaptation in Jakarta. Frequently flooded areas on the North coast (e.g., Waduk Pluit and Muara Angke) as well as along the Ciliwung River (e.g., Kampung Pulo, Bukit Duri) were visited to observe physical flood mitigation and adaptation measures, housing structures, and socio-demographic characteristics of the residents. Overall, five different kampungs were visited; field notes were used to document impressions and observations.

Participant observation was used during the 2-day annual meeting of JRMK cooperative heads convened by UPC in Kampung Kunir. Informal and unstructured note taking as well as short discussions with meeting participants in breaks allowed for obtaining insights into cooperative achievements as well as future plans. A representative survey (see [Supplementary material 2](#) for questionnaire) among all cooperative heads ($n = 41$) assessing their reasons for joining, engagement, achieved benefits and future goals represents the third data source used for this study. Three out of four questions required open-ended answers. In the analysis, similar answers were clustered and aggregated to get an overview of triggers, motivators, and barriers for engaging n kampung cooperatives' collective action.

Finally, eight semi-structured interviews (see [Supplementary material 2](#) for questionnaires) were conducted with four network leaders and four cooperative members. Network leaders were selected based on previous online interviews; cooperative members were approached through snowball sampling, starting with recommendations by one of the network leaders. Four of them were conducted with the support of a translator. All interviews were transcribed and subsequently coded in MAXQDA following qualitative content analysis ([Mayring and Brunner, 2009](#)). The set codes used in this particular analysis is exclusively focusing on collective action and include the following: “activator/trigger,” “motivating factor to stay active,” “barrier.” Handwritten field notes were coded with the same codes as the interviews and considered in the analysis as well.

Results

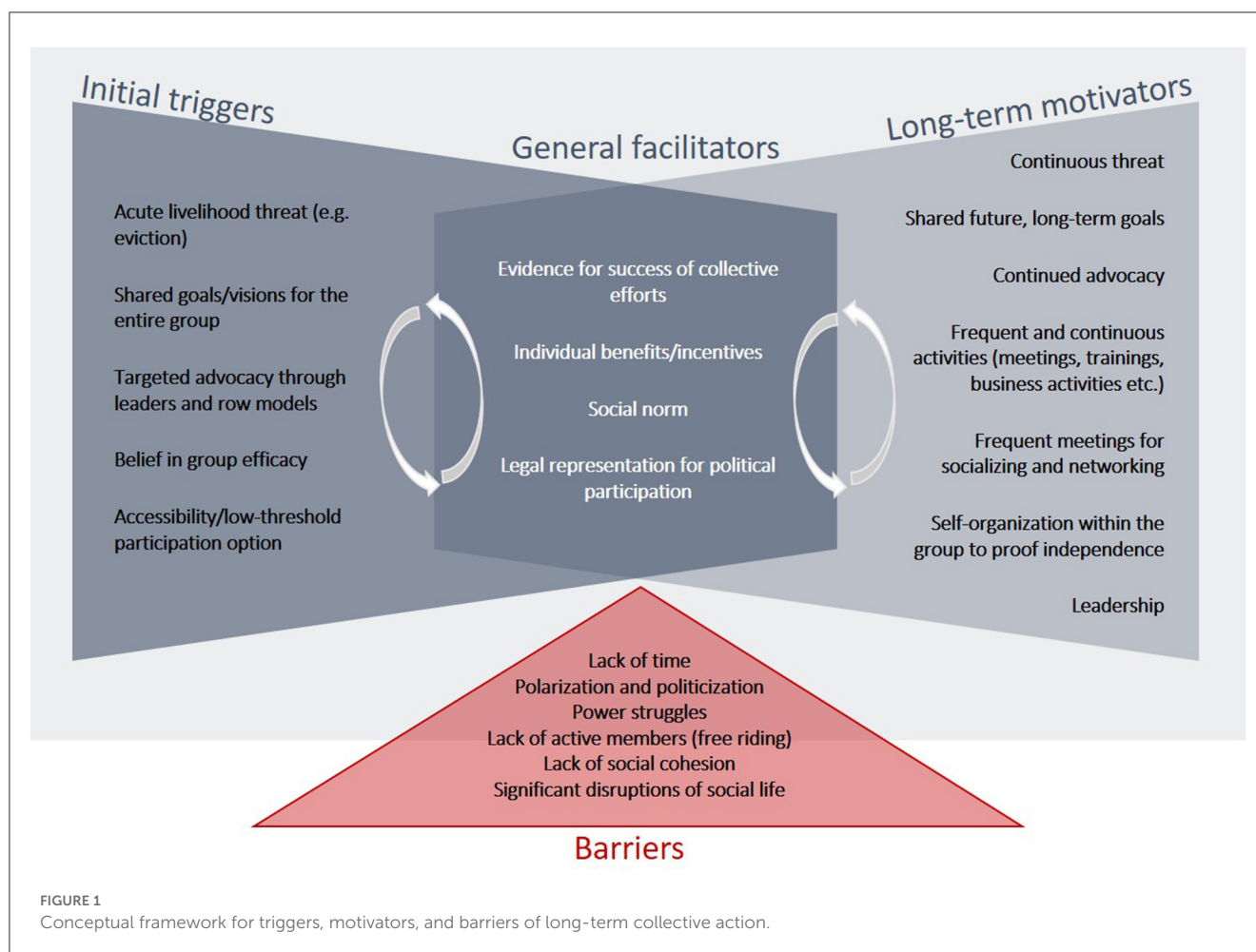
The analysis and triangulation of data resulted in three types of motivators for collective action, and a set of barriers ([Figure 1](#)). We identified distinct triggers that make individuals start to engage in collective activities for the first time (left-hand side of the figure). They differ from a set of factors that motivate them to stay active over a longer course of time (right-hand side of the figure). In addition, multiple aspects contribute to both, the activation as well as the long-term motivation to act collectively, which are depicted in the center of the figure. Finally, particular barriers can hinder individuals from joining collective activities and/or staying active members over time (bottom element of the figure).

The following sections illustrate and explain the different types of motivators and the factors they contain with practical examples and quotes from the field. A more comprehensive description can be found in the [Annex \(Supplementary material 3\)](#).

Initial triggers

Whether individuals decide to engage in collective adaptation in the first place largely depends on the threat context. In contexts where a threat—be it directly from climate change impacts or indirectly from climate change threatening livelihood stability—is perceived to be beyond individual capacities, collective engagement is more likely. Sharing goals and a vision of how to overcome a threat with people in the same situation and being actively targeted by local leaders who advocate for facing the challenge through collective activities are two key aspects triggering behavioral change toward collective action. Both aspects create a social identity that becomes salient in the face of the threat. Advocacy also helps initiation by making people aware of the potential common and individual benefits of collective action. However, joining a group also depends on the individuals' beliefs that the group will be capable of successfully achieving the collective goal. Finally, initial active engagement—as opposed to passive membership—is influenced by the type of collective activities the group decides to implement. Activities that are accessible for all with low individual investments, low time commitment, and low individual risk are likely to attract attention and engagement easily.

To illustrate how initial triggers function in practice, we take the example of flood-exposed, poor neighborhoods in Jakarta, where residents are often threatened by evictions in the name of flood protection. “Of course, the initiative comes from the people themselves because the goal is very simple, that is to avoid eviction and to avoid being displaced from their kampung” (CSI-6). In the words of a local resident who is member of a cooperative: “This cooperative is not like cooperatives in general. Other cooperatives may have a vision in economic matters, but we are different. Our cooperative has an important vision, which is to protect and defend the village” (NJ-LR-2). The constant fear of losing their assets and livelihood is perceived to be beyond the individual's capacity, increasing the wish to join forces to counter potential evictions. Or in the words of one survey respondent “Together we sure can do it” (R12) when asked for her/his motivation to join the cooperative. The shared goal to stay in the area and collectively improve the living conditions as well as livelihoods was frequently mentioned as shared vision in response to why the respondent joined the cooperative. “The same goals for land legality” (R40) and “To achieve collective prosperity” (R38). It is often encouraged either through local leaders or supporting civil society organizations that are deeply rooted in the neighborhoods. “The key is for the community themselves to have the will to fight and the presence of a key figure who can lead the organization” (CSI-6). This creates a strong social identity among many of the residents and they believe that only together they stand a chance to avert potential evictions. Activities such as frequent meetings for strategizing are easy to join and increase the feeling of belonging to the group and having decision-making power.



Long-term motivators

Keeping individuals engaged in collective adaptation over time requires first and foremost the continuation of the threat itself. When threats continue, shared long-term goals ensure social identification. However, long-term visions are often less effective identification factors as compared to short-term visions which are linked to more tangible and immediate benefits. Nonetheless, long-term goals are key for continuous collective adaptation; the definition of interim goals may help to keep up the motivation to engage. Social identification through shared visions can be maintained and reinforced by continuous advocacy, which can also help to mobilize new members. To keep the social identity salient, frequent collective activities as well as meetings of group members are essential. Working together and exchanging with each other solidifies identification with the group and the trust in group members. Finally, and in particular for disadvantaged groups who are excluded from (political) decision-making processes, self-organization within the group is key for being able to, on the one hand, showcase independence and group efficacy and, on the other hand, put forward shared needs and visions at higher levels of decision-making through their respective representatives. All of the mentioned points can be strengthened by the active engagement of group leaders.

Looking at kampung cooperatives in Jakarta, collective actions have shown to be difficult to be maintained over time. Only when the threat of eviction or very frequent flood occurrences are constantly present in the members' lives, engagement remains at a high level. In the case of kampungs, such threats are omnipresent as a resident explains "This kampung is vulnerable to government threat such as evictions. If information about eviction spreads, the residents will panic. The first threat is from JSS IPAL zone 2 in 2019 for wastewater management which is planned to be built in two places. Then, the NCICD Project for embankment along Muara Angke. Actually this project is against the floods however the impact has not been considered. There is also a threat of eviction from the widening project for a transmission tower (suted) that always haunts everyone" (NJ-LR-2). Long-term engagement can be supported by continuous advocacy of the cooperative leaders and supporting civil society organizations (CSOs) as being expressed by a cooperative leader. "I think if we can explain it as clearly as possible, they will definitely want to join the Cooperative. Moreover, being a member of a cooperative has many benefits. For example, our cooperative sells groceries (sembako). The price is quite competitive with other stalls. Then we will share the SHU that we get" (NJ-LR-1). On the one hand, these key figures help to strengthen the social identity by emphasizing shared goals and visions and increase social pressure by alluding to the social norm

of collectivity. On the other hand, they mobilize new members keeping the cooperatives vivid. Cooperative members highlight how they enjoy frequent exchanges and learn from each other during activities in various regards; two key motivation factors over time. “Before the pandemic, we had every meeting in a different house so that each member would know each other. After we reciting Qur’an, we discussed about the cooperative” (NJ-LR-4). In the survey, respondents mentioned “got lots of friends” (R13, R15), “could exchange ideas” (R14), “develop own knowledge in cooperatives” (R1, R5, R14, R31) as achievements realized through their cooperative membership. At the same time, the internal structure of kampung cooperatives helps to organize day-to-day life and achieve shared goals such as collective kampung upgrading in a more coherent and independent way, showing local authorities their autonomy and strength in self-organization as well as capability to accommodate flooding. “Back then, this area was called “slums.” So we, the cooperative, tried to make a program. If the government thinks that dense settlements cannot be managed, the solution must be relocation. Then we tried to come up with other solutions, to show the government that we can manage the land use, that’s it (NJ-LR-1).” This capacity is an important aspect for averting evictions and obtaining collective settlement rights in their places of residence.

General facilitators

A few of the factors identified can be considered relevant for both dimensions—the initial engagement in collective adaptation and keeping engaged over time. The most important factor is evidence of success of collective engagement. Only if individuals see that shared visions and goals are reached, they consider engaging. Ideally, the successful implementation of collective adaptation is also linked to benefits not only for the group but also for the participating individuals. Besides this, incentives for group members help facilitate engagement. In contexts in which collective self-understanding and reciprocity are highly valued, initial as well as long-term engagement in collective activities is supported through strong social norms. Individualism as well as passivity is frowned upon and in some cases even results in social sanctions and/or exclusion, which is why the motivation to participate is rather high. Finally, group leaders can act as (legal) representatives to advocate for the shared visions and needs at higher levels of decision-making.

In practical terms, general facilitators among kampung cooperative members in Jakarta can be considered essential for initiating and maintaining their collective activities as well as the collective construct. Members highlighted, for instance, that success stories of how kampung cooperatives successfully obtained building permits and urban zoning changes for their members encouraged individuals to join. “Of course, with the success that we have in making the residents get compensation of housing, it will make them believe more and many are now believing, especially because we started all this with a community cooperative, so every community that grows is using this basis” (CSI-7). Benefit at the neighborhood scale as well as individually are essential motivators, too. “The member, he can borrow the money from the cooperative

to repair his house. [...] So this house and that house from the next community also repaired by the cooperative fund but it’s very long time to pay it back” (NJ-CSI-1). At the same time, the social norm of collective engagement and reciprocity is traditionally very strong in urban poor communities in Jakarta. “[...] citizens in urban cities have the norm to help each other” (RII-1a). This lowers the initial barrier to behavioral change toward collective engagement and keeps them active, given the social pressure to adhere to cultural values and norms. Finally, kampung cooperatives are legal, officially recognized entities in Indonesia, which gives them the right to be official representatives of their members in political decision-making processes. “So their cooperative also registered to the government so now the cooperative is a legal entity. Before, this community was not [...] recognized by the government because the land is [...] not really recognized by the government. But now, when they became a cooperative and a legal entity, they are recognized by the government” (NJ-CSI-1). Accordingly, kampung cooperatives empower their members and provide the opportunity to fight for shared visions and goals, for example, by participating in urban development processes. This allows them to effectively fight for maintaining their livelihoods which reduces their vulnerability to threats such as flooding or forced evictions.

Barriers

A plethora of factors can hinder individuals from starting to act collectively and staying engaged over time. In general, the absence or inverse of initial triggers and long-term motivators as well as general facilitators represent major hindrances to collective action. Besides this, other factors were mentioned as barriers. A lack of time due to other duties is a very obvious but important barrier. Polarization and potential politicization, along with different visions, beliefs, and convictions may inhibit collective activities or at least lower collective power when they separate a neighborhood into various sub-groups. Similarly, power struggles between different local leaders may hinder larger-scale collective action due to the separation of groups as well as redundant or conflicting collective action. Apart from this, the lack of active members can also function as a barrier because passive members are perceived as free riders, meaning members who benefit from collective achievements without engaging in collective activities themselves. This reduces trust and the willingness to engage among the group members, which consequently reduces group benefits, thus risking a downward spiral of engagement until the collapse of the collective structure. Another reason for not engaging is lacking social cohesion, given that low levels of mutual trust and reciprocity hinder social identification and limit belief in group efficacy. Finally, severe disruptions in social life can inhibit the emergence of collective action or stop existing initiatives.

In flood-prone, poor neighborhoods in Jakarta, one of the most important barriers for residents to join kampung cooperatives is a lack of time due to work or family duties as well as other social obligations. “[...] they still have difficulties to find members who really want to provide time for meetings etc. because in order to get organized you still have to do lots of things such as training meetings [...]” (NJ-RII-2). When the cooperatives do not have

enough members or constantly lose members, decreasing power to achieve common visions, fewer activities and lower belief in group efficacy threaten the existence of kampung cooperatives. In cases where local leaders fear losing power with the emergence of kampung cooperatives, they may fight against their development, polarizing the residents between different movements. “There are 8 RTs; not all of them are members of the cooperative. It seems like the presence of this cooperative is considered as a competitor [...] for RT or RW. Because the program from the government will not go through the RT or RW, but through to cooperatives” (NJ-LR-1). This also lowers levels of social cohesion in the neighborhood, which represents an important precondition for collective engagement. Disruptions of mundane kampung live may also hinder collective action. Examples are the recent COVID pandemic, which limited social contacts to a minimum or forcefully implemented evictions due to which former neighbors were geographically separated and traumatized, unable to continue collective efforts. As a CSO worker describes based on his work “For kampungs which have not been evicted by the government, their social cohesion is really good. They are working closely with each other but forced evictions in certain areas is making them, there are no social cohesions anymore” (CSI-9).

Discussion and conclusions

Our study aimed at advancing the current knowledge on collective action in the context of climate change by assessing what triggers vulnerable individuals in high-risk contexts and with strong collective self-understanding to start adapting collectively, which factors keep them engaged over time, and what hinders them to act collectively. Based on one of the first English-speaking assessments of kampung cooperatives in Jakarta, we developed a conceptual framework that refines existing conceptualizations of collective climate action motivators. We put forward the following three key findings.

First, while the core motivating factors identified in other studies (van Zomeren, 2013; Fritsche et al., 2018; Agostini and van Zomeren, 2021; Carmona-Moya et al., 2021)—which mostly build on the assessment of protest movements in lower-risk contexts—also play an important role for why and to what extent individuals engage in collective adaptation in high-risk contexts, their high level of abstraction makes it difficult to use them for understanding our research context. The core motivators alone are too broad to understand and explain collective adaptation. Some of the listed influencing factors from Table 1 (e.g., “prior experience in collective action” or “physical community layout”) do not apply to the context we assessed and we identified additional ones such as “legal representation for political participation,” “self-organization within the group to proof independence” and the importance of social desires such as exchanging with neighbors and friends and building a network, which are rarely discussed in the literature on collective action in the context of climate change. Also, the feeling of being threatened by a major force (livelihood threat) played an important role in initiating as well as keeping up collective adaptation over time. This finding is confirmed by other studies on Jakarta (Bott et al., 2019)

and in different risk contexts (Vestergren et al., 2022). Hence, while many of the established influencing factors apply to the collective adaptation context, some additional ones should be considered which are important to explain why individuals engage in collective adaptation.

Second, the results show that facilitating factors for collective adaptation differ temporally, that is between initial triggers, long-term facilitators, and those contributing to both types. Such temporal differentiation is a first attempt to understand and capture dynamics during the process of collective action; a need voiced by other scholars as well (Boda and Jerneck, 2019; Hartwich et al., 2022). While many of the listed triggers and motivators we identified through the literature review as well as the empirical data influence one or several of the core motivation factors identified by van Zomeren (2013), our findings demonstrate how to temporally separate them.

Third, the barriers we identified partly diverge from other studies. For example, a lack of time due to daily work obligations, which was one of the most important barriers in our case study, is less prominently discussed in other studies. This might be linked to the fact that most studies assess the willingness to engage in collective action and not their actual engagement with related practical issues such as lacking time. Compared to the literature on barriers that was considered in this research, in our study, hindering factors such as uncertainty about the long-term effects of climate change (Pearson and Schuldt, 2018), hopelessness (Badaan et al., 2022), weak social norms for cooperation (Boon-Falleur et al., 2022), system justification (Jost et al., 2017; van Zomeren and Louis, 2017), or heterogeneity issues did not surface. An explanation could be the small sample size and the socio-cultural context of the study site. Instead, aspects of polarization and politicization of neighborhood groups due to local power struggles were more prominent. Also, we found that too few or passive members hamper collective activities and may even start a downward spiral: The fewer (active) members, the less visible success, the fewer benefits for members, the lower the belief in group efficacy, the lower social identification, and the lower the incentive to actively engage. Such downward spirals of collective engagement may be difficult to stop and are a risk for any collective action process that is meant to exist long-term. Similar observations have been made in small island communities, where changing demographic compositions result in a decreasing potential for the mobilization of social capital for collective adaptation (Petzold, 2017). However, also very big groups may hamper collective action due to free-riding, finding consensus over shared goals and problems of coordination and cooperation (Marshall, 2013; Jagers et al., 2020).

While our three key findings extend the current state of knowledge on collective adaptation, we want to highlight some of the study-specific limitations, which are mostly related to the transferability of our findings to other cultural contexts. First, the identified triggers, long-term motivators, general facilitators, and barriers base on the analysis of collective adaptation in the context of institutionalized cooperatives in a cultural context where collective self-understanding and reciprocity are high cultural values. We did not consider other informal, non-institutionalized groups, which may be similarly important to consider in research

on collective adaptation to climate change. Second, we did not extend our assessments to cultural contexts in which the collective is less valued. Against this background, our findings may not be generally applicable to any form of collective action and not to very different cultural contexts. However, we consider it to be transferable to other high-risk contexts where collective self-understanding and reciprocity are strong social norms and values. Third, the collective activities implemented by kampung cooperatives in Jakarta are not exclusively contributing to adaptation; rather, they have a multi-purpose character and increase coping and adaptive capacities through ensuring livelihood stability and hence reducing vulnerability, through empowerment and political participation as well as through access to resources and knowledge. In that sense, the identified initial triggers, long-term motivators, and general facilitators explain collective actions that contribute to individual as well as collective adaptation in an indirect manner.

For the case of Jakarta, institutionalized collective adaptation in the form of cooperatives is an example of how collectives enable otherwise excluded members of the society to voice and claim their position and needs in urban development processes (e.g., change land zoning, land consolidation). However, cooperatives can only thrive through active membership; that is, a sufficiently large number of active members who dedicate time and passion to the collective pursuit of their shared visions. Challenges regarding mobilization and self-organization may soon end their growth and relevance. At the same time, their visions may not necessarily contribute to risk reduction in the future, a caveat that limits their benefits.

Overall, our findings have implications for the conceptual understanding of collective adaptation. The novel differentiation between initial triggers, long-term motivators, and general facilitators can help understand collective action that goes beyond one-off engagements. Long-term and sustained engagement of local residents to shoulder adaptation to climate change and other livelihood threats is key for facing future threats that cannot be exclusively handled by state actors and institutions. This is not to say that collective adaptation can or should replace state-led adaptation. However, it might complement current strategies and enhance the benefits.

For practice and policy design in cultural contexts similar to our study site, the identified triggers and long-term motivators can be used to design targeted mobilization policies and activities to advance bottom-up collective adaptation. Especially the general facilitators may be of interest to advance collective adaptation because they represent low-regret entry points for triggering and maintaining long-term collective adaptation. Long-term motivators could be used to develop strategies managing fatigue to engage, a particular challenge for long-term collective action. For practitioners and policy-makers who wish to enable collective action it is important to consider that outcomes of collective adaptation may be maladaptive or non-sustainable, given that decisions are taken democratically based on the visions and ideas of the collective's members, which are not necessarily aligned with political goals. Also, the exclusion of individuals who do not meet the inclusion criteria of social groups or collectives or who do not share their respective visions and goals may limit the equitable spread of potential benefits.

Our study should encourage future research that tests the validity and transferability of the identified triggers and long-term motivators to informal, small-scale collective adaptation actions in different socio-cultural contexts. Furthermore, a detailed examination of the interplay of identified motivators would help to further unpack the emergence of collective adaptation. While it can be assumed that not all factors need to be present to trigger and maintain collective efforts to adapt, our results do not allow for evaluating the different levels of importance and interconnections between the factors over time of collective adaptation. Given that the interplay is likely to be dynamic (Hartwich et al., 2022), especially long-term motivating factors must be assessed more closely as they are likely to change over time. More in-depth knowledge about the individual motivation to engage in collective action that contributes to climate change adaptation is important to meaningfully advance adaptation not only at the local level but across scales.

Data availability statement

The datasets presented in this article are not readily available because interview partners provided their consent to use the data for the research but not for making it publicly available. Requests to access the datasets should be directed to mia.wannewitz@lmu.de.

Ethics statement

The studies involving human participants were reviewed and approved by BRIN (National Research and Innovation Agency, Indonesia). The participants provided their informed written or recorded oral consent to participate in this study.

Author contributions

MW: data collection, data analysis, and writing (original draft preparation). JP: writing (reviewing and editing). MG: supervision (reviewing and editing). All authors contributed to the article and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Supplementary material

The Supplementary Material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/fclim.2023.1213852/full#supplementary-material>

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