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What makes internationally-financed climate change adaptation projects focus on local communities? A configurational analysis of 30 Adaptation Fund projects

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ABSTRACT

There is much scholarly and policy interest in the role that international finance could play in closing the financing gap for community adaptation initiatives. Despite the interest, the overall amount of international adaptation finance that has reached local recipients remains low. What makes internationally-financed climate change adaptation projects focus on investment at the community level is particularly poorly understood. This study systematically assesses conditions that influence the focus on vulnerable local communities in internationally-financed adaptation projects. Using the Adaptation Fund (AF) under the Kyoto Protocol as the case study, we apply fuzzy-set Qualitative Comparative Analysis (QCA) to analyze 30 AF projects to identify specific configurations of conditions that lead to a stronger or weaker community focus in project design. We find that the absence of high exposure to projected future climate risks is a necessary condition for a weaker community focus in AF projects. Three configurations of sufficient conditions are identified that lead to a stronger community focus. They involve the contextual factors of projected future climate risks, civil society governance, and access modality to AF financing. In particular, AF projects with a stronger community focus are stimulated by the sole presence of higher exposure to projected future climate risks in a group of countries, and by the complementary roles of civil society governance and the access modality to the AF in others. These findings contribute new insights on how to enhance local inclusiveness of global climate finance.

1. Introduction

Developing countries are vulnerable to the negative impacts of climate change (Füssel, 2010; IPCC, 2018, 2014). The poor, natural resource-dependent, and marginalized populations will bear a disproportionate burden of adapting to these impacts (Mearns and Norton, 2010; Olsson et al., 2014; Thomalla et al., 2006). Recognizing this as global climate injustice and a barrier for achieving sustainable development, the Paris Agreement calls for stronger international commitments to support adaptation for the most vulnerable populations (UNFCCC, 2015a). Particularly vulnerable groups include women, children, elderly, minorities, people with disabilities etc., who live in vulnerable locations such as coastal zones, flood plains, rural areas, and informal settlements in disaster-prone urban areas (Olsson et al., 2014; Levy and Patz, 2015). Within this context, the paradigm that supports local adaptation has also gained prominence (Nalau et al., 2015). For example, community-based adaptation (CBA) has been increasingly adopted to operationalize local adaptation (Fenton et al., 2014). The CBA approach places the climate-vulnerable populations at the center of adaptation decision-making and capitalizes on their local knowledge for building adaptive capacity (Dodman and Mitlin 2013). Kirkby et al. (2015) estimate that developing countries in Africa, Asia and the Pacific Islands have implemented thousands of CBA projects in recent years.

Despite the increased policy support, inadequate financing remains a key barrier to community adaptation efforts in developing countries (Schipper et al., 2014). There is much interest in the role that international adaptation finance could play to close the financing gap (Fenton et al., 2014; UNEP, 2016). As a component of global climate finance, international adaptation finance mostly originates from public resources of developed countries and flows to developing countries to fund adaptation actions (Buchner et al., 2015), as part of an international commitment to address global climate injustice (Cameron et al., 2013; Hall and Persson, 2017). Bilateral aid programs, multilateral

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development banks, and specialized multilateral climate funds are three mechanisms that channel public international adaptation finance towards developing-country recipients (OECD, 2018). But while public international climate finance commitments have recenlty increased by 44% between 2013 and 2017 (OECD, 2018), Soanes et al. (2017) estimate that between 2003 and 2016 < 10% of climate finance was flowing to local level i.e. entities below the district administration including local governments, community-based organizations (CBOs), local non-governmental organizations (NGOs), households and microfinance institutions.

Some international funding mechanisms have been more successful in channeling resources towards local actions than others. The Adaptation Fund (AF) under the Kyoto Protocol is recognized as a successful example (Fenton et al., 2014). Fenton et al. (2014) argue that the AF has performed well on integrating local-level adaptation investment in its portfolio because of: 1) its mandate which is centered on vulnerable populations; 2) a requirement that project proposals prioritize particularly vulnerable communities; and 3) the option of direct access that provides funding directly to national institutions. But while these fund-related characteristics are important in shaping the AF's portfolio, contextual conditions of recipient countries could also influence funding allocations at the project level (Rai et al., 2015; Terpstra et al., 2013). For example, studies have showed that a country's administrative tradition (Biesbroek et al., 2018b) and level of decentralization (Brockhaus and Kambiré, 2009) could affect the policy approach that a government takes to support climate change adaptation across scales. As all proposed AF projects need to be endorsed by national governments of recipient countries, these country-level governance conditions are likely to be relevant in explaining whether the government agencies take a strong community focus (or not) in these projects. These contextual conditions could also interact with the AF's fund-related characteristics to shape the project design. Understanding such interaction requires a configurational research approach which accounts for the interdependence among factors in shaping an outcome.

This paper assesses under which conditions multilateral climate funds intensify or moderate the focus on local communities in their adaptation investment at the project level. Using the AF as the case study, the paper systematically compares 30 AF projects to analyze the contextual conditions for a stronger or weaker community focus in the design of each project. To systematically analyze the influence of multiple contextual conditions, we use a Qualitative Comparative Analysis (QCA) methodology. The methodology models the evidence in a configurational way to determine the conditions and their combination that explain the occurrence of the outcome and its non-occurrence. The ability to capture complex causal patterns enables us to better understand and specify the contexts under which the varying degrees of community focus in AF projects are shaped. To the best of our knowledge, this is the first paper that uses the QCA methodology to study international adaptation finance.

The paper is structured as follows. The next section develops a theoretical framework in which we define what we mean by community focus in AF projects and elaborate on the contextual conditions which could theoretically influence the outcome. Section 3 describes the data collection processes, discusses the QCA methodology, and presents the operationalization of data for the fuzzy-set analysis. Section 4 presents the main findings from the analysis of necessary and sufficient conditions for a stronger or weaker community focus in AF projects. The paper then discusses the key findings and their implications and provides a conclusion.

2. Theoretical framework

2.1. Outcome: community focus in AF projects

Following Ayers and Forsyth (2009) and Reid et al. (2010), we define vulnerable communities as groups of individuals and households in villages, communes, neighborhoods, and settlements in climate-vulnerable locations. These communities are internally diverse but at the same time share common characteristics, beliefs and/or actions that shape their collective exposure to climate change (Agrawal, 2008). While these local communities are highly vulnerable to climate change, they are also believed to "have the skills, experience, local knowledge and networks to undertake locally appropriate activities that increase resilience and reduce vulnerability to a range of factors including climate change" (Dodman and Mitlin, 2013; pp. 640–641), and are therefore a focus of adaptation interventions. As community actors such as CBOs, community leaders, and community members can be distinguished from other local but more upwardly-located actors such as cities, municipalities, and districts, we consider communities as the most local level of beneficiaries of international adaptation finance.

Building on the literature on CBA (Forsyth, 2013; Kirkby et al., 2017) and climate finance tracking at the local level (Fenton et al., 2015; Soanes et al., 2017), we define three dimensions to assess the level of community focus in AF projects: 1) the level of *financial investment* in community-level adaptation activities; 2) the level of *community participation* in project design and implementation; and 3) the level of *devolved decision-making* to the community level.

2.1.1. Financial investment at the community level

Financial resources available to local communities are critical for the implementation of adaptation actions. We therefore track the amount of funding within each AF project that flows to activities which generate direct adaptation benefits for community-level beneficiaries (Fenton et al., 2015; Soanes et al., 2017). Examples of these activities are the introduction of climate-resilient agricultural technologies to farming communities, the construction of new village water harvesting infrastructure, and capacity building for villagers and CBOs for community-based resource management. Excluded from these community-level investments are AF project activities that build infrastructure above the community scale, conduct technical analyses, improve the capacity of government institutions and/or strengthen overall policy and regulatory frameworks. An AF project that invests more in activities with direct adaptation benefits to local communities as a percentage of the total project budget is considered as the first indicator of being more community-focused.

2.1.2. Community participation

Community-focused adaptation requires active participation of community stakeholders in project design and implementation (Dodman and Mitlin, 2013; Forsyth, 2013; Lasage et al., 2015; Magee, 2013). The CBA literature emphasizes the importance of community participation processes in the project design phase for synthesizing scientific knowledge from external experts with local knowledge and customs to identify locally-appropriate adaptation options (Ayers and Forsyth, 2009; Piccolella, 2013; Reid et al., 2010), and for ensuring that the selection of project beneficiaries is inclusive (Kirkby et al., 2015). It also highlights the need for project financiers to use various cultural and linguistic styles to create equitable participation space for different sub-groups of community members (Roncoli et al., 2011). After project activities have been initiated, continued community participation in project implementation keeps the financier-beneficiary feedback loops open, allowing for adaptive management, and meaningful evaluation of lessons. We therefore consider an AF project with a higher level of community participation during project design and implementation as the second indicator of being more community-focused.

2.1.3. Devolved decision-making

Recent literature emphasizes that community-focused adaptation also requires the devolution of decision-making power to the local level (Regmi and Star, 2014). This is because community participation processes alone do not guarantee that an externally-financed adaptation project would be locally responsive. In many cases, community

participation processes only engage community stakeholders as feedback providers to confirm a pre-determined project design (UNDP, 2014), and are therefore of tokenistic value. For local communities to truly determine the methods and goals of adaptation that build on their knowledge, practices and preferences (Dodman and Mitlin, 2013; Kirkby et al., 2015), there are calls for international climate funds to move beyond community consultation to devolve decision-making on fund use to the local level (Bosma et al., 2018). This involves, for example, having local and downwardly-accountable actors such as CBOs to formally serve as project executing entities (EEs) of internationally-financed adaptation projects (AFB, 2008), and relocating funding approval functions, in addition to implementation and execution authorities, to them (Müller, 2013). We therefore consider an AF project which devolves more decision-making to community-level actors as the third indicator of being more community-focused.

2.2. Conditions enabling community focus in internationally-financed adaptation projects

Multilateral climate funds like the AF are channelling resources to local project beneficiaries through national governments, international organizations and civil society organizations. As local communities cannot access the AF directly, they rely on these higher-level actors to adopt inclusive adaptation planning, and to actively champion for community adaptation needs to be prioritized for AF financing. Understanding the contextual conditions that could influence these higher-level actors' willingness and capacity to do so is therefore relevant to understanding what makes AF-financed projects invest in community-focused adaptation. Scholarly literature has identified three groups of such relevant contextual conditions.

The first group relates to the level of climate change impacts on developing countries, which could act as a catalyst for governments to take actions to protect its vulnerable citizens (Ahmed et al., 2015; Conevska et al., 2018). In this study, we use past climate-related losses (condition 1) and projected future climate risks (condition 2) to respectively represent the observed and projected climate vulnerability of AF recipient countries.

The second group of conditions is related to the enabling governance environment for community-focused adaptation approaches. In general, the level of government decentralization (Brockhaus and Kambiré, 2009) and the role of civil society (Adhikari and Taylor, 2012; Agrawal and Perrin, 2009; Chu et al., 2016) were found to be important in previous studies, but they have not been sufficiently operationalized for cross-country comparison. In this study, we use government structure (condition 3) and governance of civil society (condition 4) to represent the AF recipient countries' enabling governance environment for community-focused adaptation approaches.

Finally, the governance of international adaptation finance itself–-particularly how finance is distributed from multilateral climate funds to recipient countries through national or international implementing entities–could also influence decision-making at the project level (Scoville-Simonds, 2016; UNFCCC 2018). It its recent assessment of global climate finance, the UNFCCC observes that "the operational priorities, experience and networks of the implementing entities through which climate finance is accessed can influence greatly how funds are spent (UNFCCC, 2018, p.91)." As the last condition in this QCA study, we therefore include the type of access modality which each recipient country uses to access AF resources (condition 5) to represent the governance of international adaptation finance.

The following sub-sections describe the theoretical expectations on the role of each contextual condition in explaining the level of community focus in AF projects.

2.2.1. Condition 1: past climate-related losses

Past climate-related extreme events represent a country's level of climate vulnerability, and are found to be a key predictor of national-level adaptation actions (Berrang-Ford et al., 2014). Given that governments have moral and legal obligations to protect citizens from harms (Cameron et al., 2013), these extreme events could act as focusing events for governments to take protective actions (Jones and Baumgartner, 2005). In reality, increasing losses from climate-related extremes have indeed provided an impetus for governments to implement adaptation policy and actions (Ahmed et al., 2015; Berrang-Ford et al., 2011; McEvoy et al., 2010). The impetus also drove developing-country governments with budget constraints to seek international adaptation finance. Reviewing 96 adaptation projects from 2004–2015 that targeted food systems, Conevska et al. (2018) find that the impact of extreme weather events was the most cited motivation for governments seeking financing from UNFCCC mechanisms for these projects.

Given that the negative climate change impacts are experienced primarily at the local level, there is evidence that, when governments take adaptation actions, they increasingly pay attention to reducing the vulnerability of local communities living in locations where negative climate impacts have been experienced. For example, developing-country governments have identified local communities such as rural households and smallholder farmers in climate-vulnerable regions as priority groups to benefit from adaptation policy actions (UNFCCC, 2015b). Among all UNFCCC member countries, 100 parties also consider CBA as a major adaptation approach to be upscaled in their countries (UNFCCC, 2015b). Such increasing prioritization of local communities can also be observed in the use of international adaptation finance at the project level (Conevska et al., 2018).

The above discussion suggests that there are precedents of past extreme weather events acting as a catalyst for developing-country governments to protect its citizens, including by seeking international adaptation finance. At the same time, there is evidence that local communities have received increasing attention from these governments as prioritized vulnerable groups, including by being targeted as the primary beneficiaries of internationally-financed adaptation projects. Given these two precedents, we therefore hypothesize that governments of countries which experienced higher climate-related losses in the past would have an impetus to protect vulnerable local communities from harms. When they apply for AF finance, they would also have an incentive to influence the design of AF-financed adaptation projects to have a stronger community focus.

2.2.2. Condition 2: projected future climate risks

Exposure to future climate risks is another key indicator of country climate vulnerability (Füssel, 2010). Similar to Hinkel (2011), we understand country climate vulnerability here as a "measure of possible future harm (p. 199)." Similar to experience with past climate risks, exposure to future climate harms can also drive governments to take anticipatory actions to protect citizens. These actions can be seen, for example, when governments use projected future climate risks as a basis to develop an adaptation policy framework (Government of Indonesia, 2016; Ministry of Environment of Jordan, 2013). In reviewing global adaptation experience, Berrang-Ford et al. (2011) also find that government actors particularly at the national level–though more so in developed countries than developing countries–are more likely to plan adaptation actions as response to long-term projected climate change impacts, when compared to individuals and households whose adaptation is largely stimulated by short-term factors such as changing market conditions and extreme weather events.

Projected future climate risks have also informed climate vulnerability assessments at regional and local levels, with results that enable governments to better plan anticipatory adaptation actions at these scales (Barnett, 2011; Chen et al., 2015; Gustafson et al., 2017; Soora et al., 2013). In recent years, climate projections in many developing countries have been downscaled (Gustafson et al., 2017). These advances have given governments in these countries an expanded capacity to identify local climate change hotspots, and to combine the science-based data with a community-

based perspective on vulnerablity to better support community-level adaptation processes (Gustafson et al., 2017).

The above discussion suggests that the presence of future climate risks could motivate national governments to plan for anticipatory adaptation, and that recent scientific advances have allowed these governments in developing countries to do so more effectively at the local level. Together with the precedent of local communities being an adaptation priority of developing-country governments as discussed above, these two observations have led us to expect that governments of AF recipient countries with higher overall exposure from projected climate risks would have an impetus to plan for anticipatory adaptation, and when they do so using AF financing, they would have more incentive in directing financing towards community-focused adaptation.

2.2.3. Condition 3: government structure

As a key characteristic of government structure (Treisman, 2002), decentralization generally refers to the transfer of power and resources–political, fiscal or administrative–away from the central government to non-central government entities (Schneider, 2003). In reality, not all decentralization reforms involve the same degree of power and resource transfer. Reforms that involve the relocation of decision-making power are often characterized as political 'devolution' (Bardhan, 2002; Fisher, 1999), while those that involve only the relocation of administrative functions are sometimes referred to as 'deconcentration' (Agarwal et al., 2012; Regmi and Star, 2014; Tacconi, 2007). Regardless of the degree, decentralization is one of the most important reforms undertaken globally to promote good governance (Bardhan, 2002; Faguet, 2014). The most prominent argument for decentralization is that "it will improve the accountability and responsiveness of government by altering its structure so as to increase citizen voice and change the deep incentives that public officials face (Faguet, 2014, p.2)." Decentralization is considered a promising mechanism to improve the governance environment needed for bottom-up approaches to climate change adaptation (Brockhaus and Kambiré, 2009). As the disconnect between national governments and local realities is often cited as a key governance barrier for these approaches (Kuruppu and Willie, 2015), decentralization could address this disconnect by enhancing participatory governance by vulnerable local communities, thus creating " 'short distances' to local realities which should result in adapted and highly responsive planning (Brockhaus and Kambiré, 2009, p.411)." This could also lead to more opportunities for mainstreaming adaptation in sub-national government plans (D'Agostino and Sovacool, 2011). We therefore expect that countries with more government decentralization, and by association government closeness to local realities, are more likely to support AF projects with a stronger community focus.

2.2.4. Condition 4: governance of civil society

Following Anheier et al. (2001), we define civil society as "the sphere of institutions, organisations and individuals located between the family, the state and the market, in which people associate voluntarily to advance common interests (p.3)", highlighting the nature of civil society as "a space for collective action (Fioramonti and Kononykhina, 2015, p.473)." While early literature largely assessed the strength of civil society from its internal characteristics such as density, membership, and legitimacy, recent studies have shifted attention towards assessing civil society strength by analyzing its enabling environment (Fioramonti and Kononykhina, 2015; Simiti, 2017). In the context of climate change, an enabled civil society is considered an important agent of change in the process of adaptation (Adger, 2003), by raising societal awareness about climate change from the bottom up, serving as an intermediary mechanism to help align government policies with community adaptation priorities (Lati, 2008), and directly supporting CBA actions (Adhikari and Taylor, 2012; Webb et al., 2015). In the context of climate finance, civil society is a key implementation partner of multilateral climate funds including the AF (Adaptation Fund NGO Network, 2012). As a check-and-balance mechanism, civil society is also expected to play a pivotal role in ensuring that the use of climate finance is reaching the poor and most vulnerable communities (Ballesteros et al., 2010; Colenbrander et al., 2018; Peterson Carvalho and Terpstra, 2015). We therefore expect to see a stronger community focus in AF projects in recipient countries with a more conducive governance environment for civil society to operate.

2.2.5. Condition 5: governance of international adaptation finance (access modality)

Access modality broadly refers to "the institutional architecture through which funding decisions are made and finance flows (Bird, 2014, p.6)." As such, it constitutes a key governance context shaping the fund-recipient relationships. Two access modalities allow developing-country recipients to access financing from the AF: under the *indirect* access modality, the recipients access funding through international intermediary organizations accredited by the fund as its multilateral implementing entities (MIEs) or regional implementing entities (RIEs); under the *direct* access modality, national organizations are accredited as national implementing entities (NIEs) to manage the funding and project implementation. Indirect access has been and remains the most dominant access modality to international adaptation finance today (Duus-Otterström, 2016). It allows developing countries with limited institutional capacities, adaptation expertise, and climate finance experience to tap into those of international organizations. Direct access modalities are considered an innovation in climate finance governance pioneered by the AF to enable recipient countries to manage their own funds and projects, strengthen country ownership and build national institutional capacities in climate finance (Adaptation Fund, 2012; Brown et al., 2010). The role of direct access in ensuring that climate finance is locally accountable has received strong attention (Bosma et al., 2018). It is argued that direct access would shorten the distances between local actors and the NIE-led project design process, thus allowing local priorities to be better captured (Fenton et al., 2014), enhance project ownership among government officials who are more accountable to local populations (Bosma et al., 2018; Craeynest et al., 2010; Müller and Pizer, 2014), and increase opportunities for devolution of funding decision-making to local actors such as civil society and local communities themselves (Bosma et al., 2018). Based on these arguments, we expect to see a stronger community focus in direct-access AF projects compared to indirect-access projects.

While each of the conditions above could theoretically influence the level of community focus in AF projects independently, it is also possible that they affect the outcome by acting in conjunction. For example, the impact of direct access in enhancing community-focused adaptation could be magnified in recipient countries which are already decentralized. The configurational approach employed in this study allows us to investigate whether such interaction between country decentralization and direct access exists in shaping the community-focused outcome.

3. Method

3.1. Sampling of cases

We choose the AF as the case study for three main reasons. First, while the AF is prioritizing most vulnerable local communities, the AF does not have a dedicated community-financing program like other funds, for example, the CBA pilot program of the Global Environment Facility Small Grant programs (Huq and Faulkner, 2013). We could therefore expect to see the different degrees of emphasis on community-based approaches at the project level as a result of context-specific negotiation among stakeholders. This ensures sufficient variation in the outcome for our QCA study. Second, compared to the Green Climate

Fund which has also introduced direct access more recently, the AF has financed a higher number of direct-access versus indirect-access adaptation projects, thus offering more cases for comparative analysis. Third, all AF projects have approved project proposal documents which are publicly available in English on its website. Each document provides detailed information about project design which enables a systematic review and comparison.

To identify the sample for this study, we first identify all projects approved by the AF as of May 2017, resulting in 63 projects from 53 countries. We then compare the available country data for the first four theorized conditions (See Section 2.2) for the 53 countries. Based on data availability, we reduce the sample size to 30 project countries, with a total of 38 approved projects. To avoid country bias in our sample size, we randomly select one project from each of the four countries with more than one project (India, Argentina, Peru, and South Africa). This results in the final sample of 30 projects from 30 countries for our QCA study (See Table A1 in Appendix A for the list of countries and Supplementary Material 1 for more project details).

3.2. Fuzzy-set analysis and configurational logic

This study employs a fuzzy-set analysis, which is one technique within the broader QCA methodology (Ragin, 2000). The application of fuzzy-set QCA to social sciences is argued to be particularly suitable for studying complex phenomena, as it detaches from the traditional distinction between case-oriented and variable-oriented research (Cebotari and Vink, 2013). Specifically, fuzzy-set analysis assumes conjunctural causation and aims at assessing whether conditions, independently or together in a configuration, explain the presence or absence of the outcome. As a systematic comparative method, fuzzy-set analysis is suitable for small and medium N-samples and combines quantitative information with a case-oriented approach, where good knowledge of each case is needed to explain the link between theory, the cases, and obtained findings (Kirchherr et al., 2016; Pahl-Wostl and Knieper, 2014).

Fuzzy-set technique revolves around the analysis of subset relations and distinguishes between the necessary and sufficient conditions and their configurational logic (Ragin, 2009, 2000). Fuzzy-set analysis employs several steps. First, the empirical and theoretical evidence feeds in a raw dataset that includes the outcome and conditions for each case. Second, raw values for conditions and the outcome are calibrated into fuzzy-set partial membership scores using evidence-based thresholds. The calibration leads to fuzzy-set membership scores for the outcome and conditions, which are based on values in the interval between [0] (non-membership) and [1] (full membership). Third, the fuzzy-set scores are used in the analyses of necessary and sufficient conditions leading to the presence and absence of the outcome. Based on the logic of subset relations, the status of being a necessary condition implies that the outcome (Yi) is a subset of the condition (Xi), where the fuzzy-set scores of the outcome should be lower or equal to the fuzzy-set scores of the condition ($Yi \leq Xi$). Inversely, the status of being a sufficient condition implies that the condition is a subset of the outcome, where the fuzzy-set scores of the condition are lower or equal to the fuzzy-set scores of the outcome ($Xi \leq Yi$). Specifics related to the outcome, conditions, calibrations, and the analyses of necessary and sufficient conditions, are subsequently presented in greater detail.

3.3. Operationalization and calibration of measurements

3.3.1. Outcome

The outcome of this study is the community focus in AF projects. Data for the outcome are collected from 30 AF project documents across three dimensions: financial investment in community-level activities, community participation, and devolved decision-making. We develop a codebook to guide our extraction of data for the three dimensions using AtlasTi. (see Supplementary Material 2).

For the financial dimension, we apply the granular approach of the climate-finance tracking methodology jointly developed by multilateral development banks (IADB et al., 2017). Specifically, we identify within each project components and sub-components that invest in community-level activities and track the financing attached to them. Once we extract this from each project document, we calculate the community-level budget as a percentage of total project budget for the 30 projects. We exclude from this calculation project administration fees charged by AF implementing entities to identify the true fraction of financing that reaches community adaptation activities. We then convert the percentages into three categories of scores by looking at the distribution of the percentages of community-based project budget in the 30 projects: the top one-third of projects with highest percentages are classified as having 'high' financial investment at the community level, the middle third as 'medium' level and the bottom third as 'low' level. We then assign the score of 3 to 'high' projects, 2 to 'medium' projects, and 1 to 'low' projects, respectively.

We assess the level of community participation using four indicators: 1) the type of public participation during project consultation (ascendingly ranked as consultation, partnership, and community self-mobilization); 2) the number of roles played by community actors throughout the project cycle; 3) the number of dimensions of climate vulnerability addressed by the project (e.g. livelihood sources, gender, health status, geography etc.); and 4) the number of beneficiary subcategories (e.g. the elderly, children, women, ethnic minorities etc.). The level of devolved decision-making in AF projects is assessed using three sub-indicators: 1) the type of organizations that the NIEs or MIEs/RIEs contract to serve as project executing entities (EEs), using the typology of international, national, sub-national, and local organizations; 2) the type of organizations that EEs partner with, using the same organizational typology; and 3) the use of mechanisms for local decision-making on project approvals and adaptation choices (such as a small grant facility and calls for proposals from communities). We add the scores of the four community participation sub-indicators to calculate an overall community participation score for each of the 30 projects, and do the same for the overall devolved decision-making score. We then use the same distributional approach as for the financial dimension to rank the 30 projects into 'high', 'medium' and 'low' categories and assign the scores of 3, 2, and 1, respectively. (See more explanation of the indicators in Supplementary Material 2).

Finally, we add the financial, participation, and devolved decision-making scores to calculate an overall 'community focus' outcome score for each of the 30 project cases. A project with a 'community focus' outcome score of 9 indicates that it is characterized by high financial investment at the community level (score = 3), high community participation (score = 3) and high devolved decision-making to community-level actors (score = 3). On the other hand, a project with an outcome score of 3 indicates that the project scores low in all the three categories (i.e. score = 1 + 1 + 1). Projects with outcome scores between 4 and 8 indicate that they have different mixtures of low, medium, high scores from three dimensions of community focus. (See Table A1 in Appendix A for the 30 outcome scores).

3.3.2. Conditions

For the Condition 1 on *'past climate-related losses'*, we use the 20-year average rankings from the Global Climate Risk Index (CRI), a comprehensive and frequently used database to proxy countries' historical climate exposure in cross-country studies (Berrang-Ford et al., 2014; Betzold and Weiler, 2018; Tranter and Booth, 2015). For example, if an AF project in India was approved in 2012, we use the 1992–2011 average CRI ranking for India as a proxy for past climate-related losses affecting the decisions of agencies involved in designing such project. This choice of data ensures that we only capture losses materializing before the date of project approval. An average ranking also better reflects a country's overall exposure to climate extremes than one year of data, and better captures the cases whereby AF project

decisions are influenced by a cumulative experience of past extreme events.

Data for the Condition 2 on *'projected future climate risks'* come from the exposure sub-index of the Notre Dame Global Adaptation Initiative (ND-GAIN) Country Index, which measures the degree by which a country is biophysically exposed to future climate hazards (Chen et al., 2015). Betzold and Weiler (2018) used the ND-GAIN exposure sub-index and the CRI side-by-side to respectively measure the impacts of past and future climate vulnerability in recipient countries on bilateral donors' allocation of adaptation finance between these countries. They found both indicators to be statistically significant, with the ND-GAIN exposure sub-index scores correlated with both the selection of recipient countries and the allocated amounts, while the CRI only correlated with recipient selection.

For the Condition 3 on '*government structure'*, we use country scores from the Government Closeness Index (GCI). Using data for mid 2000s (mostly 2005), the GCI is a global database of indicators that do not only measure how decentralized a country's government is, but also how close a decentralized government is to its citizens (Ivanyna and Shah, 2014). While other global databases, such as the tiers of government (Treisman, 2008) and the Varieties of Democracy dataset (V-Dem Institute, 2018), contain decentralization-related indicators for developing countries, the GCI was specifically designed to capture most closely the discussed concept of 'short distances' between national governments and local populations. We therefore consider the GCI most fit-for-purpose.

For the Condition 4 on *'governance of civil society'*, we use the Governance Environment Sub-index under the CIVICUS Civil Society Enabling Environment Index launched in 2013. Conceptualizing civil society as a space for collective action, the sub-index focuses on governance indicators most theoretically relevant to rights and freedoms which enable civic participation (Fioramonti and Kononykhina, 2015).

For the Condition 5 on *'access modality'*, we use Atlas.ti to extract information on the condition from the AF project documents. Projects with MIEs and RIEs are coded as indirect access, and projects with NIEs as direct access. Direct access is assigned the value of 1 and indirect access of 0. (See Table A2 in Appendix A for more information on all the data sources for the five conditions).

3.3.3. Fuzzy-set data calibration

For each case, we calibrate fuzzy-set scores on the outcome and the five conditions, thus transforming 'raw' data into fuzzy-set membership scores. The fsQCA software calibration tool is used for this procedure (Ragin and Davey, 2016). The calibration tool uses well-informed threshold values to automatically assign fuzzy-set scores to each measurement. The outcome and four conditions have each three threshold values: the full membership in the set (fuzzy-set score = 1), the non-membership in the set (fuzzy-set score = 0), and a crossover point above which a case is closer to full membership and below which a case is closer to non-membership. One condition, the access modality, is binary and we do not calibrate it as the data are already in a 0,1 format. Table 1 summarizes the thresholds used to calibrate the raw data into fuzzy-set scores. For the detailed distribution of raw and fuzzy-set scores of the 30 project cases, see Appendix A, Table A1. Furthermore, the rationale for choosing these specific calibration thresholds are detailed in Appendix A, Table A2.

3.4. Research limitations

Some limitations should be noted given the nature of the study. First, assessing the level of community-focused adaptation is challenging as the concept of community is contested (Kepe, 1999; Titz et al., 2018), and what constitutes community focus is subject to interpretations. While the rich CBA literature significantly shapes the current understanding of key characteristics of community adaptation initiatives, there is no common methodology to assess the level of

Table 1
Summary of data sources, measurements and calibration thresholds.

	Condition 1 Past climate-related losses	Condition 2 Projected future climate risks	Condition 3 Government Structure	Condition 4 Governance Environment for Civil Society	Condition 5 Access Modality to Adaptation Fund	Outcome Community focus in Adaptation Fund project
Data source	The Global Climate Risk Index (CRI)	The exposure sub-index of the Notre Dame Global Adaptation Initiative (ND-GAIN) Country Index	The Government Closeness Index (GCI)	The Governance Environment Sub-index under the CIVICUS Civil Society Enabling Environment Index	Coding of AF project documents	Coding of AF project documents
Measurement	Historical impacts of weather-related extreme events.	The degree by which a country's key systems, are biophysically exposed to future climate	The level of localization of government, which reflects the closeness to its people	Fundamental individual and structural capabilities that provide the minimum preconditions for social and political engagement.	Direct access vs indirect access to the AF	Community focus = 1) community-level financial investment + 2) community participation + 3) devolved decision-making
Range of values of raw data	Between 1-159 to 1-182 *	0.247- 0.722	0 – 36.843	0.17 - 0.96	0 or 1	3–9
Threshold for full membership	10	0.565	0.167	0.65	1	8
Crossover point	50.5	0.490	0.089	0.475	N/A	5.5
Threshold for non-membership	101	0.437	0.011	0.32	0	3

* The maximum value of the CRI rankings depends on the reporting year. This study uses the CRI rankings from the years 2013–2018 which cover more than 180 countries each year. However, the highest 20-year average rankings from the countries during these years vary between 159 and 182, due to multiple countries being assigned the same rankings in a given year.

'community focus' across projects and countries. Recognizing this complexity, we integrate both quantitative and qualitative perspectives to develop a more informed, and arguably reasonably nuanced, picture of each adaptation project's level of community focus. However, future studies could consider adding more aspects of assessment for a more comprehensive understanding of community-focused adaptation.

Second, the 'community focus' outcome score in this paper represents an overview of each project's community orientation at the design completion stage but not in its actual implementation. As these projects mature, future studies should assess if they also exhibit post-implementation characteristics of meaningful community-level adaptation such as accountability, transparency, sustainability, flexibility, ownership, capacity building, participatory monitoring and evaluation etc. (Faulkner et al., 2015; Fenton et al., 2015; Terpstra et al., 2013).

Third, limited diversity complicates the analysis of community-focused adaptation in this study. Limited diversity refers to when logically possible combinations of conditions are not covered by empirical evidence (Schneider and Wagemann, 2012, p.328). In this study, 15 of 32 different configurations of conditions are not assigned empirical cases, which impedes a full-fledged conclusion based on observations. Future research could aim to test the observed configurational evidence from this study with more cases.

Finally, the study is designed to focus on the country-level enabling conditions for internationally financed, community-focused adaptation projects. As a result, it does not capture the importance of regional and local contexts which could also shape the outcome. However, there are severe data limitations to assess regional and local conditions across developing countries. Future research could explore relevant regional and local conditions and potential data sources for them, as well as identify more project cases to provide additional insights on the scale and configurational logic tested in this study. Adding multiple projects for each country would also bring the opportunity to better assess the within-country variations of different community-focused projects.

4. Results

This section presents the analyses of necessary and sufficient conditions for the presence of the outcome (a stronger community focus in AF projects) and the absence of the outcome (a weaker community focus in AF projects). It must be noted that both analyses employ two parameters of fit. The first parameter is called 'consistency' and indicates the degree to which the subset relation is approximated. Values of consistency can range between 0 and 1, with higher values indicating a better subset relation. There are no clearly defined standards to set the benchmark for consistent subset relations (Schneider and Wagemann, 2010), but a consistency value of 0.80 is generally seen as the minimum accepted cut-off point for a reliable set analysis for sufficiency (Ragin, 2009). A consistency threshold of 0.9 is advised for necessity (Schneider and Wagemann, 2012, p.143).

The second parameter of fit is 'coverage' and indicates the relation in size of the overlap between the condition set and the outcome set. In the analysis of necessary conditions, the coverage shows the relevance and trivialness of a necessary condition (Schneider and Wagemann, 2012). Similarly, in the analysis of sufficient conditions, the coverage shows how much of the outcome is covered by the sufficient condition at hand (Schneider and Wagemann, 2012, p.325).

For simplicity, all measurements have been assigned a one-word coding, which is specified when results for the necessary and sufficient conditions are presented. The wording of each condition and the outcomes is outlined in Table 2.

4.1. Necessary conditions

The analysis of necessary conditions includes the presence and absence of all conditions for both the presence and absence of the outcome. Table 2 presents the findings of the necessity analysis. We find no necessary condition for the presence of the outcome. However, with a consistency score of 0.91, we find that *the absence of high exposure to future climate risks* is a necessary condition for the absence of the outcome. Although the consistency score of 0.91 is relatively high, it is slightly below the perfect consistency score of 1.00, so we approach this condition as 'quasi-necessary'. With a moderate coverage score of 0.52, we conclude that *the absence of high exposure to future climate risks* is a nontrivial necessary condition for a weaker community focus in AF projects. However, it does not explain the full variation in the weakness of community focus exhibited by the projects.

Nevertheless, our analysis suggests that, without a high degree of vulnerability to future climate harms, countries would not have acted to direct more AF project financing towards local communities. However, given that there is no necessary condition for the presence of the outcome, the opposite is not the case; a higher degree of vulnerability to future climate harms does not guarantee the presence of a stronger community focus in AF projects. This can be interpreted as when countries are highly exposed to future climate risks, whether or not they would design AF projects to have a stronger community focus is not explained by one necessary condition, but a configuration of sufficient conditions.

4.2. Sufficient conditions for stronger community focus in AF projects

The analysis of sufficiency is performed by outlining the logical combinations of all conditions and linking them to the presence or the absence of the outcome. The analysis produces three types of solution terms: conservative, parsimonious, and intermediate. Here, we follow the recommendation of Baumgartner and Thiem (2017) (p.24) and present the parsimonious solution, as it represents the superset of the intermediate and complex solutions and was found to better reflect analyses exposed to limited empirical diversity. Table 3 presents the results of the analysis of sufficient conditions of this study. The conservative solution, which does not use simplifying assumptions in logical minimization, and intermediate solution, whose logical minimization is informed by directional expectations from theories, are also presented in the Appendix B. The truth tables showing all logical combinations for the analysis of sufficient conditions are included in the Appendix C .

We find that the parsimonious solution contains three paths of configurations of sufficient conditions enabling AF projects with a stronger community focus (Table 3). The consistency score of the overall solution formula (encompassing the entire solution) is 0.805, meaning that the claim that these configurations are sufficient for the outcome to occur is supported by empirical evidence. The coverage score of 0.690 indicates that the solution formula explains roughly 69% of the outcome when it is present. Overall, cases may have membership in more than one configuration, as is the case of projects in Mali, Kenya, Rwanda, and Ethiopia because the memberships in configuration of sets may overlap.

We present the solutions in a configuration format, using the coding of conditions as presented in Table 2. Terms in capital letters mean the presence of the condition, while lower-case terms mean the absence of the condition. Furthermore, the sign " * " indicates the logical relation "AND" between the conditions. Configuration 1 contains a single condition which by itself is sufficient to explain the presence of the outcome. Configurations 2 and 3 contain the so-called INUS conditions, that is conditions which are themselves insufficient but form a necessary part of an unnecessary but sufficient configuration (Schneider and Wagemann, 2012). In other words, INUS conditions can be understood as relevant elements in the observed configuration in which the outcome is shaped (Cebotari and Vink, 2013).

Configuration 1: CLIMFUTURE

Configuration 1 shows that the presence of higher exposure to future climate risks is individually sufficient to explain the presence of a stronger community focus in AF projects in eight cases. The cases are from Niger, India, Mali, Uganda, Ethiopia, Rwanda, Kenya, and Sri

Table 2
Analysis of necessary conditions for stronger and weaker community-focus in AF projects.

Condition	Code	Stronger community-focus in AF projects (Presence of the outcome)		Weaker community-focus in AF projects (Absence of the outcome)	
		Consistency	Coverage	Consistency	Coverage
Past climate-related losses	CLIMPAST	0.39	0.71	0.46	0.58
	climpast	0.77	0.67	0.77	0.47
Projected future climate risks	CLIMFUTURE	0.42	0.87	0.29	0.42
	climfuture	0.72	0.59	0.91*	0.52
Government structure	GOVSTRUCTURE	0.69	0.60	0.73	0.44
	govstructure	0.36	0.65	0.35	0.44
Governance of civil society	GOVCIVIL	0.59	0.69	0.61	0.50
	govcivil	0.57	0.68	0.61	0.51
Access modality	MODALITY	0.47	0.64	0.38	0.36
	modality	0.53	0.55	0.62	0.45

Notes: Uppercase letters refer to the presence of a condition, and lowercase letters to the absence of a condition.
* consistency score ≥ 0.90.

Lanka. In these countries, AF projects are designed to have a stronger community focus regardless of the level of past climate-related losses, the decentralization characteristic of government structure, the governance of civil society, and the access modality to the AF.

*Configuration 2: GOVCIVIL * modality*

Configuration 2 shows that indirect-access AF projects are designed to have a stronger community focus in countries with a more conducive governance environment for civil society. The presence of conducive civil society governance and the indirect access modality work together as INUS conditions for the outcome to occur, regardless of the level of exposure to past and future climate risks and the prevailing level of government decentralization. This configuration applies to six cases, namely Belize, Ghana, Guatemala, Mali, Paraguay and Lebanon.

*Configuration 3: govcivil * MODALITY*

Configuration 3 is the flip side of the Configuration 2 and applies to five cases: Ethiopia, Jordan, Morocco, Rwanda, and Kenya. Despite the absence of conducive civil society governance, direct-access AF projects are designed to have a stronger community focus. Here, the weak civil society governance and the direct access modality appear together as INUS conditions that explain the outcome of a stronger community focus in AF projects, independently of the roles of past and future climate risks and the level of government decentralization.

4.3. Sufficient conditions for weaker community focus in AF projects

The analysis of sufficient conditions for the absence of the outcome uses the same five conditions employed in the previous analysis. The fuzzy-set analysis indicates that there are two paths in the parsimonious solution that are sufficient to explain a weaker community focus in AF projects (Table 3). The overall solution consistency is high (0.84), suggesting that its claim is empirically supported. At the same time, the overall coverage score of 0.38 means that the solution formula explains roughly 38% of the outcome of a weaker community focus in AF projects. This suggests that a large part of the negated outcome remains unexplained by the conditions in Configurations 4 and 5. Further research may unveil additional conditions relevant to explaining a weaker community focus in AF projects.

*Configuration 4: govcivil * GOVSTRUCTURE * CLIMPAST*

Configuration 4 shows that AF projects with a weaker community focus can be found in the context of recipient countries with weak civil society governance, despite these countries having decentralized governments and having experienced high losses from past climate-related extremes. This situation applies to projects in Honduras and Colombia and occurs regardless of the countries' exposure to projected future climate risks and the access modality to the AF.

Table 3
Fuzzy-set analysis of sufficient conditions for stronger and weaker community-focus in AF projects (parsimonious solutions).

		Stronger community-focus in AF projects			Weaker community-focus in AF projects	
Condition	Code	Configuration 1	Configuration 2	Configuration 3	Configuration 4	Configuration 5
Past climate-related losses	CLIMPAST				X	
	climpast					X
Projected future climate risks	CLIMFUTURE	X				
	climfuture					X
Government structure	GOVSTRUCTURE				X	
	govstructure					X
Governance of civil society	GOVCIVIL		X			
	govcivil			X	X	
Access modality	MODALITY			X		
	modality		X			X
Cases		Niger, India, Mali, Uganda, Ethiopia, Rwanda, Kenya, Sri Lanka	Belize, Ghana, Guatemala, Mali, Paraguay, Lebanon	Ethiopia, Jordan, Morocco, Rwanda, Kenya	Honduras, Colombia	Egypt, Mauritania
Consistency		0.872	0.788	0.861	0.869	0.809
Raw coverage		0.421	0.318	0.238	0.254	0.145
Unique coverage		0.134	0.172	0.097	0.233	0.123
Solution consistency			**0.805**			**0.844**
Solution coverage			**0.690**			**0.378**

Notes: Uppercase letters refer to the presence of a condition, and lowercase letters refer to the absence of a condition.

*Configuration 5: govstructure * climfuture * climpast * modality*

Configuration 5 shows that a configuration of four conditions–centralized government, low exposure to future climate risks, low past climate-related losses and the use of indirect access modality to access AF funding–explains a weaker community focus in AF projects in Egypt and Mauritania, regardless of the governance environment of civil society.

5. Discussion

We briefly discuss the QCA results, focusing on each of the five conditions and how they relate to community focus in AF projects as the outcome, before discussing the contributions of our work to the debates on international adaptation finance.

When comparing the two conditions representing recipient-country climate vulnerability (Conditions 1 and 2), we find that *the exposure to future harms* has a stronger explanatory value, as its absence is found to be a necessary condition for a weaker community focus in AF projects, while its presence is also sufficient by itself to explain a stronger community focus in AF projects in eight countries (Niger, India, Mali, Uganda, Ethiopia, Rwanda, Kenya, and Sri Lanka). On the other hand, the accumulated experience from *past climate-related losses* does not help explain any case of stronger community focus in AF projects, while its absence only forms part of the observed explanation for a weaker community focus in two AF projects, but for which the projected future climate risks condition also plays a contributing role.

We interpret these findings to support the theoretical expectation that national governments, especially when using international adaptation finance to protect local communities, have more incentives to plan for adaptation as anticipatory actions than as reaction to past climate extremes, which differs from the finding of Conevska et al. (2018). Our finding also expands Berrang-Ford et al. (2011) by providing new evidence that developing-country governments are also anticipatory adaptation actors, and offers counter-evidence to studies that found scientific uncertainties and long timeframes associated with climate projections to be a key barrier for anticipatory adaptation actions (Barnett, 2001; Ford et al., 2015). Three factors could offer explanations for our findings. First, both improved weather monitoring and downscaled climate projections have enabled climate vulnerability assessment at sub-national scales, thus allowing AF projects to identify climate hotspots and better target vulnerable groups in these regions. This is evident in the AF project in Sri Lanka, whereby district-level climate vulnerability analyses were used to design adaptation interventions to address increased rainfall variability in the Mahaweli Basin. Second, local communities increasingly perceive changing current climate hazards to be associated with future climate change, thus creating a sense of urgency for actions despite future climate uncertainties. This is evident in the AF project in India, whereby perceptions expressed by hill communities in Uttarakhand during stakeholder consultation have formed the basis for project activities. Third, there has been an increased adoption of the vulnerability-centric framing of adaptation (Dupuis and Biesbroek, 2013; Hall, 2017), which considers existing development deficits as drivers of social vulnerabilities to future climate change and highlights the need to address these drivers today as anticipatory adaptation. The influence of this framing is present in all eight AF project countries for which the high exposure to future climate risks is a sufficient condition for a stronger community focus.

We do not find the decentralization characteristic of government structure (Condition 3) to be an important condition for community focus in AF projects. While forming part of the sufficient conditions for four cases of AF projects with a weaker community focus, *government structure* was not part of any configuration of conditions that explains the 19 cases of AF projects with a stronger community focus. On the other hand, the AF projects in Honduras and Columbia exhibit a lower community focus despite the presence of more localized governments, which contradicts the theoretical expectation for the *government structure* condition. This high decentralization-low community focus anomaly could be potentially explained by the presence of barriers that prevent the decentralization promise for bottom-up adaptation from being realized. These barriers include limited connection and information flows between national and local government actors, unclear division of responsibilities in adaptation planning and financing (Brockhaus and Kambiré, 2009), limited technical capacities among local government agencies (Madzwamuse, 2011), limited integration of civil society in the decentralized processes (Brockhaus and Kambiré, 2009), and potential capture of decentralized decision-making by local elites (Bardhan, 2002; Persha and Andersson, 2014).

We find that the conducive governance environment of civil society (condition 4) is an important contextual condition for community focus in AF projects. This is evidenced by the presence of this condition in Configuration 2 and its absence in Configuration 3, which together explain a stronger community focus in 11 project cases, and also by its absence in Configuration 4 that explains a weaker community focus in two project cases. In Belize, Ghana, Guatemala, Mali, and Paraguay, our finding indicates that conducive civil society governance plays a key role in shaping indirect-access AF projects to have a stronger community focus. Arguably, the conducive governance environment has allowed civil society organizations in these countries to effectively communicate the expectations of targeted project communities to MIEs/RIEs during consultation processes, thus closing the knowledge gap on local realities which could have otherwise inhibited community-focused project design. However, despite the presence of both decentralized governments and high exposure to past climate-related losses, the presence of unconducive civil society governance still contributes to a lower community focus in AF projects in Honduras and Colombia. This is potentially because civil society organizations operating in this environment are unlikely to effectively mobilize and represent vulnerable local communities in AF project consultation processes. These findings support the theoretical expectation for the *GOVCIVIL/govcivil* condition (condition 3). However, we also find cases of a stronger community focus in AF projects in Ethiopia, Jordan, Morocco, Rwanda, and Kenya, despite the presence of weaker civil society governance. Since all of these cases are direct-access projects, the finding suggests that the role of the direct access modality should be investigated closely to understand the presence of a stronger community focus in these cases.

It should be noted that Lebanon is a deviant case in our analysis above due to the ambiguous membership (0.52) in Configuration 2 and also a very low membership score in the outcome (0.05). In this ambiguous case, the indirect- access project in Lebanon exhibits a low community focus (0.05), despite the country having a conductive governance environment for civil society (0.52). However, the borderline membership of 0.52 barely fulfills the status of having a conductive governance environment in Lebanon, and the influence of this condition appears to be outweighed by a weaker community focus in the project design. This contradicts the pattern seen in other cases under Configuration 2. This therefore suggests that it will be controversial to consider Lebanon as a typical case for either weak or strong community focus in subsequent process tracing analysis of causal mechanisms linked to configurations outlined in this study.

Finally, our finding confirms that the access modality (condition 5)

is another important contextual condition. We draw this conclusion because the condition helps explain the presence of a stronger community focus in 11 project cases and the absence of such outcome in two project cases. However, our result also suggests that the *MODALTY/modality* condition on its own is not sufficient for the presence or absence of the outcome, but it works configurationally with other conditions. For the presence of the outcome, the access modality condition works in conjunction the governance environment for *civil society* condition. On the one hand, the "*GOVCIVIL * modality*" configuration indicates that an enabled civil society could help compensate for the long distances between local communities and MIEs/RIEs, leading to indirect-access AF projects with a stronger community focus. On the other hand, the "*govcivil * MODALITY*" configuration suggests that the direct access modality helps shorten the vertical distances between AF project consultation processes and local civil society organizations in recipient countries, despite them being otherwise constrained by the overall weak civil society governance environment. In this sense, our finding lends support to the theoretical expectation that the direct access modality could "in certain national contexts, lead to greater civil society participation in the AF project cycle (Ballesteros et al., 2010, p.28)." For the absence of the outcome, the indirect access modality works in conjunction with the low levels of past climate-related losses (condition 1) and projected future climate risks (condition 2) and the presence of a centralized government structure to explain a weaker community focus in AF in two recipient countries. These findings also support the theoretical expectations discussed in Section 2.2.

Overall, our findings contribute to the adaptation literature in three ways. First, by looking at projects financed by the AF, we place these planned community adaptation initiatives in the context of global climate governance, in which mobilizing and transferring finance is an important mode of such governance (Hall and Persson, 2017). This differs from, but complements, much of the existing literature that discusses these initiatives as local actions shaped largely by within-community characteristics including risk perceptions, local knowledge systems and capacity of local institutions (Alam et al., 2017; Lebel, 2013; Sekine et al., 2009).

Second, we add new insights to the growing body of literature that discusses the limits of stand-alone community adaptation actions and emphasizes the importance of macro-level enabling factors (Adhikari and Taylor, 2012; Archer et al., 2014; McNamara and Buggy, 2017; Mimura et al., 2014; Regmi and Star, 2015; Spires et al., 2014). Our findings bring attention to the role of vulnerability to future climate risks, the governance of civil society and the access modality to international climate funds as three important enabling conditions for internationally-financed, community-focused adaptation.

Third, while adaptation research has until recently been dominated by in-depth, qualitative, single or small-N studies (Biesbroek et al., 2018a), this study develops a new and integrated model of assessing community focus in AF projects from the set-theoretic lenses of necessary and sufficient conditions. The methodological innovation of this study is twofold: (a) the fuzzy-set analysis of the community focus in AF projects employs a configurational logic, in which several conditions interrelate and often need to be understood in a conjunctural manner; and (b) to the best of our knowledge, this is the first study to point to a causal asymmetry in the study of community focus in adaptation projects, in that what explains the weaker outcome is not automatically the negation of the conditions, or configuration of conditions, that explains the stronger outcome. The causal asymmetry is often overlooked by studies, as it cannot be captured easily with mainstream data modelling techniques.

This study also makes two contributions to the climate finance literature. First, while previous studies highlighted the potential of the direct access modality in supporting community-level adaptation (Fenton et al., 2014), our findings demonstrate that indirect-access adaptation projects could equally focus on local vulnerable communities when working in conjunction with an enabled civil society. In addition, the outcome assessment framework developed for this paper (see Section 2.1) could form a basis for developing an operational methodology to track the delivery of global adaptation finance to the community level. The existing standardized tracking methodologies, such as the Rio-Markers used by bilateral donors (OECD, 2016) and the joint climate-finance tracking approach used by multilateral banks (IADB et al., 2017), are not designed to mark community-bounded financing. As a result, there is a major global knowledge gap on the actual amount of global adaptation finance allocations that have reached community-level beneficiaries. A new community-focused methodology is needed to close the gap and ensure tracking consistency as part of a transparency mechanism under the Paris Agreement (Lesnikowski et al., 2017).

6. Conclusion

Using the AF as the case study, this study assesses under which conditions internationally-financed adaptation projects are designed to focus on adaptation investment at the community level. We apply the fuzzy-set QCA methodology to analyze the contextual conditions for a stronger or weaker community focus in AF projects. We find that the absence of high exposure to projected future climate risks is a necessary condition for a weaker community focus in AF projects. We also find that AF projects with a stronger community focus are stimulated by the sole presence of higher exposure to projected future climate risks in a set of countries, and by the complementary roles of civil society and the access modality to the AF in others.

Our findings carry policy implications for global climate finance actors seeking to promote locally inclusive use of international adaptation finance. First, the findings suggest that there are divergent policy pathways to stimulate internationally-financed, community-focused projects in developing countries. While earlier literature highlights the promise of the direct access modality in promoting community-focused adaptation (Fenton et al., 2014), this study shows that access modality by itself does not automatically deliver the community-focused outcome in all country contexts, and works in conjunction with the country context to deliver the outcome only in some countries. The study also shows that community-focused adaptation could be promoted under both direct access and indirect access modalities.

Second, the study shows that country-level enabling conditions matter for shaping the use of international adaptation finance at the project level to be community-focused. While the analysis in this study focuses on the project design, the country-level and project-level (access modality) conditions that explain the variation in project design could continue to influence project implementation. For example, in countries where civil society and access modality have complemented each other in driving the community-focused design of AF projects, such collaboration could continue to be important in ensuring that the strong community focus is not diluted throughout the project cycle. However, understanding this collaboration in the context of project implementation, and which policy actions are needed to support it, will require further research.

Finally, when the limited capacity of civil society plays a role in shaping a weak community focus in internationally-financed adaptation projects, particular policy attention should be given to strengthening a

conducive environment for civil society to promote bottom-up adaptation approaches. This could include involving civil society actors such as CBOs in local climate awareness campaigns and building their capacity in community engagement and climate finance readiness.

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Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper. There are no funding sources involved in this research.

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Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.gloenvcha.2020.102035.

Appendix A. Data, Measurements and Calibrations

Table A1/ and Table A2.

Table A1
Summary of raw and fsQCA scores for the 30 cases.

Cases	Raw scores						fsQCA scores					
	climpast	climfuture	govstructure	govcivil	modality	community	climpastfz	climfuturefz	govstructurefz	govcivilfz	modalityfz	communityfz
Lebanon	121	0.332	0.198	0.48	0	3	0.01	0	0.99	0.52	0	0.05
Argentina	93	0.47	1.225	0.63	1	3	0.07	0.24	1	0.93	1	0.05
Peru	64	0.457	1.444	0.59	1	3	0.31	0.13	1	0.88	1	0.05
Cambodia	28	0.394	0.026	0.34	0	4	0.84	0	0.08	0.07	0	0.14
Jamaica	51	0.448	0.008	0.65	1	4	0.49	0.08	0.04	0.95	1	0.14
Uzbekistan	132	0.319	2.169	0.19	0	4	0.01	0	1	0	0	0.14
Honduras	1	0.445	0.355	0.45	0	4	0.98	0.07	1	0.38	0	0.14
Colombia	47	0.501	4.853	0.45	0	5	0.56	0.61	1	0.38	0	0.35
Egypt	136	0.36	0.042	0.34	0	5	0.01	0	0.14	0.07	0	0.35
Mauritania	74	0.364	0.007	0.45	0	5	0.2	0	0.04	0.38	0	0.35
Sri Lanka	70	0.499	0.171	0.38	0	6	0.24	0.59	0.96	0.14	0	0.65
Guatemala	10	0.479	0.206	0.58	0	6	0.95	0.35	0.99	0.86	0	0.65
Mali	122	0.525	0.015	0.58	0	6	0.01	0.8	0.05	0.86	0	0.65
Morocco	84	0.338	0.152	0.37	1	6	0.12	0	0.92	0.12	1	0.65
Chile	108	0.384	1.895	0.83	1	6	0.03	0	1	1	1	0.65
Uganda	95	0.52	1.461	0.39	0	6	0.07	0.77	1	0.16	0	0.65
Ethiopia	65	0.511	2.095	0.25	1	6	0.3	0.7	1	0.01	1	0.65
Panama	95	0.446	0.024	0.63	1	6	0.07	0.08	0.08	0.93	1	0.65
Paraguay	46	0.423	0.707	0.57	0	6	0.58	0.02	1	0.84	0	0.65
Belize	21	0.472	0.238	0.78	0	7	0.9	0.27	1	0.99	0	0.86
South Africa	74	0.431	1.556	0.64	1	7	0.2	0.03	1	0.94	1	0.86
Jordan	134	0.289	0.039	0.37	1	7	0.01	0	0.13	0.12	1	0.86
India	16	0.572	0.776	0.54	1	7	0.93	0.96	1	0.75	1	0.86
Niger	80	0.633	0.018	0.44	0	7	0.15	1	0.06	0.34	0	0.86
Rwanda	117	0.509	0.026	0.41	1	8	0.02	0.68	0.08	0.22	1	0.95
Kenya	70	0.508	0.105	0.42	1	8	0.24	0.67	0.65	0.26	1	0.95
Nepal	17	0.477	0.047	0.39	0	8	0.92	0.32	0.17	0.16	0	0.95
Lao	87	0.394	0.34	0.34	0	8	0.1	0	1	0.07	0	0.95
Costa Rica	60	0.451	0.148	0.81	1	9	0.36	0.1	0.91	1	1	0.99
Ghana	131	0.444	0.173	0.61	0	9	0.01	0.07	0.96	0.91	0	0.99

Table A2
Data Sources, Measurements, and fsQCA Calibrations of the Outcome and Conditions.

	Condition 1 Past climate-related losses	Condition 2 Projected future climate risks	Condition 3 Government Structure	Condition 4: Governance Environment for Civil Society	Condition 5 Access Modality to Adaptation Fund	Outcome Community focus in Adaptation Fund projects
Code	Climpast	Climfuture	Govstructure	Govcivil	Modality	Community
Data source	The Global Climate Risk Index (CRI)	The exposure sub-index of the Notre Dame Global Adaptation Initiative (ND-GAIN) Country Index	The Government Closeness Index (GCI)	The Governance Environment Sub-index under the CIVICUS Civil Society Enabling Environment Index	AF project documents	AF project documents
Data developer	GermanWatch	Notre Dame Global Adaptation Initiative, University of Notre Dame	Ivanyna and Shah (2014)	The World Alliance for Citizen Participation (CIVICUS)	Analysis of AF project documents by authors, using Atlas.ti	Analysis of AF project documents by authors, using Atlas.ti and excel-based calculations
Measurement	The CRI rankings reflect the relative extent countries have been affected by historical impacts of weather-related extreme events. The impacts are measured in four dimensions of direct impacts: death tolls, death per 100,000 inhabitants, absolute losses (in million USD in the purchasing power parity term), and relative losses per unit GDP (%), factoring in human development index (Eckstein et al., 2017). For each country, CRI data are available as a ranking for a given year (based on extreme events occurring in the previous calendar year) and as an average ranking based on 20 years of data.	The exposure sub-index measures the degree by which a country's key systems, including food, water, health, ecosystems, human habitat, and infrastructure, are biophysically exposed to future climate hazards and therefore represents country-level long-term vulnerability to climate change (Chen et al., 2015) The exposure sub-index comprises the following sub-indicators: projected change of agricultural cereal; projected population change yield projected change of annual run-off, projected change of annual groundwater recharge, projected change of deaths from climate change induced diseases, projected change in vector-borne diseases due to changes in length of transmission season (LTS), Projected change of biome distribution; projected change of marine biodiversity; projected change of warm periods; projected change of flood hazard; projected change of hydropower generation capacity, projected change of sea level rise impacts (Chen et al., 2015). As the overall level of exposure is projected for the coming decades, each country is assigned one time-invariant exposure score.	The GCI was developed through a two-step approach. First, the level of government decentralization was measured based on indicators of political, fiscal and administrative autonomy enjoyed by local governments, resulting in a global composite decentralization index. Second, local governments which cover smaller area and serve populations with more homogenous preferences are considered closer to its citizens. Therefore, the global decentralization index was adjusted for country heterogeneity characteristics (e.g. local government unit area, ethno-linguistic composition, age, income, urbanization composition etc.) to arrive at the GCI (Ivanyna and Shah, 2014)	The Governance Environment Sub-index was theoretically designed to measure "fundamental individual and structural capabilities that provide the minimum preconditions for social and political engagement. These include the rule of law, policy dialogue, personal and associational rights and the regulatory frameworks for civic organizations (Fioramonti and Kononykhina, 2015, p.477)." The sub-index draws from 32 global data sources, including those widely used in governance research such as the Worldwide Governance Indicators, the Democracy Index published by the Economist Intelligence Unit, Freedom House data and reports, Transparency International's corruption perception data etc.	The access modality condition indicates binary categorical difference between direct-access AF projects which are implemented by national implementing entities (NIEs), and indirect-access projects, which are implemented by multilateral implementing entities (MIEs) or regional implementing entities (RIEs)	The level of community focus in the design of each AF project is measured by (a) the *financial investment at the community level* score + (b) the *community participation* score + (c) the *devolved decision-making* score (a) Financial score = Project budget allocated to community-level adaptation activities / [overall project budget-project administration fees] (%) (b) Participation score = (Type of public participation by community stakeholders during project design) + (Number of roles played by community stakeholders throughout project cycle) + (Number of dimensions of climate vulnerability of project beneficiaries targeted) + (Number of beneficiary sub-categories) (c) Devolved decision-making score = (Number of local/community-based organizations (CBOs) executing project) + (Number of local/CBOs serving as project partners) + (use of local decision-making mechanism on project funding and adaptation choices) For each of the three score categories, top one-third of projects = 'high' (score = 3), middle one-third = 'medium' (score = 2), and bottom one-third = 'low' (score =1)
Range of values in the database	1–159 to 1–182 (depending on the reporting year)	0.247- 0.722	0 – 36.843	0.17 - 0.96	0 or 1	3–9
Full membership (fsQCA score =1)	10	0.565	0.167	0.65	1	8
Crossover point	50.5	0.490	0.089	0.475	N/A	5.5
Non-membership (fsQCA score = 0)	101	0.437	0.011	0.32	0	3

(*continued on next page*)

Table A2 (*continued*)

	Condition 1 Past climate-related losses	Condition 2 Projected future climate risks	Condition 3 Government Structure	Condition 4: Governance Environment for Civil Society	Condition 5 Access Modality to Adaptation Fund	Outcome Community focus in Adaptation Fund projects
Rationale for fsQCA calibrations	CRI Reports classify countries into 5 groups based on rankings. Group 1 = most affected by historical impacts of weather-related extreme events (rankings 1–10 from top); group 2 (rankings 11–20 from top); group 3 (rankings 21–50 from top); group 4 (rankings 51–100 from top); and group 5 (least impacted by historical weather-related extreme events) (101 or more from top). We use the ranking 10 (or less) to represent the full membership of countries exposed to past climate risks, and the ranking 101 (or more) to represent the non-membership. The score 50.5, which is the boundary between the 3th and 4th groups, is used as a crossover point between countries exposed vs. non-exposed to past climate risks.	We adopt the same calibration logic that for the *climapast* condition to this condition: i.e. top 10 countries in the global distribution are considered representing full membership of countries exposed to future climate risks, while the bottom 100th and beyond represent non-membership. However, as the CRI rankings (data source for *climapast*) and the ND-GAIN exposure sub-index scores (data source for *climfuture*) move in opposite directions, we re-rank the ND-GAIN exposure sub-index from the bottom using the CRI five-group system, whereby Group 1 = most exposed to climate risks (rankings 1–10 from bottom); group 2 (rankings 11–20 from bottom); group 3 (rankings 21–50 from bottom); group 4 (rankings 51–100 from bottom); and group 5= least exposed to climate risks (101 or more from bottom). After the re-ranking, we use bottom-10 countries in the ND-GAIN exposure sub-index, which correspond to countries with scores 0.565 (or more), to represent full membership in the group of countries exposed to future climate risks, while countries which are ranked 101th and above from the bottom, which corresponds to the scores of 0.437 (or less), represent non-membership. Similar to *climapast*, the boundary between the 3th and 4th groups, with the score at 0.490, is used as the crossover between exposed and non-exposed for *climfuture*.	The GCI groups countries into four score groups: Quartile 1 (government least close to people) corresponds to GCI of 0.011 or less; Quartile 2 = GCI of 0.012 - 0.166; Quartile 3 = GCI of 0.167–2.112; and Quartile 4 (government closest to people) corresponds to GCI of 2.113 or more. We use the GCI of 0.167 or more (Quartile 3 or above) to represent the full membership of countries with most government closeness to people. This is because Quartile 4 is dominated by developed countries, while a large number of decentralized developing countries are represented Quartile 3. We therefore interpret that Quartile 3 is a better benchmark for government localization level in developing countries. The lower quartile (Quartile 1), with the GCI of 0.011 or less, is used to represent non-membership. The crossover between governments close and not close to people is placed at the GCI score of 0.089 or the mid-point between 0.167 and 0.011.	The Civicus Governance Environment Sub-index has 5 score categories: highest (0.81–0.96), high (0.65–0.8), medium (0.48–0.64), low (0.33–0.47), and lowest (0.17–0.32). We use the high score cut-off point (0.65 and above) to represent fully conducive governance environment, and the lowest score range cut-off (0.32) to represent fully non-conductive governance environment. The score 0.48 (boundary between low and medium) is used as a crossover point i.e. the boundary between conducive vs non-conductive governance environment.	This is a binary condition. Direct access modality = 1 and Indirect access Modality = 0	The outcome score is calculated from 3 sub-scores: 1. financial score (high =3, medium =2, low =1); 2. participation score (high =3, medium =2, low =1); and 3. devolution score (high =3, medium =2, low =1). We use 8 to represent fully community-focused projects, as it means that a project needs to score high in at least 2 sub-scores and medium in 1 sub-score. We use 3 to represent fully non-community-focused projects, as it means that a project scored low in all three sub-scores. 5.5 is used as a cross-over point, indicating a mid-point between 8 and 3.

Appendix B. Complex, parsimonious and intermediate solutions

1) The presence of outcome (Stronger Community Focus)

Model: communityfz = f(climpastfz, climfuturefz, govstructurefz, govcivilfz, modalityfz)
Algorithm: Quine-McCluskey
--- COMPLEX SOLUTION ---
frequency cutoff: 1
consistency cutoff: 0.837662

	raw coverage	unique coverage	consistency
~climpastfz*~govcivilfz*modalityfz	0.227812	0.195026	0.911765
~climpastfz*climfuturefz*~govstructurefz*~modalityfz	0.0944036	0.0785755	0.917582
climfuturefz*govstructurefz*~govcivilfz*~modalityfz	0.123233	0.0537028	0.851562
~climfuturefz*govstructurefz*govcivilfz*~modalityfz	0.239683	0.173544	0.820116
climpastfz*climfuturefz*govstructurefz*govcivilfz*modalityfz	0.0768796	0.0440928	0.931507

solution coverage: 0.647258
solution consistency: 0.862199
Cases with greater than 0.5 membership in term ~climpastfz*~govcivilfz*modalityfz: Morocco (0.88,0.65), Jordan (0.88,0.86), Rwanda (0.78,0.95), Kenya (0.74,0.95), Ethiopia (0.7,0.65)
Cases with greater than 0.5 membership in term ~climpastfz*climfuturefz*~govstructurefz*~modalityfz: Niger (0.85,0.86), Mali (0.8,0.65)
Cases with greater than 0.5 membership in term climfuturefz*govstructurefz*~govcivilfz*~modalityfz: Uganda (0.77,0.65), Colombia (0.61,0.35), Sri Lanka (0.59,0.65)
Cases with greater than 0.5 membership in term ~climfuturefz*govstructurefz*govcivilfz*~modalityfz: Ghana (0.91,0.99), Paraguay (0.84,0.65), Belize (0.73,0.86), Guatemala (0.65,0.65), Lebanon (0.52,0.05)
Cases with greater than 0.5 membership in term climpastfz*climfuturefz*govstructurefz*govcivilfz*modalityfz: India (0.75,0.86)
--- PARSIMONIOUS SOLUTION ---
frequency cutoff: 1
consistency cutoff: 0.837662

	raw coverage	unique coverage	consistency
climfuturefz	0.421142	0.133974	0.872365
govcivilfz*~modalityfz	0.317694	0.171848	0.788219
~govcivilfz*modalityfz	0.237988	0.0966647	0.860941

solution coverage: 0.689655
solution consistency: 0.804749
Cases with greater than 0.5 membership in term climfuturefz: Niger (1,0.86), India (0.96,0.86), Mali (0.8,0.65), Uganda (0.77,0.65), Ethiopia (0.7,0.65), Rwanda (0.68,0.95), Kenya (0.67,0.95), Colombia (0.61,0.35), Sri Lanka (0.59,0.65)
Cases with greater than 0.5 membership in term govcivilfz*~modalityfz: Belize (0.99,0.86), Ghana (0.91,0.99), Guatemala (0.86,0.65), Mali (0.86,0.65), Paraguay (0.84,0.65), Lebanon (0.52,0.05)
Cases with greater than 0.5 membership in term ~govcivilfz*modalityfz: Ethiopia (0.99,0.65), Morocco (0.88,0.65), Jordan (0.88,0.86), Rwanda (0.78,0.95), Kenya (0.74,0.95)
--- INTERMEDIATE SOLUTION ---
frequency cutoff: 1
consistency cutoff: 0.837662
Assumptions:
climpastfz (present)
climfuturefz (present)
govstructurefz (present)
govcivilfz (present)
modalityfz (present)

	raw coverage	unique coverage	consistency
climfuturefz	0.421142	0.18372	0.872365
~govcivilfz*modalityfz	0.237988	0.0966647	0.860941
govstructurefz*govcivilfz*~modalityfz	0.250424	0.154324	0.777193

solution coverage: 0.672131
solution consistency: 0.805556
Cases with greater than 0.5 membership in term climfuturefz: Niger (1,0.86), India (0.96,0.86), Mali (0.8,0.65), Uganda (0.77,0.65), Ethiopia (0.7,0.65), Rwanda (0.68,0.95), Kenya (0.67,0.95), Colombia (0.61,0.35), SriLanka (0.59,0.65)
Cases with greater than 0.5 membership in term ~govcivilfz*modalityfz: Ethiopia (0.99,0.65), Morocco (0.88,0.65), Jordan (0.88,0.86), Rwanda (0.78,0.95), Kenya (0.74,0.95)
Cases with greater than 0.5 membership in term govstructurefz*govcivilfz*~modalityfz: Belize (0.99,0.86), Ghana (0.91,0.99), Guatemala (0.86,0.65), Paraguay (0.84,0.65), Lebanon (0.52,0.05)

2) The absence of outcome (Weaker Community Focus)

Model: ~communityfz = f(climpastfz, climfuturefz, govstructurefz, govcivilfz, modalityfz)
Algorithm: Quine-McCluskey
--- COMPLEX SOLUTION ---
frequency cutoff: 1
consistency cutoff: 0.862245

	raw coverage	unique coverage	consistency
climpastfz*govstructurefz*~govcivilfz*~modalityfz	0.17303	0.151909	0.926087
~climpastfz*~climfuturefz*~govstructurefz*~govcivilfz*~modalityfz	0.137287	0.116166	0.862245

solution coverage: 0.289196
solution consistency: 0.896725
Cases with greater than 0.5 membership in term climpastfz*govstructurefz*~govcivilfz*~modalityfz: Honduras (0.62,0.86), Colombia (0.56,0.65)
Cases with greater than 0.5 membership in term ~climpastfz*~climfuturefz*~govstructurefz*~govcivilfz*~modalityfz: Egypt (0.86,0.65), Mauritania (0.62,0.65)
--- PARSIMONIOUS SOLUTION ---
frequency cutoff: 1
consistency cutoff: 0.862245

	raw coverage	unique coverage	consistency
climpastfz*govstructurefz*~govcivilfz	0.254265	0.233144	0.869444
~climpastfz*~climfuturefz*~govstructurefz*~modalityfz	0.144598	0.123477	0.809091

solution coverage: 0.377742
solution consistency: 0.84392
Cases with greater than 0.5 membership in term climpastfz*govstructurefz*~govcivilfz: Honduras (0.62,0.86), Colombia (0.56,0.65)
Cases with greater than 0.5 membership in term ~climpastfz*~climfuturefz*~govstructurefz*~modalityfz: Egypt (0.86,0.65), Mauritania (0.8,0.65)
--- INTERMEDIATE SOLUTION ---
frequency cutoff: 1
consistency cutoff: 0.862245
Assumptions:
~climpastfz (absent)
~climfuturefz (absent)
~govstructurefz (absent)
~govcivilfz (absent)
~modalityfz (absent)

	raw coverage	unique coverage	consistency
climpastfz*govstructurefz*~govcivilfz*~modalityfz	0.17303	0.151909	0.926087
~climpastfz*~climfuturefz*~govstructurefz*~govcivilfz*~modalityfz	0.137287	0.116166	0.862245

solution coverage: 0.289196
solution consistency: 0.896725
Cases with greater than 0.5 membership in term climpastfz*govstructurefz*~govcivilfz*~modalityfz: Honduras (0.62,0.86), Colombia (0.56,0.65)
Cases with greater than 0.5 membership in term ~climpastfz*~climfuturefz*~govstructurefz*~govcivilfz*~modalityfz: Egypt (0.86,0.65), Mauritania (0.62,0.65)

Appendix C. Truth Tables

Colombia is the case that shows simultaneous subset relations: the solution term associated with Colombia is identified as sufficient both for the presence of the outcome (Table C1) and its absence (Table C2). To resolve this paradox, we follow the following the procedure detailed in (Schneider and Wagemann, 2012, p.243–244). We multiply the raw consistency score with the Proportional Reduction in Inconsistency (PRI) score to get the PRODUCT of the solution term associated with Colombia. For the **presence** of outcome (stronger community focus), the PRODUCT of the solution term associated with Colombia is 0.3 (0.85*0.36). For the **absence** of outcome (weaker community focus), the PRODUCT of the solution term associated with Colombia is 0.58 (0.91 *0.64).

According to Schneider & Wagemann (2012), only the one with a high PRODUCT value can be interpreted as sufficient for the outcome of interest. Based on the two PRODUCT numbers for Colombia, we therefore consider the solution term sufficient for the absence of the outcome, and not its presence.

Table C1
Truth table for the presence of outcome (Stronger community focus).

govcivilfz	govstructurefz	climfuturefz	climpastfz	modality	number	communityfz	cases	Raw consistency	PRI consistency	SYM consistency
0	0	1	0	0	1	1	Niger	1	1	1
0	0	1	0	1	1	1	Rwanda	1	1	1
0	0	0	0	1	1	1	Jordan	0.994186	0.992188	1
1	1	1	1	1	1	1	India	0.931507	0.89899	0.89899
0	1	1	0	1	2	1	Kenya, Ethiopia	0.923497	0.869159	0.911765
1	1	0	1	0	3	1	Guatemala, Belize, Paraguay	0.918429	0.822368	0.822368
0	1	1	0	0	2	1	Sri Lanka, Uganda	0.902778	0.75	0.875
1	0	1	0	0	1	1	Mali	0.885496	0.788732	1
0	1	0	0	1	1	1	Morocco	0.849057	0.655914	0.871429
0	1	1	1	0	1	1	Colombia	0.845588	0.363636	0.363636
1	1	0	0	0	2	1	Lebanon, Ghana	0.837662	0.671053	0.671053
0	1	0	1	0	1	0	Honduras	0.748792	0.246377	0.246377
1	0	0	0	1	2	0	Jamaica, Panama	0.709091	0.542857	0.672566
0	1	0	0	0	2	0	Uzbekistan, Lao	0.679612	0.435898	0.461538
1	1	0	0	1	5	0	Argentina, Costa Rica, South Africa, Chile, Peru	0.637744	0.522857	0.575472
0	0	0	1	0	2	0	Cambodia, Nepal	0.61326	0.473684	0.473684
0	0	0	0	0	2	0	Egypt, Mauritania	0.591837	0.0697677	0.092308

Table C2
Truth table for the absence of outcome (Weaker community focus).

govcivilfz	govstructurefz	climfuturefz	climpastfz	modality	number	~communityfz	cases	Raw consistency	PRI Consistency	SYM Consistency
0	1	0	1	0	1	1	Honduras	0.917874	0.753623	0.753623
0	1	1	1	0	1	1	Colombia	0.911765	0.636364	0.636363
0	0	0	0	0	2	1	Egypt, Mauritania	0.862245	0.686047	0.907692
0	1	0	0	0	2	0	Uzbekistan, Lao	0.720874	0.508547	0.538462
1	1	0	0	0	2	0	Lebanon, Ghana	0.668831	0.328947	0.328947
0	1	1	0	0	2	0	Sri Lanka Uganda	0.652778	0.107143	0.125
0	0	0	1	0	2	0	Cambodia, Nepal	0.651934	0.526316	0.526316
1	1	0	1	0	3	0	Guatemala, Belize, Paraguay	0.622357	0.177632	0.177632
0	1	0	0	1	1	0	Morocco	0.603774	0.096774	0.128571
1	1	0	0	1	5	0	Argentina, Costa Rica, South Africa, Chile, Peru	0.533623	0.385714	0.424528
1	0	0	0	1	2	0	Jamaica, Panama	0.531818	0.264286	0.327434
0	1	1	0	1	2	0	Kenya, Ethiopia	0.464481	0.0841122	0.0882353
1	0	1	0	0	1	0	Mali	0.458015	0	0
0	0	1	0	0	1	0	Niger	0.402062	0	0
1	1	1	1	1	1	0	India	0.390411	0.10101	0.10101
0	0	0	0	1	1	0	Jordan	0.255814	0	0
0	0	1	0	1	1	0	Rwanda	0.191304	0	0

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