POWER CONSIDERATIONS AS INVISIBLE FILTERS OF LOCAL INVOLVEMENT IN PARTICIPATORY CLIMATE ADAPTATION: THE CASE OF GHANA'S EFFUTU MUNICIPALITY

By

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DISSERTATION ABSTRACT

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The rising incidence and severity of environmental disasters associated with climate change and the acknowledged failure of adaptation projects to address the priority needs of marginalized and most vulnerable social groups in less resilient communities have necessitated calls for the inclusion of local people and their experiences in climate adaptation initiatives., this dissertation examines how inequalities in external and local actors' power considerations and expressions shape the actors' participation and roles in climate adaptation decision making in rural communities. It also explores how existing sociocultural systems and power structures influence the involvement of rural women and the use of local people's ecological knowledge in climate adaptation project planning and the constraints therein.

This dissertation is designed as a three-part case study, using a mixed methods approach. Data was collected primarily through interviews with adaptation actors, including officials of local government agencies and leaders of fishers' and farmers' groups in the Effutu Municipality of Ghana in West Africa. Additional data were obtained through field observation, document analysis, and surveys with fishers' and farmers' group members.

The findings partly support the view in the extant literature that dominant actors dominate local actors, and local elites dominate other local actors in participatory climate

adaptation and other development initiatives. The findings also indicate that local women participate in climate adaptation projects, but multiple interlinked sociocultural and structural challenges constrain women's involvement. The analysis also shows that local and external actors' differential power and perceptions about local ecological knowledge limit its use in climate adaptation.

Contrary to the widely-held unidirectional, top-down view of power flow in participatory climate adaptation processes, the analysis uncovers a multidirectional power flow in the interactions among local and external actors. Local people (including politically and socially marginalized groups like women) also possess and express power by leveraging their agency through diverse strategies to regulate external domination and promote their priorities during adaptation planning and implementation. Theoretical and methodological contributions to the analysis of participatory processes and social inclusion are discussed. The practical implications for inclusive participatory adaptation planning, policymaking, and communication for development and social change are also discussed.

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CHAPTER I

INTRODUCTION AND DESCRIPTION

Climate change issues have received considerable attention, yet the impacts persist. Scientists continue to provide worrisome evidence on the increasing emission of greenhouse gasses into the environment (Cook et al., 2016; van der Linden et al., 2015). Ninety-seven percent of climate scientists believe climate change is occurring, and it is driven by human activities, mostly the burning of fossil fuel (Cook et al., 2016), indicating a scientific consensus on the reality of climate change (Cook et al., 2016; van der Linden et al., 2015). Consequently, the world is facing widespread droughts, resulting in a shortage of water for domestic, industrial, and agricultural purposes, thus reducing crop yield and food supply, especially in rain-fed agricultural communities (Alston, 2018; IPCC, 2018; Sultana, 2014). Other effects include frequent and large-scale wildfires, rising sea levels, severe storms, frequent floods, heat waves, higher terrestrial and aquatic temperatures, and other erratic weather and environmental conditions (see Alston, 2018; Janetos, 2020; Sultana, 2014).

Experts agree that people must proactively adopt measures that reduce the human contribution to global warming (i.e., climate change mitigation) while adapting to the effects of climate change (IPCC, 2018; Sen Roy, 2018). Climate change mitigation refers to responses to climate change "that seek to reduce the risk of future change in the physical climate system by reducing the emissions of greenhouse gases," and adaptation involves "responses that seek to adapt to adverse impacts that are already occurring or that prospectively reduce the risk of future impacts" (Janetos, 2020, p. 171). Per The United Nations Framework Convention on Climate Change,

> "Adaptation refers to adjustments in ecological, social, or economic systems in response to actual or expected climatic stimuli and their effects or impacts. It refers to changes in processes, practices, and structures to moderate potential damages or to benefit from opportunities associated with climate change" (UNFCCC, n.d.).

Hence, climate change adaptation planning is the process of adjusting to climate change impacts by taking actions to reduce the harmful effects of climate change and position oneself to take advantage of new opportunities (Fischer, 2018; Janetos, 2020).

Adaptation strategies could be in the form of constructing flood defenses, adopting drought-resistant or early maturing crop varieties, moving to highlands, creating large and/or deep drainage systems, revising government policies, and creating additional incomes sources, among others, all of which should be guided by the best available science and local contexts of affected communities (Fischer, 2018; Janetos, 2020; UNFCCC, n.d.). Due to the complex and evolving nature of climate change, there is no silver bullet climate adaptation strategy that works in all contexts. Adaptation solutions can assume several forms and features based on the unique setting of a community, country, or region (UNFCCC, n.d.). Adaptation projects "that are informed by indigenous knowledge and local knowledge can accelerate the wide-scale behaviour changes consistent with adapting to and limiting global warming…" (IPCC, 2018, p. 24). Integrating local ecological knowledge in project design helps to ensure the development of efficient, cost-effective, and sustainable adaptation (Givecheh Kometa, 2019).

Generally, efforts to improve the success of adaptation projects have not been adequately effective in changing behavior and actions due to limited knowledge and concern about climate change among the public and policymakers despite the abundant scientific evidence (Davidson, 2016; Gifford, 2011; Weber, 2010). Like other development interventions, climate change adaptation projects require the support of stakeholders, including local beneficiaries, to succeed

(Ingram, 2013). Empirical evidence and a systematic literature review indicate multiple barriers to implementing climate adaptation projects in rural Ghana (Antwi-Agyei et al., 2015). Antwi-Agyei et al. concluded that a combination of effective communication of climate information and an appreciation of the local contexts where adaptations occur is required to improve the lives of rural people. Marginalized rural population groups are often disproportionately affected by climate change (Nyahunda et al., 2021). Arora-Johnson (2011) and Nyahunda et al. (2021) have observed that poor and geographically distant vulnerable women are the most excluded from climate decisions and that more attention must be given to gender and power inequalities in environmental decisions.

For many years, the United Nations' Intergovernmental Panel on Climate Change (IPCC) and many studies have projected the value of leveraging the capacity of local actors[1] and their local ecological knowledge to improve climate change adaptation projects as participatory initiatives (Buggy & McNamara, 2016; Dumaru, 2010; Givecheh Kometa, 2019; IPCC, 2018; McNamara & Westoby, 2011). However, it is important to recognize that climate adaptation actors operate in a socio-ecological system and that adaptation processes are multilevel in nature, involving cross-level interactions among actors with diverse interests in its governance (see e.g.,

[1] Local actors, as used in this study, refers to individuals (farmers and fishers) involved in their personal capacities or as leaders of community-based local groups.

External actors in this study include all governmental and nongovernmental officials involved in planning and executing climate change adaptation initiatives in the Effutu Municipality. Although some of these officials may be natives of the municipality, external actor, as used in this study, refers to *persons involved in climate adaptation initiatives in their official capacities*. One local government official who participated in the study was a native of the municipality, but they participated in the study in their official capacity like the other local government officials.

It must be noted that because Ghana is unitary state with decentralized structures, the officials of local government agencies (apart from unit committee and assembly members) are mostly not elected or appointed by the local people. The officials may not be natives of the local area where they work. The Ministry of Local Government and Rural Development and its decentralized metropolitan/municipal/district assemblies appoint the local government officials, sometimes at the national or regional levels, and assign them to work in the local areas. Other central government ministries and departments also employ and deploy officials to their respective regional and municipal-level departments, which form part of the local government structure.

Bisaro et al., 2010; Chu, 2018). Climate adaptation involves various technical, institutional, legal, educational, and behavioral actions, usually incorporated into sectoral initiatives like water management planning, agricultural policy, and risk reduction strategies (Munaretto et al., 2014). Paradoxically, most climate action policies are formulated at the global or national levels or, at best, at the municipal level, but climate change impacts are felt at the local level (Chu, 2018; Takao, 2012; Vedeld et al., 2016).

Adaptation actors may include local community participants, environmental experts, local or municipal government officials, and national government officials, as well as officials of environmental NGOs and donor agencies. The multilevel view recognizes that climate change adaptation cannot be effectively addressed at any geographic scale or by any actor category alone (Vedeld et al., 2016). The multilevel nature of climate change adaptation often implies that the process involves polycentric interests that can lead to uncertainties among competing interests (Huitema et al., 2009; Vedeld et al., 2016). Therefore, effective coordination is needed for the management of the activities and interests of stakeholders at all levels of climate change adaptation projects (Vedeld et al., 2016). Vedeld et al. (2016) also recommend that the place-based nature of climate adaptation should be recognized and reflected in such initiatives. This is where the peculiarity of the communities where adaptation initiatives are undertaken should be upheld, not only in terms of the problems and the solutions but also the social systems and structures in the given community (Buggy & McNamara, 2016) if the initiatives are to solve the problems of the affected community. In line with this, the Ghana National Climate Change Policy (MESTI, 2013, sec. 1_10) recognizes this by underscoring the primacy of local participation in three of its 14 guiding principles outlined as follows:

Principle 1: “The principle of subsidiarity in order to ensure participatory decision-making at the lowest appropriate level in society;”

Principle 2: “The principle of delivering the greatest common good to society when prioritising conflicting responses to climate change;”

Principle 6: “The principle of improving equity and gender sensitivity.”

Fabricius and Collins (2007) suggest that many community-based natural resource management initiatives (including climate change adaptation projects) fail due to inadequate capital in impoverished, remote rural areas where most of such projects take place. The challenge with inadequate capital could be a mix of human capital (skills and education), financial capital, and physical capital (infrastructure and services) that are in short supply. Fabricius and Collins (2007) observe that though rural communities mostly have social capital, they usually lack the required financial and physical capital for executing their projects. To address the challenge with funding, communities tend to be dependent on external sources of funding for their local projects, particularly during the initial stages when there are no returns on investment (Fabricius & Collins, 2007). Critical financial support for such projects usually come from public institutions at the municipal and state levels (Bisaro et al., 2010; Vedeld et al., 2016). Local actors also tend to need support from other public institutions (especially those at the higher level of the multilevel institutions) and donors involved in the adaptation process who have control over government resources and other funding sources (Kauffman, 2017; Vedeld et al., 2016).

The control over resources becomes the potential starting point for power differences in the struggle to pursue various actors’ interests in the adaptation process. Eriksen et al. posit that the adaptation process is inherently “fraught with inequities in social relations, struggles over who has the right knowledge, and who is authorized to govern and guide change” (2015, p. 531).

The power differential between government agencies and environmental NGOs as project initiators or managers on the one hand and local community actors as "beneficiaries" on the other hand, can and does pose difficulties for collaboration and often leads to the exclusion of local community actors (Roosvall & Tegelberg, 2013). Years of subjection to this situation has reduced local communities to "passive recipients" of internationally packaged adaptation solutions (Brugnach et al., 2017). Thus, local communities have "little possibilities to defend their own legitimate interests and to contribute to climate change solutions" (Brugnach et al., 2017, p. 21). Brugnach et al. conclude that the situation partly results from the low capacities of local communities to influence climate change adaptation decision-making processes.

Mosse (2001) argues that due to the inability of participatory initiatives to overcome power differential in many instances, participatory interventions are often driven by the knowledge and expectations of donors and external project managers, given their power and authority in the working relationship with local participants. Local knowledge and needs are inevitably constructed by how they are articulated in the intervention process and by the agenda of the project managers. Also, in many situations, beneficiaries request "what they think they will get" from project managers or donors, and "development agencies are able to project their own various institutional needs onto" the beneficiary communities (Mosse, 2001, p. 24).

Also, participatory development or participatory resource management hinges on the involvement of local communities and the incorporation of their knowledge and experiences into project plans (Buggy & McNamara, 2016; Hickey & Mohan, 2004). But project initiators often operate on limited conceptions of community as homogenized and unproblematic geographical place entities where social and political action occur (Buggy & McNamara, 2016; Chu, 2018; Hickey & Mohan, 2004), thus overlooking the socio-political context of communities that can

impact the quality of local participation and project outcomes thereof (Buggy & McNamara, 2016; McNamara & Westoby, 2011). Rather than yielding desirable outcomes for communities, ignoring issues of social inequalities within communities and the associated power differential in social relations can lead to participatory projects that exacerbate social and economic disparities in society equity (see Buggy & McNamara, 2016; Carr, 2008; Chu, 2018; Eriksen et al., 2015; Takao, 2012). Initiators of climate adaptation projects often prioritize efficiency, which leads to a reliance on pre-existing knowledge sources, social networks, and decision-making processes. This practice reproduces socioeconomic inequities rather than fostering inclusivity and equity (see Chu, 2018; Davidson, 2016; Eriksen et al., 2015). Hence, approaching participatory development with a blanket view of social inequalities and power relations without understanding power dynamics as peculiar to communities could backfire (see e.g., Buggy & McNamara, 2016; Mansuri & Rao, 2013). Waddington and Mohan (Waddington & Mohan, 2004) refer to the case of Village Aid in Ghana, where women resisted participatory approaches for public engagement and transparent decision-making because the new processes reduced the women's existing opportunities for politicking informally through the male elders.

As the foregoing demonstrates, power is often thought to be held and applied by the dominant actors in the participatory process—powerful external actors exert their power over local participants, while local elites exert their influence over less powerful local participants (Brugnach et al., 2017; Buggy & McNamara, 2016; Mosse, 2001). Thus, the role of power in participatory processes is conceived in a unidirectional sense in which powerholders essentially reverse such processes to the much-criticized top-down approach where the dominant control the development process. However, Kauffman (2017) argues that though local actors may not have much external exposure and are often considered powerless and marginalized, they are highly

successful in leveraging their local ties and knowledge to shape the design of development initiatives and drive their implementation. The power of both local and external actors manifests in their negotiations and contestations and thereby influences the power of actors on either side of the equation (Arko, 2019). This two-way power influence between local and external actors engaged in the participatory process is asymmetric and dynamic, allowing local and external actors to influence each other in their engagement (Arko, 2019).

Local elites' capture of participatory development processes and the associated benefits can lead to resistance from the less powerful. The contestations and power struggles among local actors for the leadership of projects can lead to shifts in leadership from the elite to other members of a community (Lund & Saito-Jensen, 2013). Climate adaptation processes often experience tensions between local and external actors over which forms of knowledge to employ (see Gordon & Krech, 2012; Klepp & Fünfgeld, 2022). Hence, in engaging communities in the climate change discourse, it is important to recognize context-specific differential vulnerabilities to climate change. Understanding how communities have adapted to changes in climate will provide critical insights that guide project initiators to design culturally appropriate and contest-specific projects (McNamara & Westoby, 2011). Such projects enable local communities to drive climate change adaptation project decisions (Dumaru, 2010) by employing genuine dialog with local participants, which is required but often missing (Mefalopulos, 2008).

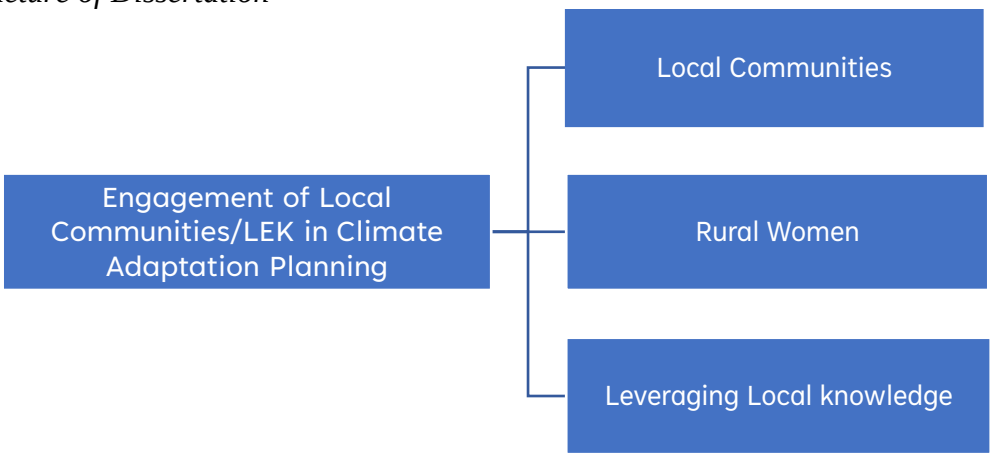
The Current Study

This dissertation is a case study in three parts, with the various parts investigating how local government agencies engage (i) local communities, (ii) rural women (part two) in the planning of climate change adaptation projects, focusing on the power relations that shape these engagements. Part three of the study investigates how local government agencies and local actors

perceive and leverage local ecological knowledge (LEK) in climate change adaptation project planning in the Effutu Municipality of Ghana. Figure 1 below shows the structure of the dissertation.

Figure 1

Structure of Dissertation



The focus on women in this study is meant to spotlight the case of women as a social group that is often marginalized by social systems and structures and thus excluded from climate change decision making in many parts of the world (see e.g., Alston, 2018; Arora-Jonsson, 2011; Davidson, 2016; Denton, 2002; Garutsa et al., 2018). Rural women particularly have a high vulnerability to climate change and are thus most impacted by climate change (Alhassan et al., 2019; Denton, 2002; Jost et al., 2016). Yet, the poor and geographically distant vulnerable women are the most excluded from climate decisions Arora-Johnson (2011). Because women constitute a broad social category, highlighting the case of women's experiences in participatory climate adaptation could provide useful insights that shed light on the dynamics of marginalized groups' experiences and the gender dimension of environmental justice in the participatory process.

Significance of the Study

Much of the extant literature on participatory climate adaptation (and development in general) has focused on how external actors control and dominate their local counterparts and how local elites dominate other local participants, including marginalized social groups. Consequently, many adaptation projects do not yield the maximum results for communities, and their outcomes do not serve the priority needs of the most vulnerable. While this conclusion may be largely valid in many cases, this view also characterizes local actors and marginalized social groups like women as passive and powerless participants who accept their domination without resistance. A major gap that remains in the literature, as presented above, is that we know little about how the power struggles among various local actors and between local and external actors impact each others' power. Given that various local and external actors possess unequal power for pursuing their competing interests in the context of participatory climate adaptation, how do the various actors' expressions of power impact other actors' power and the overall participatory climate adaptation process? Whereas Arko's (2019) view of dynamic and asymmetric power relations in the participatory process suggests that local actors can and do influence the participatory process, we do not yet know much about the ways in which local actors gain and use their influence in the process. We also know little about the contexts or aspects of climate adaptation projects in which local actors express their power and how that impacts the broader participatory process.

The quest to gain more insights to address these gaps is inspired by the Foucauldian perspective that power is diffused throughout society rather than centrally held but that the power of the less dominant in society is held in check by the more dominant actors. This Foucauldian view suggests that the so-called less powerful local actors and the even less powerful

marginalized groups in communities do have power that can shape the participatory process, as indicated by some scholars (Arko, 2019; Gordon & Krech, 2012; Kauffman, 2017; Lund & Saito-Jensen, 2013). Hence, it becomes interesting to critically examine how the expressions of power shape the participatory process from a non-unidirectional view of power flow in the interactions among various local actors and between local and external actors engaged in participatory climate change adaptation.

In the case of Ghana, there is little literature on how local government agencies in Ghana engage local communities and tap into local knowledge on climate change in designing and implementing their adaptation projects. The purpose of this study was to help provide empirical evidence on how local government agencies involve various segments of society, including women and other marginalized groups, in their adaptation planning and how they perceive and leverage local people's experiences and ecological knowledge for adaptation decision making.

Organization of the Dissertation: Chapters Outline

This study examined how diverse local and external actors play their roles in participatory climate adaptation planning. It focused on how power differential among local actors and between local and external actors shapes the local and external actors' power and roles, the involvement of women, and the use of LEK in climate adaptation planning in the context of the existing sociocultural systems and power structures in rural communities. The rest of this document is organized as follows:

Chapter II: Theoretical Framework and Literature Review

This chapter presents the theoretical framework that guided the design and execution of the study. It also includes a review of relevant literature and the gap in the literature that this study sought to fill. The chapter ends with the research questions.

Chapter III: Research Methods

This chapter presents the discussion and justification of the research design, study setting, methods used for data collection, population, samples, sampling techniques, research instruments, and data analyses.

Chapter IV: Power Perceptions and Expressions as Constraints and Enablers of Climate Adaptation Actors' Roles

This chapter presents the findings on how the expressions of power and the related internalization of routinized ways of thinking among local and external actors enable or constrain these actors' roles in participatory climate adaptation decision making.

Chapter V: Actors' Power and Role Dynamics in Participatory Climate Adaptation

This chapter presents the findings about how adaptation actors' power differential shapes local actors' participation in adaptation decision making and implementation. It also addresses how external actors' power expressions shape the posture and activities of local actors and vice versa in the participatory adaptation process. It ends with how group inclusiveness influences local actors' participation in their groups' activities.

Chapter VI: Actors' Perceptions of Knowledge Source and LEK Application in Climate Change Adaptation Planning

This chapter presents the findings about how the differences in power and perceptions of LEK among local and external actors influence the use of LEK in climate adaptation planning.

Chapter VII: Women's Involvement and Roles in Climate Adaptation Planning: Constraints and Response

This chapter presents the findings about how sociocultural systems and power structures shape women's involvement and roles in climate adaptation decision making and

implementation. It also presents the constraints on women's participation and how women respond to those constraints in participatory climate adaptation initiatives.

Chapter VIII: Discussion and Conclusion

The researcher interprets the findings in this chapter and discusses their implications for theory, policymaking, participatory climate adaptation planning, and development communication practice. The limitations and conclusions of the study are also presented.

CHAPTER II

THEORETICAL FRAMEWORK AND LITERATURE REVIEW

Introduction

In this chapter, the researcher presents the theories that guided this study and how they informed the design, data collection, and data analysis. Also included in the chapter is a review of relevant literature about this study to indicate what is already known and the gap that this study was intended to address. The chapter ends with the research a summary of research questions that the study focused on addressing.

Theoretical Framework

This study is informed by three complementary theories, which, together, provide a framework for analyzing and understanding the different (and sometimes intersecting) aspects of local participation in climate change adaptation planning and implementation. The study is mainly guided by Foucault's theory of knowledge and power. This theory helps in analyzing the sources and operation of power in the social relations that could be observed in the interactions among local actors and between local actors and external actors who are involved in climate change adaptation initiatives. The study also draws on theoretical insights from two related theories—participatory development communication, which deals with how to get stakeholders (in this case, local people) to participate in climate adaptation projects, and the conceptual framework for participatory development (which points to the factors or conditions that influence individuals' and groups' decision to participate in a given project and how they participate). These theories and their applications to the study are discussed below.

Theory of Knowledge and Power

The analysis in this study was partly guided by the theoretical lenses on the distribution of power and the agency of people in society. Nagel's (1975) definition of power as the *capacity to get others to do as one desires* succinctly summarizes many other definitions of power, which conceive of power as centralized, overt control. Such conceptions also view power relations as characterized by conflict and exclusion. Foucault radically departs from this view and argues that we should cease describing the "effects of power in negative terms: it "excludes", it "represses", it "censors", it "abstracts", it "masks", it "conceals." In Foucault's view, "power produces; it produces reality; it produces domains of objects and rituals of truth" in society (1991, p. 194).

The data was explored with Foucault's (1980) idea that power is not necessarily centralized in representative politics, the state, or the economy. Power is diffused throughout society and embodied in discourse, knowledge, and regimes of truth (Foucault, 1980). Thus, individuals and social groups possess and express power. However, dominant systems routinize what is favored by reinforcing norms and thus limiting the knowledge people can gain about themselves and their society. The dominant discourse of the system determines the boundaries of what is considered normal and possible, thus limiting what knowledge is possible. In a relational sense, Foucault (1980) conceives knowledge and power as inseparably bound. Thus, "the exercise of power perpetually creates knowledge and, conversely, knowledge constantly induces effects of power" (Foucault, 1980, p. 52). In other words, power and knowledge beget and reinforce each other in an intertwined loop.

Foucault (1995) indicates that discipline involves several techniques aimed at controlling or limiting the body's (or a person's) operations. Discipline operates through the application of force and arrangements (sociocultural or political) that are meant to regulate the individual's

movements and experiences. Discipline could be achieved through strategies like military drills or everyday tools like timetables that require adherence. The three elements of disciplinary power include *hierarchical observation, normalizing judgment, and examination*. Power uses observation and gaze as its key instruments to ensure that norms are developed and/or maintained.

Thus, according to Foucault (1980), social domination does not necessarily result from the application of force, but people's internalization of the ways of thinking that are reinforced through routinized forms of discipline in social institutions like family, schools, and workplaces encourage conformity to the dominant. The process of domination does not allow people to realize their true potential, construct their identity, and assert their agency. Knowledge is, therefore, not universal and incontrovertibly objective but dependent on the historical contexts that shape the discourse and the *episteme* of society. Power is constituted by the accepted forms of knowledge and truth in a milieu. These social inequalities, power imbalances, and domination play out in the participatory process (Foucault, 1980). Lund and Saito-Jensen's (2013, p. 110) "empirical findings lend some support to the viewpoint that a hierarchical and stable social order within communities tends to be maintained and repeatedly reproduced" in participatory initiatives. Arko (2019) adds that the asymmetric power relations that play out in the negotiations and contestations among internal and external actors shape the trajectory of participatory development.

In the context of adaptation processes, actors express and enact their forms of power through their acceptance or dismissal of particular kinds of knowledge, which validates adaptation and shapes its processes and outcomes (see Klepp & Fünfgeld, 2022). What people do to adapt to climate change depends on what they know. Yet, how people act is itself linked

to how they acquire their knowledge, as different knowledges make us act differently (Mahony & Hulme, 2018). The sources of knowledge—LEK and scientific knowledge—tend to create tension among participatory climate change adaptation actors (Eriksen et al., 2015; Gordon & Krech, 2012). Adaptation practices are inevitably influenced by the norms and discourses of institutions in ways that limit the variety of adaptation pathways by emphasizing some rationalities while excluding others (Davidson, 2016). Klepp and Fünfgeld (2022, p. 759) have argued that "Western post-enlightenment ontologies that favour specific types of knowledge have dominated power/knowledge practices in responses to climate change – often to the exclusion of forms of knowledge grounded in other ontological and epistemological traditions." In line with those ontological views, external actors often consider scientific knowledge to be universal, well-founded, and effective (Klepp & Fünfgeld, 2022). Some actors, on the other hand, tend to see LEK as a tool for resisting scientific ecological knowledge, which they perceive as foreign and sometimes unsuitable for their context (Gordon & Krech, 2012). For instance, Davidson (2016, p. 434) has observed that despite some notable success, the adoption rates of climate adaptive measures have been disappointing in agriculture. Due to the social embeddedness of farmers and their decision-making processes, "farmers are not mere 'utility maximizers,' even when they have complete autonomy over their operations."

External actors derive their power from the notion of the superiority of the scientific source of their knowledge, funding practices, and control resources, which often allows them to control the adaptation process (see Brugnach et al., 2017; Klepp & Fünfgeld, 2022; Mosse, 2001). Local people derive their power from the notion of authenticity of the source of the knowledge, which is timeless, ancient, and embedded in their culture (Gordon & Krech, 2012). The inseparability of knowledge and power (Foucault, 1980; Klepp & Fünfgeld, 2022) also plays

out in the evaluation of LEK among local people. Gordon and Krech found that tensions around local knowledge emerge among local people, given that LEK is neither uniformly produced nor uniformly shared or distributed in society (2012).

The differing instrumental, ideological, and identity-based motives, together with the time, social and psychic costs of participation that inform people's participation in such initiatives (Mansuri & Rao, 2013), become another source of tension in participatory initiatives. The participatory development space is characterized by asymmetric power relations among actors (Arko, 2019; Mansuri & Rao, 2013). Arko (2019) notes that this asymmetric power is dynamic and constrained by structures embedded in participatory development initiatives. He argues that the power of local participants (including their agency) and external actors, which manifest in their negotiations and contestations, both enable and constrain the agency of local and external actors in participatory development initiatives.

This observation challenges the notion of static power asymmetry that is always skewed in favor of external project initiators, as put suggested by some scholars (e.g., Akinsemolu & Olukoya, 2020; Alston, 2015; Garutsa et al., 2018; Jost et al., 2016; Mansuri & Rao, 2013). Arko argues that the view of static power asymmetry does not adequately consider the agency or contribution of local actors (often viewed as subalterns) in shaping the course of participatory development. Arko's (2019) view of dynamic power asymmetry is consistent with Foucault's (1980) idea that power is not centralized in authorities but diffused throughout society. This suggests that power is not only held and expressed by external actors and elite local actors but that some marginalized groups also hold and express power in the participatory process (Arko, 2019; Lund & Saito-Jensen, 2013).

These perspectives are worth exploring in this study. How does the social space created for participatory initiatives reflect this social reality? Also, how do the expressions of power and the related internalization of routinized ways of thinking among local and external actors enable or constrain these actors' agency in the participatory process? Perhaps the difference lies in the power behind the particular actor group's power that enables or constrains their action. The perspectives on knowledge and power dynamics in participatory initiatives are valuable for examining how power differential operates in the social relations involved in the participatory climate adaptation process and how they influence the process.

Foucault's theory of knowledge and power provides an important lens for identifying and analyzing the sources of power and the discursive practices in the participatory process that are employed to "discipline and punish" or whip dissenting voices into line and thereby ensure consensus among local actors or between local actors and external actors. It helps to understand the expressions of power and agency and the expressions of resistance to power or agency from both local and external actors. It also helps to understand how the use of power to suppress dissent as a means of ensuring project success might contribute to the moderation of diverse views and the overlooking of the needs of the marginalized and most vulnerable (Buggy & McNamara, 2016; Chu, 2018) while promoting others' needs or aspirations. The understanding gained through this theoretical lens could also be useful for identifying solutions to the potential knowledge and power-related issues that constrain local participation.

Participatory Development Communication

Many scholars and practitioners have acclaimed the participatory paradigm of development as an effective approach to development and community empowerment (e.g., Arnstein, 1969; Freire, 1982; Mefalopulos, 2008; Melkote & Steeves, 2015). Local participation

is critical for the success of development initiatives (Mefalopulos, 2003, 2008; Melkote & Steeves, 2015). As laid out in the literature review, the likelihood and extent to which local communities participate in climate change adaptation project planning is influenced by a myriad of factors. Hence, development communication scholars and practitioners have developed considerable insight into how project managers can employ participatory communication to mobilize local stakeholders for project buy-in and participation. Proponents of the acclaimed participatory development approach recommend the involvement of local people and communities in projects from the onset to the end of projects – from planning through implementation to evaluation (Mefalopulos, 2003; Melkote & Steeves, 2015). The participatory development approach encourages development agents to recognize and work through local actors and systems to ensure project ownership (Bowen, 2005). Mefalopulos (2003) argues that participatory communication can enhance the likelihood of people's decision-making on issues and their participation in projects that impact their lives.

However, project initiators' intention to involve local stakeholders in projects does not necessarily induce participation as envisaged (Mansuri & Rao, 2013). The extent to which the public accepts a project largely determines whether people will support it and/or make the desired behavioral changes. "Public acceptability depends on the individual's evaluation of expected policy consequences, the perceived fairness of the distribution of these consequences, and perceived fairness of decision procedures" (IPCC, 2018, p. 24). There has been a significant interest in the participatory approach to development. Yet, many of the frameworks are not much different from the approaches of the top-down approaches that do not recognize meaningful engagement of local beneficiaries as partners, as they fail to disrupt the existing structures but retain the status quo of power inequalities (Wilkins, 1999). The top-down approach to

development does not recognize the peculiarity of the communities and people's experiences in the developing world in designing development plans (Dutta, 2012).

Hence, the social and political situations of many societies continue to render the urban and rural poor women and other marginalized communities locked in a state of dependency that is continually reproduced by state and private sector agencies (Navarro, 2000). This hinders the agency of local people. Aiming at empowerment and social justice, participatory development communication scholars believe people need to be liberated from the resulting power inequalities that hinder their empowerment (Melkote & Steeves, 2015). Melkote and Steeves (2015, p. 69) argue that "it is usually futile and may be unethical and impractical for communications and human service professionals to help solve minor and/or immediate problems while ignoring the systemic barriers erected by societies that permit or perpetuate inequalities among citizens."

Development should be aimed at addressing the needs of people and communities that are most affected by social inequalities, marginalization, and deprivation in rural and urban areas. All people, including the marginalized, should be able to participate at every stage of development (see Buggy & McNamara, 2016; Lioubimtseva, 2022; Munaretto et al., 2014). The development process must also apply strategies that recognize and utilize the knowledge and experiences of local people in all decision making, planning, and message design (Dutta, 2012). To that end, development communication should be designed on the ideals of development for social justice and empowerment (Melkote & Steeves, 2015). Cultural and historical sensitivity enables the development process to acknowledge how relevant social divisions like gender, class, race, ethnicity, age, and religion impact the development process (Melkote & Steeves, 2015, p. 51). Ultimately, this helps to eliminate social injustices and empower individuals to live meaningful lives by promoting equal and non-discriminatory development in which there is

equal participation. The communication process should encourage the agency of local communities and individuals from a perspective that makes local people the drivers rather than passive beneficiaries of development (Sen, 1999).

The insights here are useful for examining the communicative practices employed by both local and external actors in climate change adaptation planning and implementation. The analysis will cover both planned and unplanned communication among actors involved in climate adaptation initiatives. It will look at actors' project-related expressions, presentation of community views or preferences, and policy information sharing, as well as the receivers' reactions to such messages. This will help to understand the motives of the external actors in encouraging or limiting the extent of local participation and the motives of local people in participating passively or actively and meaningfully. Examining the communicative practices of all actors could help uncover how the discourse of participation includes or exclude segments of the communities and their needs in the participatory process.

Conceptual Framework for Participatory Development

Mansuri and Rao (2013) categorize local people's involvement in development projects (in the context of this study, climate change adaptation planning and implementation) as a form of civil society activity or collective action. In this case, local participants work together with external actors toward building collective resilience to climate change. Mansuri and Rao (2013) posit that, in the ideal sense, the core goals of collective action include justice and fairness and that such action operates on the principles of reciprocity, open criticism, and debate. Thus, the central tenets of the participatory approach are common interests and equality (Alexander, 2006). Civil society work is often not smooth, as it thrives by acting foremost as a watchdog, working to

constrain power and seeking to limit powerful social, political, and economic forces to operate in the interests of the larger society (Mansuri & Rao, 2013).

Mansuri and Rao (2013) shed more light on the factors that influence local stakeholders' decisions to participate in development projects. They suggest that the realities and perceptions of social, economic, and political conditions of local people and communities could mitigate the likelihood of local participation, regardless of participatory development communication. While they do not dwell much on the efficacy of development communication in promoting effective local participation, they indicate that rectifying information failures by regularly providing relevant and credible information can improve citizens' awareness about problems and potential solutions. Better-informed citizens would also acquire an enhanced ability to make informed decisions and mobilize to demand accountability from their leaders (Mansuri & Rao, 2013). However, information failure – the inadequacy of information and transparency in information distribution (Mansuri & Rao, 2013; Ostrom, 2011)—and other inequalities imply individual differences in information-seeking and information-processing habits and abilities (Ostrom 2011) that significantly limit efforts toward participation as well as political and social accountability (Mansuri & Rao, 2013).

An individual's participation in civic activities is induced by instrumental, ideological, and identity-based motives (Mansuri & Rao, 2013). Instrumental motives refer to the economic and political benefits an individual may gain through participation. Ideological motives refer to motivations for adhering to shared beliefs. In this case, individuals are more likely to participate in a civic activity that is consistent with their belief system. Identity-based motives refer to the social or religious identity of the individual. This may include participating in a cause that promotes the welfare or status of a social group or religion that one identifies with (Mansuri &

Rao, 2013). An individual is likely to participate in a given civic activity when they perceive that their participation in a given civic activity will satisfy their motives.

Also, participation comes with some costs (Mansuri & Rao, 2013). These include the opportunity cost of time spent engaging in civic activity. The opportunity cost here is estimated based on factors like the individuals' economic standing, employment status, and family commitments. There are also social costs to the individual. The meaning of these costs to the individual determines their likelihood of participating. People are not likely to participate where the social costs are prohibitively high for the individual or social groups that are proscribed from free engagement in public life, as is often the case for women in traditional societies. There may also be psychic costs that influence groups of people like women and other disadvantaged groups who have been suppressed for a long time and have come to internalize discriminatory ideologies. Also, individuals and groups that are also used to free benefits may find it a burden if required to work for such benefits through participation. These psychic costs make it a challenge when mobilizing affected individuals and groups for development activities (Mansuri & Rao, 2013).

Mansuri and Rao (2013) indicate that the decision to participate in civic activity occurs at two stages. First, people make individual decisions on participation. In deciding on participation, individuals do a cost/benefit analysis of several factors—the fulfillment of their instrumental, ideological, and identity-based motives as well as costs (opportunity cost of time, social costs, and psychic costs) to be incurred in participating or otherwise. At the second stage, individuals recognize that participation is not limited to individual decisions, as collective action is most effective when engaged in collectively (Mansuri & Rao, 2013). Here, the individual assesses the

group's ability to overcome setbacks to collective action and act successfully toward members' common interests.

Collective decision to act can be slow or not forthcoming, and this can hinder an individual's desire to participate. People's perception of the likelihood of success and its associated material or social benefits determines their participation (Mansuri & Rao, 2013). Thus, individual and group decisions about participation play out in the form of a loop, each dependent on the other. Because individual participation is dependent on their perception of the larger group's participation and chances of cooperating toward success, the group has "to be able to resolve the challenges of collective action and act with a common purpose. But corporation failure is the most common source of civil society failure. This can affect both individual incentives for participation and, consequently, the group's capacity for collective action" (Mansuri & Rao, 2013, p. 60). A group's inclusiveness and indications of value for members' contributions also play a role in encouraging individual members' participation in their groups' activities (DeWall et al., 2011; Jansen et al., 2014, 2020).

While some people participate for personal gain, others do participate because they deem it appropriate and beneficial to the general community. Whatever be the motivation for participation, group participation is hardly free of potential controls, often in the hands of the elite (Mansuri & Rao, 2013). The elites tend to capture the power and benefits of participation (Mansuri & Rao, 2013; Rao & Ibáñez, 2005). But "Elite control can be an effective part of the cooperative infrastructure when power is used to facilitate collective action toward the public good" (Mansuri & Rao, 2013, p. 75). This kind of control is referred to as *benevolent capture* (Rao & Ibáñez, 2005). However, these benevolent elites tend to have social networks through which they work. In the process, this network captures the participatory process in its favor and

benefits more from it, leading to clientelism. Clientelism is another practice that is inimical to the common good and can limit the efficiency of the participatory process and worsen inequality. Where there is clientelism, people who are close to leadership are more likely to participate and benefit socially and materially from local projects (Mansuri & Rao, 2013).

Lund and Saito-Jensen (2013) found that, due to their leadership traits, the elite tend to take advantage of the benefits of participatory initiatives at the early stages. However, the elites do not always have a free ride in doing so, as marginalized groups resist the elite control over leadership and resources in participatory initiatives. Over time, some marginalized groups are able to get people who are favorably disposed to their interests into the leadership of participatory initiatives. When this happens, the participatory initiative creates new avenues for these previously marginalized individuals or groups to compete for power and resources, indicating that not only the elites capture the benefits of participatory initiatives, but non-elites also can and do participate in the practice of capture. Thus, Lund and Saito-Jensen (2013) suggest that the case of who captures the participatory processes is dynamic and evolving rather than static.

Addressing elite capture is necessary to ensure that climate change adaptation initiatives serve the needs of the most vulnerable people in society (Buggy & McNamara, 2016; Jost et al., 2016). But addressing elite capture remains a major challenge for development workers and communities due to the fundamentally complex and sensitive nature of the subject. Buggy and McNamara (2016) suggest that strategies need to be employed to transform power relations and rework existing community structures and processes to ensure that participation becomes open and representative of all segments of communities instead of only the elite. This suggestion aligns with the notion of the bottom-up approach, which requires development practitioners to

navigate traditional barriers and foster unhindered frontline participation of local people in the decision-making process (Mefalopulos, 2003; Melkote & Steeves, 2015). That way, local people can collectively contribute meaningfully to adaptation projects to mitigate the effects of climate change on vulnerable rural communities. However, many scholars have pointed out that community participation often does not serve the needs of some segments of society, usually disadvantaged sections of society(see e.g., Cooke & Kothari, 2001; Melkote & Steeves, 2015). This results from practices like elite capture and clientelism (Lund & Saito-Jensen, 2013; Mansuri & Rao, 2013).

Buggy and McNamara (2016) posit that community is often conceived in participatory development as a uniform place where development initiatives are implemented. Buggy and McNamara (2016) argue that this notion of community does work well in the context of climate change adaptation. They recommend that community be reinterpreted as a socio-political context with diverse segments that need to be understood and transformed. This approach helps to avoid designing projects with embedded problems that contribute to project failure. A new and appropriate view of community will help to ensure project outcomes do not worsen existing inequalities or result in maladaptation. For Buggy and McNamara (2016), this reinterpreted view of community allows for climate change adaptation initiatives that recognize and prioritize the needs of the most vulnerable people in society who also tend to be most impacted by climate change (Alston, 2015; Arora-Jonsson, 2011; Davidson, 2016).

Mansuri and Rao (2013) indicate that effective participation requires individuals who have adequate information to identify and access opportunities and then mobilize citizens to take advantage of the opportunities. But, in this framework for participation, the authors are largely silent on how information delivery should be organized and strategically targeted at diverse

stakeholders, given the manifold potential barriers to local people's participation. This is perhaps because Mansuri and Rao (2013) discount the potency of effective communication in promoting equitable development and the challenge of executing effective communication. Mansuri and Rao (2013, p. 79) state that "Solving imperfections in the provision of information is relatively straightforward, in that it is less likely to involve a reversal in local power relations." They add that resolving information asymmetries between the rich and the poor is often not sufficient to address power differences. Thus, Mansuri and Rao (2013) suggest a preference for direct confrontation with power as the way to create more accountable and responsive policies. But how specifically is power to be confronted directly?

This seems to be a major gap in Mansuri and Rao's (2013) conceptual framework for participatory development. The way the authors express their fondness for direct confrontation, perhaps, suggests a one-way view of how to address power. This gap needs to be explored, and that is one of the aims of this study. Confronting power directly without addressing the potential capacity and agency deficits among local participants (particularly marginalized and disadvantaged poor and uneducated) groups will hardly be sufficient for addressing power imbalances that tend to plague the participatory process. Arko (2019) suggests that efforts to address power asymmetry in participatory development should be directed toward reforming the structures that enable and constrain actors' agency. This points to the need for development practitioners to understand how both local and external actors' power and agency drive or constrain the effectiveness of participatory initiatives.

Even though it may be unintended, Mansuri and Rao (2013) throw an important challenge to development communication theorists and practitioners, for whatever the approach used to confront power, it is highly unlikely that communication can be reasonably excluded.

This is perhaps where development communication theorists and practitioners need to respond with effective strategies in their work to address power imbalances and ensure greater success of participatory initiatives. This points to the need for development communication practitioners working on adaptation to go beyond creating platforms for engagement and work toward understanding the local socioeconomic and political contexts of adaptation. This will guide development communication practitioners to develop strategies to navigate the potential barriers to effective and equitable participation. That way, they can enhance the involvement of local people and ensure that local priorities, including those of the most vulnerable, are factored into climate adaptation plans. This will involve adequately engaging and incorporating relevant local ecological knowledge in the planning and implementation of adaptation projects.

Despite the shortcoming identified in Mansuri and Rao's (2013) framework for participatory development, the framework provides an important lens for examining why some members of a community may participate while others do not get involved in participatory initiatives. It helps to identify and analyze the motivations for participation and the constraints to local participation. It also provides useful insights for understanding the often-inequitable distribution of the benefits of participatory initiatives. In sum, it complements Foucault's theory of knowledge and power in providing a searchlight for examining the data on local people's participation in climate change adaptation project planning and implementation in rural Ghana. Together, these will be useful for analyzing how actors' power shapes the participatory process. It will also help to appreciate the social, political, and economic dynamics of stakeholders' participation in climate adaptation.

Conceptions of Participation

The meaning of the concept of participation has become fluid (Carpentier et al., 2019) due to its multi-disciplinary utility and the extensive attention it has received from diverse disciplines, research traditions, and fields of practice. The approaches employed in the application of participation are informed by the underlying conceptions of *what constitutes participation* and *the purpose or goal of participation*, but as demonstrated below, these are often not clearly delineated.

What Constitutes Participation?

The conceptions of what constitutes participation could be broadly categorized into two, namely sociological and political approaches (Carpentier et al., 2019). From the sociological perspective, participation is conceived in terms of what the word participation simply denotes—taking part. This conception likens participation to social interaction (Carpentier et al., 2019) in which external project initiators or managers engage local actors. The sociological approach to participation often measures the impact of participatory initiatives by counting the number of local participants rather than evaluating the dynamics of local participation and the actual impact of the process and its outcomes (Mefalopulos, 2003; Pretty, 1995). The inspiration for this orientation largely flows from theories like Rogers' (Rogers, 2003) diffusion of innovation and the two-step flow model (Katz & Lazarsfeld, 2006) which remain instrumental to the evolution of development thought. Subscribers to the sociological conception of participation are guided by the view that development and social change result from the transfer of information and material resources from more advanced regions and better-informed persons (Melkote & Steeves, 2015). Theories based on this view are critiqued for their overriding assumption that development and social change could only be engendered through the introduction of ideas and

innovation from external actors who control the decision-making process, thus limiting the role of local people and their knowledge as drivers of development and social change (Cooke & Kothari, 2001; Melkote & Steeves, 2015; Mosse, 2001).

Other scholars conceptualize participation as an inherently political process that serves diverse functions for stakeholders, comprised of various local and external actors (Arnstein, 1969). Inspired by the democratic theory, the political view of participation conceives participation as power-sharing (Arnstein, 1969; Carpentier et al., 2019). The political view evaluates participation in terms of the extent of local involvement and control over decision making. For Arnstein, participation is essentially about deliberate power redistribution that enables the lowly and marginalized to be involved in present and future political and economic processes. Participation should position such people to influence social reform and share in the benefits of society. She distinguishes between the "empty ritual of participation and [benefits, which implies] having the real power needed to affect the outcome of the process" not only for the present but also for the future (Arnstein, 1969, p. 216). Participation could range from minimalist or weak to maximalist or strong participation (Barber, 2009; Carpentier, 2011). It could take the form of manipulation that is considered non-participation to forms of participation that foster "citizen control" over decision making and management of development processes (Arnstein, 1969).

Brett (2003, p. 5) defines participation as: "an educational and empowering process in which [local] people, in partnership with each other and those able to assist them, identify problems and needs, mobilise resources, and assume responsibility themselves to plan, manage, control and assess the individual and collective actions that they themselves decide upon." Per this definition, the sociological and political views of what constitutes participation should not be

isolated in practice. Perhaps, such decoupling of the approaches to participation is not even realistic, as social interactions are invariably inescapable in participatory processes, and those interactions naturally bring into play the power dynamics embedded in social relations. The question of interest is rather about how much power external actors relinquish and how much of it local actors take up or bring into the interactions. As Carpentier and colleagues (2019, p. 21) observe: "Both access and interaction still remain vital for participatory processes, as participation requires to have access and interaction, but participation is, at the same time, more than 'mere' access and interaction, because of its focus on the redistribution of power." Given that both the sociological and political approaches hold relevance for conceptualizing development and social change initiatives, the theoretical challenge remains how to effectively merge the two approaches in theory and practice, particularly.

The Goal of Participation

Yet, other scholars think of participatory approaches in terms of the goal of participation—whether participation is a means to an end or an end in itself, based on the approach that development agents apply in the participatory development process. When participation is considered as a means to an end, local people's participation is encouraged as a way to help attain project goals (Oakley, 1989), often predetermined by external bodies (Melkote & Steeves, 2015; Nikkhah & Redzuan, 2009) and the attainment of those goals is prioritized over the quality of local participation in the process (Moser, 1989). With little community power to control the process, participation tends to be top-down, temporary, static, passive ((Nikkhah & Redzuan, 2009), compulsory (Oakley, 1989), or manipulative (Arnstein, 1969). Essentially, participation as a means does not depart much from the information and technology flow paradigm (akin to the sociological orientation), as grassroots people are directed through

activities (Melkote & Steeves, 2015) formulated by external experts. The reliance on outside ideas, expertise, and technology places less emphasis on the roles and contributions of local people and their knowledge for addressing local developmental and social challenges.

On the other hand, the conception of participation as an end in itself assumes that people value the opportunity to think, express themselves, have a sense of belonging to the group, being recognized and respected for who they are, and empowered to contribute their ideas to important decisions (Diaz-Bordenave, 1989; Kothari, 1984; Tehranian, 1985). This approach allows for the leveraging of local expertise to improve project design and implantation. With participation as an end orientation, the empowerment of local people is an essential outcome of the process (Melkote & Steeves, 2015; Nikkhah & Redzuan, 2009; Parfitt, 2004). Development initiators with this orientation acknowledge that "Participation is not a fringe benefit that authorities may grant as a concession but every human being's birthright that no authority may deny or prevent" (Diaz-Bordenave, 1989, p. 3). Employing participation as an end means using the bottom-up approach, with active and dynamic local participation in addressing evolving local needs (Moser, 1989; Nikkhah & Redzuan, 2009; Oakley, 1989). This allows local people to have significant control over decision making and project implementation. This approach is not only likely to yield immediate emotional satisfaction for local participants, but it also enhances the success of projects and yields relevant outcomes that are sustainable.

As with the sociological and political approaches to participation, it is imperative to note here that participation as a means and participation as an end in itself cannot be viewed as mutually exclusive or dichotomous orientations (Parfitt, 2004). While the orientation of development agents and other actors in the process may emphasize one over the other, the two are usually at play and manifest concurrently in any participatory process. In one breath,

participation in a given program can be viewed as a means to an end, with the delivery of stated program goals as the central output. In another breath, participation in the same program can be viewed as an end that considers empowerment as its essential outcome. The orientation that observers tend to notice is often a matter of the orientation that project managers highlight and pursue. Thus, "participation is only meaningful and utile if conceived as both means and end" (Parfitt, 2004, p. 554). However, the empowerment outcome must be reemphasized to project the emancipatory function of participation.

Typologies of Participation and the Involvement Continuum Model

Scholars have developed various typologies of participation that elucidate the concept of participation from diverse perspectives, based on contextual and disciplinary orientations (e.g., Aaltonen & Kreutz, 2009; Arnstein, 1969; Mefalopulos, 2008; Pretty, 1995; Tosun, 1999; White, 1996). Across the typologies of participation, the quality of participation expressed in the labels used for the forms of participation (see Table 1 below) is frequently measured in terms of how much control local people exercise over development initiatives and the outcomes (Arnstein, 1969; Mefalopulos, 2003, 2008; Pretty, 1995; White, 1996). Tosun (1999) measures and categorizes participation based on how local people become part of the process—coercive participation, induced participation, and spontaneous participation. Aaltonen and Kreutz (Aaltonen & Kreutz, 2009) evaluate and classify participation according to the extent to which external project initiators engage local stakeholders, namely low-level engagement, mid-level engagement, and high-level engagement. In the subsequent section, these and other typologies of participation are discussed in the context of the Involvement Continuum Model (ICM)—an organizing framework for the extant topologies of participation. Table 1 below provides a summary of this discussion.

Table 1

The ICM as an Organizing Framework for the Typologies of Participation

ICM: Author (2022)	**Non-involvement**		**Partial involvement**			**Involvement**		
Arnstein (1969)	Nonparticipation		Degrees of tokenism			Degrees of citizen power		
	Manipulation	Therapy	Informing	Consultation	Placation	Partnership	Delegated power	Citizen control
Pretty (1995)	Manipulative participation	Passive participation	Participation by consultation	Participation for material incentives	Functional participation	Interactive participation	Self-mobilization	
White (1996)	Nominal participation		Instrumental participation	Representative participation		Transformative participation		
Tosun (1999)	Coercive participation		Induced participation			Spontaneous participation		
Mefalopulos (2003, 2008)	Passive participation		Participation by consultation	Functional participation		Empowered participation		
World Bank (1995)	Information sharing		Consultation			Collaboration	Empowerment	
Aaltonen and Kreutz (2009)	Low-level engagement		Mid-level engagement			High-level engagement		

Each form of participation or non-participation in the ICM, namely non-involvement, partial involvement, and involvement, encompasses the various connotations of the forms of participation that appear under it in its respective column. Hence, involvement, partial involvement, and non-involvement are best understood in terms of the conceptions of the forms of participation in the extant typologies of participation, using the ICM as an organizing framework for the myriad typologies of participation as represented in the table above.

The Involvement Continuum Model

As can be seen atop the various typologies of participation reviewed above, scholars have used various labels for what they consider to be the most desired forms of participation, generally one that results in development or social change for the benefit of local people, while enhancing local people's capacity to better take care of their needs. While the diversity of labels holds value for understanding participation, it also creates a potential conceptual confusion that can be resolved with an organizing framework that encompasses the varied notions of desirable participation and sets it apart from other forms of participation. In the next few paragraphs, a case is made for the widespread use of "involvement" in describing the desirable forms of participation as observed in the participation literature (Aaltonen & Kreutz, 2009; Mefalopulos, 2003, 2008; Melkote & Steeves, 2015) and why the ideal forms of participation could be termed as *involvement* to harmonize the diverse but complementary conceptions of the desirable forms of participation in the literature.

Arnstein's (1969) ladder of participation collapses the types of participation into three broad categories based on the levels of local participants' power in shaping the participatory process, namely: *non-participation, degrees of tokenism, and degrees of citizen power*. The participation process begins to reflect the *bringing in* of local people from mid-level, at least, to high-level intensity in communication with stakeholders. Despite the varied contexts that inspired the various typologies of participation, the ideal forms of participation in the other typologies invariably correspond to Arnstein's third category—degrees of citizen power. In the Engage Your Stakeholders Toolkit, Aaltonen and Kreutz (2009) labeled as *involvement* the form of participation that corresponds to Arnstein's (1969) upper three rungs (partnership, delegated power, and citizen control).

Per Aaltonen and Kreutz's (2009) typology, local involvement in participatory initiatives improves with the intensity of the engagement of local stakeholders. Communication serves as the vehicle for improving poor or minimalist forms of participation like what Arnstein (1969) describes as non-participation and transforms it into *involvement* (or high-level engagement), a higher and desired form of participation. Involvement is used in reference to participatory processes in which local stakeholders are interested and knowledgeable participants who contribute their relevant, place-specific insights (like indigenous or local knowledge) to the planning of participatory development and social change projects and also possess enough power to implement plans or shape the implementation of plans.

The ICM identifies three broad categories of participation, viz: non-involvement, partial involvement, and involvement. Unlike the labels used in the extant typologies, the labels assigned to the forms of participation in the ICM provide uniformity in the conceptualization of the forms of participation. This labeling helps to present the forms of participation as a continuum, reflecting the progression of intensity in local participation and control over decision making in the model, ranging from non-involvement through partial involvement to involvement. The concept of involvement is inspired by the combined connotations of Arnstein's (1969) "degrees of citizen power" with *citizen control* on the topmost rung, reflecting the highest degree of local people's control over decision making. The use of *involvement* for the desirable forms of participation is also based on the notion of *partnership* with high-level engagement in Aaltonen and Kreutz's (2009) model. It must be noted that in this model, involvement is considered to begin from the mid- to high-level stakeholder engagement. From this, it is plausible to consider 'participatory' initiatives that do not exhibit, at least, mid-level engagement as non-involvement.

Non-involvement. Non-involvement is based on the conception that local people are generally handicapped in terms of relevant knowledge and organizational capability to drive development and social change processes. Yet, it also acknowledges that people's buy-in and support for development initiatives through patronage, accommodations, and provision of 'cheap labor" and local resources are needed for projects to succeed. Non-involvement also suggests project initiators' preference for limited local participation as a means of ensuring efficiency. This mode of participation is akin to what Arnstein (1969) labeled as *manipulation* and *therapy* under the category of "non-participation." Non-involvement encompasses all the weak forms of participation identified in the extant typologies (see Table 1 above). These types of participation do not aim to encourage local people's participation in the designing and implementation of development and social change programs. They are meant to be a form of therapy, which is '*both dishonest and arrogant,'* as the more powerful project initiators and managers use local people's participation as a means of "curing them of their 'pathology' rather than changing the racism [or chauvinism] and victimization that create their "pathologies" (Arnstein, 1969, p. 218).

Non-involvement is characterized by *low-level* engagement in which project initiators *spread information,* and stakeholders *receive information* (Aaltonen & Kreutz, 2009; World Bank, 1995). Akin to passive participation in Mefalopulos' (2003, 2008) model, local stakeholders attend meetings to listen to external project initiators and experts whose roles include *informing* the local participants (Mefalopulos, 2003, 2008; Pretty, 1995). Local participation is more cosmetic than change-oriented, as decision making is mostly top-down. In the non-involvement mode, project initiators use *nominal participation* to position development projects as having a popular base to gain legitimacy for the projects, while local people get involved in the process to fulfill their desire to be included for potential material benefits (White,

1996). Other observable features include *manipulative* practices from project initiators and managers (Pretty, 1995) that could result in *coercive participation* (Tosun, 1999). Consequently, local knowledge and expertise do not make it to the decision-making table where solutions are formulated to address the developmental and social challenges of communities of interest.

In the ICM, local participants must have, at least, some form of control over decision making to be considered involved. Hence, the conception of non-involvement discounts the modes of participation like *passive participation* (Mefalopulos, 2003, 2008; Pretty, 1995), *therapy or manipulation* (Arnstein, 1969; Pretty, 1995), *coercive participation* (Tosun, 1999) that only involve *low engagement* of stakeholders (Aaltonen & Kreutz, 2009) as they essentially do not make any room for local control over decision making. This argument is made at the risk of sounding exclusionary or being accused of seeing the glass as half empty instead of half full. Occasional and manipulative engagement of local people to satisfy external actors' preconceived strategies and milestone requirements cannot be conceived as the involvement of local people, as the motivation for involving local people is ungenuine.

Partial Involvement. The employment of partial involvement stems from the assumption that local people have just enough capacity in terms of knowledge, local coordination and mobilization capacity, and some motivation to support the execution of projects. This assumption feeds on project initiators' recognition of their need for adequate levels of local stakeholder engagements to court wider local support, patronage, and accommodations in support of their project goals. In the ICM, involvement is considered to begin where there is mid to high levels of engagement and involvement in decision making. With *mid-level* engagement, project initiators and stakeholders *discuss* the details of projects, while *high-level* engagement creates avenues for project initiators and stakeholders to *engage* and *partner* (Aaltonen & Kreutz, 2009) to work

together in planning and executing projects as well as resolving challenges. Partial involvement is marked by varying *degrees of tokenism,* with external initiators of development and social change programs engaging local people as a measure to obtain some level of local participation (Arnstein, 1969). Local people's participation is generally driven by material incentives or individuals' instrumental motives (Mansuri & Rao, 2013; Pretty, 1995; Tosun, 2006; White, 1996). Local actors may be seen to be involved in some forms of decision making in the partial involvement mode, unlike the non-involvement mode where local people are largely excluded from decision making.

However, as observed in *functional participation* (Mefalopulos, 2008; Pretty, 1995), external actors make the major decisions and then employ local participation as a means to accomplish project goals, including containing costs (Arnstein, 1969; Pretty, 1995; White, 1996). Partial involvement makes room for *mid-level engagement* that enables project initiators and stakeholders to discuss issues (Aaltonen & Kreutz, 2009). "Stakeholders may make inputs into the decisions, but often not from the beginning of the process" (Mefalopulos, 2008, p. 52). This approach enables project initiators to leverage local people's knowledge and skills in the execution of pre-planned programs where needed (White, 1996), particularly when challenges arise during implementation. However, information flow is largely one-way and mostly from project initiators to the local people, without sufficient channels for feedback and negotiations.

Also, partial involvement is characterized by *participation by consultation*—the mode of participation in which "stakeholders are consulted, but the final decision making rests in the hands of the experts," as local actors are not seen as equal partners (Mefalopulos, 2008, p. 52). Project initiators "consult" local participants for their opinions, but the discussion between project initiators and local stakeholders remains a "window-dressing ritual" (Arnstein, 1969, p.

219) that provides no guarantees that the opinions and concerns of citizens or local people will be taken into account, as the status quo is maintained (Aaltonen & Kreutz, 2009; Mefalopulos, 2008; Pretty, 1995; World Bank, 1995). Some versions of partial involvement can yield some degree of power to local participants to influence decision making, but those are usually limited to minor decisions (Arnstein, 1969; Pretty, 1995; White, 1996). Also, the favored model of *representation* in this type of participation in which local elites represent their communities at the decision-making table tends to limit the number and diversity of local participants (Arnstein, 1969; White, 1996) in favor of local elites, largely excluding socially and politically marginalized groups. Local representatives also tend to have no voting powers. Where they do, they can be easily outvoted by their numerically-advantaged external counterparts. These local elites may serve in advisory roles where their advice is subject to the discretion and endorsement of external actors (Arnstein, 1969; Mefalopulos, 2008). In partial involvement mode, some local knowledge and understanding of the problems of interest and potential solutions may make it to the decision-making table, but they are largely filtered out in favor of counsel from external expertise. Consequently, local knowledge and expertise are marginally used, if at all, in addressing local developmental and social challenges in this form of participation. Hence, local people's gains are usually limited to the chance to have *"participated in participation"* (Arnstein, 1969, p. 219), while the powerful consider their compilation of records of the people's participation as successful involvement of the people.

Involvement. Involvement demonstrates an affirmation that at least some local people (constituting a critical mass) possess relevant place-specific (local) and general knowledge along with adequate organizational capability and the motivation to undertake projects to improve their own circumstances if given the financial and additional expertise they may lack. Involvement

signifies project initiators' desire for unlimited local support for jointly-set project goals. Considered the ideal form of participation, participation as involvement is characterized by high "degrees of citizen power" (Arnstein, 1969). In involvement mode, one observes *high-level engagement* among project stakeholders. Project initiators and stakeholders *engage and partner* to plan and deliver development and social change initiatives (Aaltonen & Kreutz, 2009). The level of citizen power and clout for decision making increases to take the form of *partnership* between external project initiators and local people. This enhanced partnership allows citizens or local participants to enter into negotiations and engage in trade-offs with powerholders. As seen in Pretty's (1995) *interactive participation,* local and external actors jointly undertake situational analysis and collaborate in developing action plans as well as form or strengthen local institutions together. Participation is conceived as a right rather than a means for attaining preconceived project goals.

In the most desirable form of participation, as Mefalopulos (2008, p. 52) observes in *empowered participation*, involvement allows relevant local stakeholders to "take part throughout the whole cycle of the development initiative and have an equal influence on the decision-making process." Better still, the level of citizen power could improve even further to take the form of *delegated power* and *citizen control* (Arnstein, 1969), granting local people adequate autonomy to control decision making and even make independent decisions on resource utilization. This encourages the *self-mobilization* of local people to take initiatives to address challenges in their communities (Pretty, 1995). Local people may depend on external experts for technical advice and resources but retain their independence in taking initiatives to change local systems and institutions that need improvement. Involvement promotes the *spontaneous participation* of local people (see (Oakley, 1989; Tosun, 1999) whose interest in participation

goes beyond material or socio-political benefits for themselves. Thus, involvement signifies project initiators' desire for unlimited local ownership and support for jointly-set project goals.

The resulting direct and active local participation fosters bottom-up decision making, which allows evolving local interests to be prioritized and addressed (Nikkhah & Redzuan, 2009) by using relevant local insights about the ecosystem to inform the design of solutions for local developmental and social challenges. Involvement, in its ideal form (the subject of a future article), creates participatory processes that do not only incorporate local insights into decision making but also fosters processes that reflect the inherent diversity of local communities, including often marginalized social groups like women. Involvement results in a balanced local–external control over decision making at the relevant stages of the process. Project initiators ensure this balance by demonstrating their support for *genuine* or *true participation* (Melkote & Steeves, 2015). This ensures that participatory processes and their outcomes are responsive to varied local interests, views, aspirations, and priorities.

Ultimately, involvement focuses on the two-fold conception of the purpose of participation as a means to an end and an end in itself. This orientation results in the designing of development or social change initiatives aimed at attaining project goals while empowering local people (Parfitt, 2004). Hence, the conception of involvement represents a bidirectional view of desirable participation— (i) from the efforts of project initiators not only to create space for local participants but also to share power with local people and encourage their agency to enable them to exercise adequate control over the development and social change process; (ii) the efforts of local people to leverage their agency to seek and/or gain and take up adequate space to participate and to mobilize their power (including local knowledge and expertise) as equal

partners with adequate control over decision making in the development and social change process.

The notion of involvement in the ICM also merges the sociological approach of *interaction* that fosters meaningful engagement among stakeholders with the political approach of promoting power distribution to make room for adequate local control over decision making in development and social change initiatives (Carpentier et al., 2019). In other words, involvement fuses the conception of *participation as an end in itself* with the conception of *participation as a means to an end*. In this regard, the involvement mode ensures that project managers employ appropriate mechanisms to genuinely engage local people toward attaining sustainable solutions to communities' prioritized challenges, recognizing the inherent diversity in communities and focusing on the most vulnerable groups rather than just going through the motions. For instance, in involvement mode, project evaluation is co-designed and implemented as a local–external stakeholder enterprise. Involvement places local actors at the center of the evaluation process, emphasizing local perspectives in the analysis of project processes and outcomes as the indicators of project success. Therefore, the bidirectional perspective in the ICM recognizes the need for both interaction and access to be optimized in the ideal modes of participation.

Review of Related Studies and Research Questions

This section presents a review of studies related to the involvement of local people (including women and other marginalized groups) and the incorporation of local knowledge in climate change adaptation project planning. This literature review is done to show the basis for the research questions addressed in the study.

Local Ecological Knowledge and Power Relations in Adaptation

The value in recognizing and incorporating traditional ecological knowledge (TEK) in climate change adaptation initiatives continues to gain traction (Codjoe et al., 2014; Fung, 2006; Gordon & Krech, 2012; IPCC, 2018). Traditional ecological knowledge refers to a body of environmental knowledge based on beliefs, experiences, and practices of a people accumulated through their adaptive relationship with their environment over time and passed on through generations (Berkes et al., 2000; Gadgil et al., 1993). Traditional ecological knowledge is specific to people of a given place and is based on their experiences. Such knowledge is variously labeled as *indigenous knowledge, local knowledge, traditional knowledge, or folk knowledge* (Berkes et al., 2000; Brook & McLachlan, 2008). Indigenous knowledge is often used to refer to these kinds of knowledge because it avoids some undesired connotations and projects the positive attributes. For instance, the *local* character of TEK conceals their global sources (Gordon & Krech, 2012), while the *traditional* label suggests such knowledges are conservative and unchanging though they are actually dynamic and constantly recreated by political and ideological realities.

The researcher prefers to use the local ecological knowledge label because of its predominant reference to *localness* of place and knowledge rather than the aboriginality of people or ethnicity, culture, and indigeneity or timelessness of knowledge. Local knowledge is used to refer broadly to the knowledge of people of and about a place, not necessarily restricted to those with ancestral ties to the place. Local knowledge accommodates knowledge as shared by settlers and indigenes. Indeed, local ecological knowledge is "characterized by both historical and contemporary knowledge acquired through extensive observation of the environment and its species" (Tomaselli et al., 2018, p. 338). Because indigenous knowledge is embedded in culture,

it is neither uniformly produced nor shared or distributed (Gordon & Krech, 2012). It is thus inherently a site for the contestation of views and expression of power. Within any given society, new and sectarian (or sub-group) knowledge forms constantly evolve through encounters between different segments of society. These knowledge forms could be "simultaneously local and global, indigenous and cosmopolitan, and subaltern and elite" (p. 14).

Gordon and Krech (2012) argue that indigenous knowledges in themselves are a product of power relations, citing the case of Africa and North America, where the LEK of indigenous peoples was shaped significantly through colonial relations. The attempt by Europeans to assert their political authority over the natives and the natives' resistance demonstrated the dynamic nature of LEK as the indigenous knowledges accommodated influences, "changed, adopted new forms, and appropriated other types of knowledge. They incorporated new ideas and adapted to explain and act on environmental changes" (Gordon & Krech, 2012, p. 13). In these processes, LEK recreated itself to express opposition to dominant political authority. As a tool for resisting scientific and universal knowledge (often viewed as foreign and mainly Western), traditional and indigenous forms of knowledge derive their power from the notion of timelessness, ancient, and embedded in the culture of a people.

Local knowledge "offers an alternative to the power–knowledge nexus of Western thought, and yet it introduces its own modalities of power" (Gordon & Krech, 2012, p. 1). Gordon and Krech add that "Globally, 'indigenous' has a certain moral charge, a valiant effort to counter the hegemony of outsiders" (2012, p. 5). Every people have their own indigenous knowledge. The consciousness of one's indigenous knowledge is triggered through relations with other cultures that have different forms of knowledge. Gordon and Krech point to how Europeans involved in the colonial enterprise, by encountering indigenous knowledge in Africa

and North America or elsewhere, began to "recognize their own indigenous knowledges" (2012, p. 13).

Local Knowledge and Climate Change Adaptation Decision Making

Climate change is not a new phenomenon, and so are the efforts of locals to adapt to the impact of climate change (McNamara & Westoby, 2011). Local communities have important knowledge and resources that are context-specific (Smith & Sharp, 2012). Such knowledge on climate change adaptation has proved useful in many places and situations (McNamara & Westoby, 2011). Involving local people in project planning enables them to ensure that their interests are factored into the plans. When involved in decision making, local people feel more confident in the project and are more willing to participate in the project (Brugnach et al., 2017; Smith & Sharp, 2012). However, local people's participation does not necessarily mean their interests would be fulfilled. Participation in the social space created for participatory initiatives tends to be similar to the larger social reality, with power inequalities in the relations among local actors at one level and between local actors and external actors at another level (Lund & Saito-Jensen, 2013). Arko (2019) suggests that the asymmetric power relations that play out in the negotiations and contestations among internal and external actors in participatory initiatives shape the trajectory of participatory development.

Scholars argue that instead of the widely-held view that powerful external actors wield and use power over powerless local people, local people also wield and bring their agency into the participatory process (e.g., Arko, 2019; Kauffman, 2017; Lund & Saito-Jensen, 2013). The power of local and external actors manifests in how their negotiations and contestations enable and/or constrain the agency of local and external actors in participatory development initiatives Arko (2019). Yet, the dominance of power, internalized routines, and perceptions

about the acceptability of one's actions in public settings may influence the actions of individuals and groups in participatory processes (Mansuri & Rao, 2013). Individuals or social groups that perceive themselves as proscribed from certain public actions are less likely to participate in such public actions (Mansuri & Rao, 2013). Given this review, this study posed the first research question:

> RQ1: How do the expressions of power and the related internalization of routinized ways of thinking among local and external actors enable or constrain these actors' roles in the participatory process?

Brugnach et al. (2017) studied how scale, knowledge, and power interrelate and serve as a barrier or opportunity for involving indigenous people in groups. They concluded that "involving indigenous peoples in the development of mitigation measures for climate change presents procedural, conceptual and structural challenges" (p. 19). Hence, the researchers argue that negotiations at different levels of the socioeconomic and political hierarchy, blended knowledge, and power-sharing between local people and project managers should be employed to ensure collaboration between local communities and project managers.

The nature and sources of local knowledge on climate change are different from the scientific method often acknowledged by project initiators. Bringing the two together can pose challenges due to the radical differences in the rules of knowledge production, acquisition, and shareability (Brugnach & Ingram, 2012). Who has the capacity to influence decisions? The power differential between government agencies, project initiators, and local community actors can also pose difficulties for collaboration and often leads to the exclusion of local community actors (Roosvall & Tegelberg, 2013). Brugnach et al. (2017, p. 21) state that years of subjection to this situation has reduced local communities to "passive recipients" of internationally

packaged adaptation solutions. Local communities have "little possibilities to defend their own legitimate interests and to contribute to climate change solutions." Brugnach et al. suggest building local communities' capacity to enable them to influence climate change adaptation decision-making processes.

Yet, the exclusion of local communities, their experiences, and peculiar ecological knowledge in climate adaptation planning may not be a simple challenge to overcome, given the social inequality and discrimination that are embedded in society and the resulting contestations and other forms of resistance to discriminatory practices that lead to ongoing social struggles. The views that local people may have inadequate opportunity to promote their legitimate interests by contributing meaningfully to climate change solutions (Brugnach et al., 2017; Roosvall & Tegelberg, 2013) and that varying perceptions among local and external actors about local knowledge (Brugnach & Ingram, 2012; Gordon & Krech, 2012) moderate the leveraging of local ecological knowledge in adaptation projects are worth exploring together. This will help to understand how power differential in negotiations and the associated contestations among local and external actors engaged in participatory climate change adaptation impact the quality of local participation and the leveraging of local experiences and local ecological knowledge thereof. Hence, we pose research questions two and three:

> RQ2: How does power differential among local actors and between local and external actors shape the dynamics of local actors' participation in climate change adaptation planning?
>
> RQ3: How do local and external actors' differential power and perceptions about local knowledge influence the leveraging of LEK in climate change adaptation planning?

Women's Experience with Climate Change Impacts

Gender has been found to be a significant indicator of vulnerability to climate change impact due to embedded and routinized social practices and systemic inequalities (see e.g., Alston, 2015; Garutsa et al., 2018; Jost et al., 2016). Relative to men, women are more vulnerable and less resilient to climate change impacts (Alhassan et al., 2019; Alston, 2018; Jost et al., 2016; MESTI, 2013; Sen Roy, 2018; Sultana, 2014). Global South women are disproportionately responsible for household management and care for family members (Alston, 2018; Sen Roy, 2018), including washing, fetching fuel, and providing household water as well as producing and preparing food (Jost et al., 2016; MESTI, 2013; Sen Roy, 2018). With water bodies drying up or getting contaminated from excessive exploitation, rural women who mostly bear the responsibility of providing water for domestic use have to walk longer distances than before to fetch clean water (see Alhassan et al., 2019; Alston, 2018). Conversely, when men have to play this role in rare cases, they can use bicycles and motorbikes (Alhassan et al., 2019). Women's efforts to adapt to climate change often create more burden for them, as available adaptation strategies like trench construction (for water management) and mulching are labor-intensive for women who also tend to lack access to cash to procure labor and other inputs (Jost et al., 2016).

In the Effutu Municipality of Ghana, Ankrah's (2018, p. 144) "conversations with respondents revealed that in the early and later part of the 1990s, the community [the Effutu municipality] received heavy rains..." The impact of climate change has been critical for rural dwellers, especially women whose livelihood is hard hit by erratic weather patterns and reduced crop yields (see e.g., EMA, 2020; Yaro et al., 2015) and reduced fish catch (Ankrah, 2018) mainly because, unlike their male counterparts, women are relatively more vulnerable and less

resilient to climate change impacts. Alhassan et al. (2019) found that women affected by the impact of climate change also have limited access to credit and other forms of financial assistance when needed due to traditional factors. They report that in many rural communities, a woman can only approach a traditional or community leader for financial assistance through her husband or brother, which limits women's ability to access credit.

Women are more likely to engage in small-scale farming on less fertile lands that have been left to fallow near the community, resulting in poor yields (see Alhassan et al., 2019; Davidson, 2016). Alhassan et al. (2019, p. 210) found that "female-headed households were significantly more vulnerable to climate change and variability than male-headed households." Hence, as Alston (2018) found in Bangladesh, many women go without food and/or work long hours even in their old age to support their families. Affected women have become distressed, frustrated, and alienated due to crop failure and the resultant anguish associated with not being able to feed their families (see Alhassan et al., 2019; Alston, 2018; Davidson, 2016).

Women's Involvement in Adaptation Decision-Making

The foregoing provides significant insights into the considerable impact of climate change on women. This calls for gender-sensitive and inclusive initiatives to combat climate change. Otherwise, socially marginalized groups such as women would face increased challenges if concerted action is not taken to mitigate the effects of climate change (see Boetto & McKinnon, 2013; MESTI, 2013). Boetto and McKinnon (2013, p. 234) state "…that specific groups such as women are at risk of further disadvantage unless collective action is taken to circumvent the impact of climate change." Yet, myriad factors like traditional governance systems, decision-making structures, and gendered sociocultural practices in rural communities tend to create social inequalities (see Alston, 2018; Jost et al., 2016; Melkote & Steeves, 2015).

These factors often impede or exclude rural women from contributing adequately and meaningfully to climate change discourses, project planning, and implementation (Akinsemolu & Olukoya, 2020; Alston, 2018; Garutsa et al., 2018). Even when women participate, patriarchal systems disadvantage and moderate women's voices in decision making (see Akinsemolu & Olukoya, 2020; Garutsa et al., 2018; Nyahunda et al., 2021). For example, Garutsa et al. (2018) report that in the Shona culture of Southern Africa, women's inputs into climate change deliberations are often discounted, leading to the exclusion of women from decision making. In Akinsemolu and Olukoya's (2020) study in Nigeria, the women interviewees indicated that their unequal participation in decision making deepens social inequality and deters them from contributing to climate change mitigation.

Patriarchal norms constrict women's access to local and external knowledge sources and support providers that are meant to improve people's resilience to climate change (see Alhassan et al., 2019; Davidson, 2016; Jost et al., 2016). Male domination of access to climate information sources (like radio) and access to agricultural extension services helps to make men more successful farmers and thereby improves men's resilience to climate change relative to women. Jost et al. (2016) found that male biases in agricultural organizations in many parts of the world often make them overlook women's needs for information, fertilizers, seeds, and subsidized tools, among others. Men's success, in turn, makes them the preferred local partners in adaptation decision making (Jost et al., 2016). The dependence on men perpetuates itself, as the practices of adaptation project initiators often prioritize efficiency by relying on established knowledge sources and (local) political structures dominated by men. This tends to replicate and reinforce social inequalities by sidelining radically transformative agenda toward inclusiveness and equity (see Carr, 2008; Chu, 2018; Eriksen et al., 2015; Takao, 2012).

Hence, efforts to combat climate change and its effects should be holistic to incorporate the local knowledge and perspectives of variously affected people right from the planning stage to ensure the outcomes address their priority needs (Brugnach et al., 2017; Buggy & McNamara, 2016; Coates & Gray, 2012; IPCC, 2018). In doing so, local communities should be considered not as monoliths but as stakeholders comprising diverse sub-groups with varied experiences and interests as well as socioeconomic inequalities (see Buggy & McNamara, 2016). Participatory adaptation should address rather than ignore fundamental concerns about who gets to participate and how (Buggy & McNamara, 2016; Sprain, 2017) as well as who is in charge. Adaptation decision-making mechanisms should be deeply inclusive, open to divergent values and preferences, and accommodate uncertainties in decisions. In particular, it is imperative to involve women in decision-making on climate change adaptation processes at all levels (Sen Roy, 2018), as women are disproportionately impacted by climate change (see e.g., Alston, 2018; Davidson, 2016; Jost et al., 2016).

Thus, women are systematically excluded from climate change decision making in many parts of the world (Alston, 2015; Arora-Jonsson, 2011; Davidson, 2016; Garutsa et al., 2018; Nyahunda et al., 2021). The poor and geographically distant vulnerable women are the most excluded from climate decisions (Arora-Jonsson, 2011). The researcher argues that the focus on who contributes the most to climate change only serves to take attention from the gender and power inequalities in environmental decisions. Carr's study showed that in Ghana, some adaptation options remained the choice not because they had proved useful but only because of unequal gender relations. Also, the women did not seem innocent in the perpetuation of the unequal gender system (2008).

Scholars have said environmental management improves with women's involvement (Agarwal, 2010; Buckingham, 2010) and have thus called for increased participation of women in climate change decision making. Carvajal-Escobar et al. (2008) argue that women's social roles make them environmentally conscious and always looking for adaptation strategies, making it imperative to include their knowledge and experiences in planning adaptation projects. They add that "adaptation processes are an opportunity for questioning and changing traditional gender relations in society" (Carvajal-Escobar et al., 2008, p. 279). Women do not only express less skepticism (Tranter & Booth, 2015), but they also show more concern (McCright, 2010; Sundblad et al., 2007) about climate change. In Sweden, Sundblad et al. (2007) found women and men had similar cognitive risk judgments about climate change, but women had the tendency to be more environmentally concerned.

Having more women in decision-making does not always mean they have the chance to influence decisions. In some settings, women may be included but are restricted by norms that are not easy for them to override (Arora-Jonsson, 2011). Excluding women from adaptation decision making means women's unique knowledge and needs are not reflected in climate change decisions. This does not only affect women farmers but the adaptation of agriculture as a whole (Davidson, 2016). Based on this insight, the next research question asked:

> RQ4 (a): "How are rural women involved in the planning and implementation of climate change mitigation and adaptation projects in Ghanaian farming and fishing communities?"

While so much is said about the systematic exclusion of women from climate change adaptation decision making (Alston, 2015; Arora-Jonsson, 2011; Davidson, 2016; Nyahunda et

al., 2021), there is considerable silence on how women respond to their exclusion from such decision-making processes. Do women passively accept their exclusion from decision making without resistance? This question is worth exploring. Emerging scholarship suggests that power is not only held and expressed by external actors and local elites; local actors also hold and express power in participatory processes (Arko, 2019; Lund & Saito-Jensen, 2013). Also, some marginalized groups leverage their power to contest power and even assume power in the participatory process (Lund & Saito-Jensen, 2013). However, we do not know much about how women as a social group that is heavily impacted by climate change (e.,g., Alhassan et al., 2019; Alston, 2015; Denton, 2002; Jost et al., 2016) but systematically excluded from climate change adaptation decision making (Alston, 2015; Arora-Jonsson, 2011; Davidson, 2016; Nyahunda et al., 2021) respond to their exclusion from such decision making. Hence, the final research questions asked:

> RQ4 (b): "How do existing social roles and structures influence women's involvement and roles in participatory climate change adaptation project planning and implementation?"
>
> RQ4 (c): "In which ways do women in the Effutu Municipality express their agency in response to the expressions of power that shape their involvement in climate participatory change adaptation project planning?"

Summary of Research Questions

The development of the research questions has been informed by the context of the study, the conceptual framework, and the related literature reviewed. The research questions that guided this study are as follows:

RQ1: How do the expressions of power and the related internalization of routinized ways of thinking among local and external actors enable or constrain these actors' roles in the participatory process?

RQ 2: How does power differential among local actors and between local and external actors shape the dynamics of local actors' participation in climate change adaptation planning?

RQ 3: How do local and external actors' differential power and perceptions about local knowledge influence the leveraging of LEK in climate change adaptation planning?

RQ4 (a): "How are rural women involved in the planning and implementation of climate change mitigation and adaptation projects in Ghanaian farming and fishing communities?"

RQ4 (b): "How do existing social roles and structures influence women's involvement and roles in participatory climate change adaptation project planning and implementation?"

RQ4 (c): "In which ways do women in the Effutu Municipality express their agency in response to the expressions of power that shape their involvement in climate participatory change adaptation project planning?"

CHAPTER III

RESEARCH METHODS

Overview of the Study

This study was undertaken as a case study in four phases. During the first phase, the researcher visited the study communities over a two-month period to observe the local communities and people's fishing and farming activities in the Effutu Municipality. He also observed the local culture and the local people's engagements with officials of local government agencies. The researcher also held extensive one-on-one and small-group interactions with the local people and government officials. The interactions were recorded and reviewed to inform the subsequent data collection phases. In phase two, the researcher conducted 34 in-depth interviews with officials of local government agencies and local leaders from selected fishers' and farmers' groups in the study area. The third phase involved administering one-on-one surveys with randomly selected leaders and members of the fishers' and farmers' groups (n = 225). Finally, publicly available official documents, media reports, and other documents related to climate change adaptation initiatives in the municipality were obtained and analyzed. In the rest of this chapter, the researcher presents the context of the study and the approaches employed in conducting the study—the background information on the setting of the study, the overall design of the study, methods used for data collection, data processing, and data analysis.

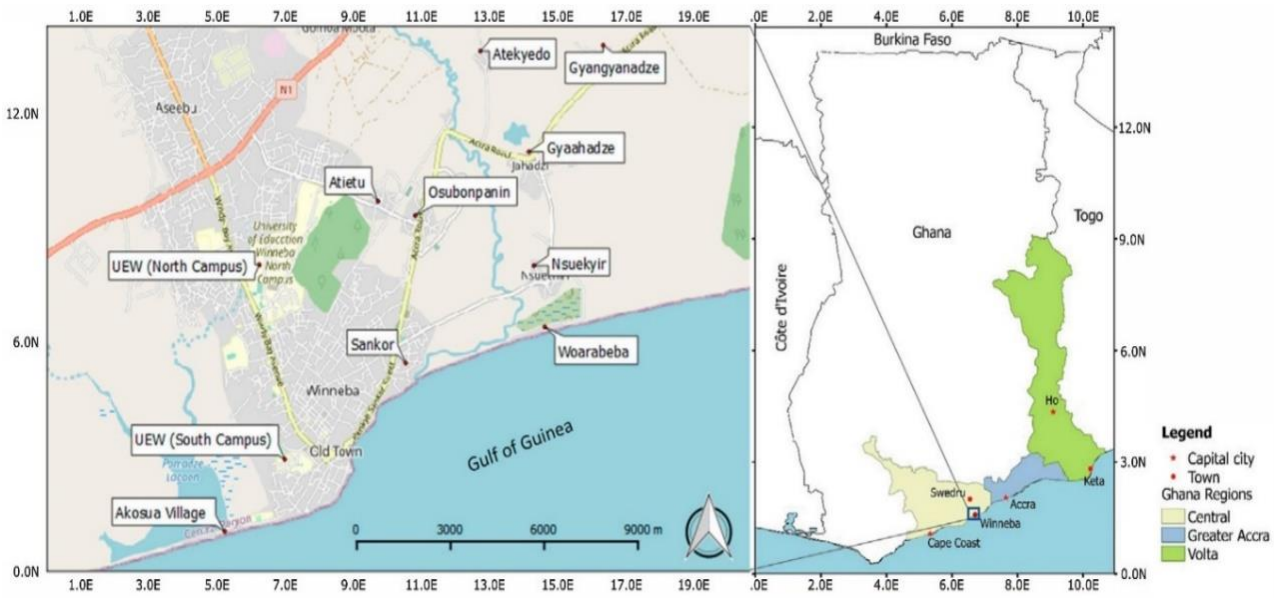
Study Site and Context: The Effutu Municipality

The Effutu Municipality along the coast of Ghana in West Africa (see map in Figure 2 below) was purposively selected for this study, focusing on rural communities. The characteristics of the municipality and its people's experiences with the impacts of climate

change as well as their involvement in personal, community-level, governmental, and nongovernmental climate adaptation initiatives (see e.g., Ankrah, 2018; EMA, 2018; D. Koomson et al., 2020) made the municipality and its people suitable for the study. The municipality lies between latitudes 5°16’ and 20.18” N and longitudes 0°32’ and 48.32’’ W, covering a land area of 95 km^2 (EMA, 2020; Ghana Statistical Service, 2014). The area is in the dry-equatorial climatic zone and experiences low rainfall and a long dry season of five months. The municipality is bounded in the south by the Gulf of Guinea (see Fig 2), and it is one of the many areas on the coast of Ghana that are considerably impacted by climate change (see Ankrah, 2018; EMA, 2014, 2020; D. Koomson et al., 2020; MESTI, 2013).

Figure 2

Map of Effutu Municipality with its communities



Note: Adapted from Koomson et al. (2022)

Apart from the sea, the area has many water bodies, including the Muni Lagoon and five rivers—Ayensu, Onyina, Bommbir, Ntakorfam, and Gyahadze. The area is also characterized by

coastal savannah grassland (Ghana Statistical Service, 2014). These features make the area suitable for fishing, farming, and salt wining. “Fishing, farming and related work are the leading economic activities in the municipality” (Ghana Statistical Service, 2014, p. 4). Thus, a large proportion of the municipality’s rural households (84.8%) and 49.4% of urban households are engaged in crop farming (Ghana Statistical Service, 2014). All segments of people (including women) in the rural communities are involved in the area's fishing and farming occupations. Because these economic activities largely depend on nature, people's livelihoods are heavily impacted by the ramifications of climate change (see Ankrah, 2018; EMA, 2018). The Erratic weather conditions with reduced annual rainfall ranging from 400 mm to 500 mm (EMA, 2018) and deteriorating conditions of the ocean, lagoons, and other water bodies have taken a toll on crop yield and fish catch (see Ankrah, 2018; Davies-Vollum et al., 2021). The 2013 Annual Progress Report of the Effutu Municipal Assembly (EMA) states:

> This consistent yearly drop in rainfall pattern… is as a result of the climate change phenomenon which is impacting negatively on the small holder [*sic*] poor farmers in the Municipality and the need to adopt coping strategies to mitigate the impact of climate change on the vulnerable group of people in the Municipality (MPCU, 2013, p. 9).

In response to the climate change situation, the local people, the EMA, other local government agencies, and nongovernmental organizations (NGOs) have been undertaking various adaptation measures. The “Effutu Municipal Assembly has, in line with Ghana’s national climate change policy, adopted varied strategies to adapt to the effects of climate change and reduce the impacts, especially on the vulnerable, women and children” (EMA, 2018, p. 9). Ongoing adaptation initiatives include tree planting under the taungya system[2]; promotion of

[2] “The Taungya system is an agroforestry intervention whereby farmers are given parcels of land from degraded forest reserves to produce food crops and to help re-establish and maintain timber plantations.” The modified

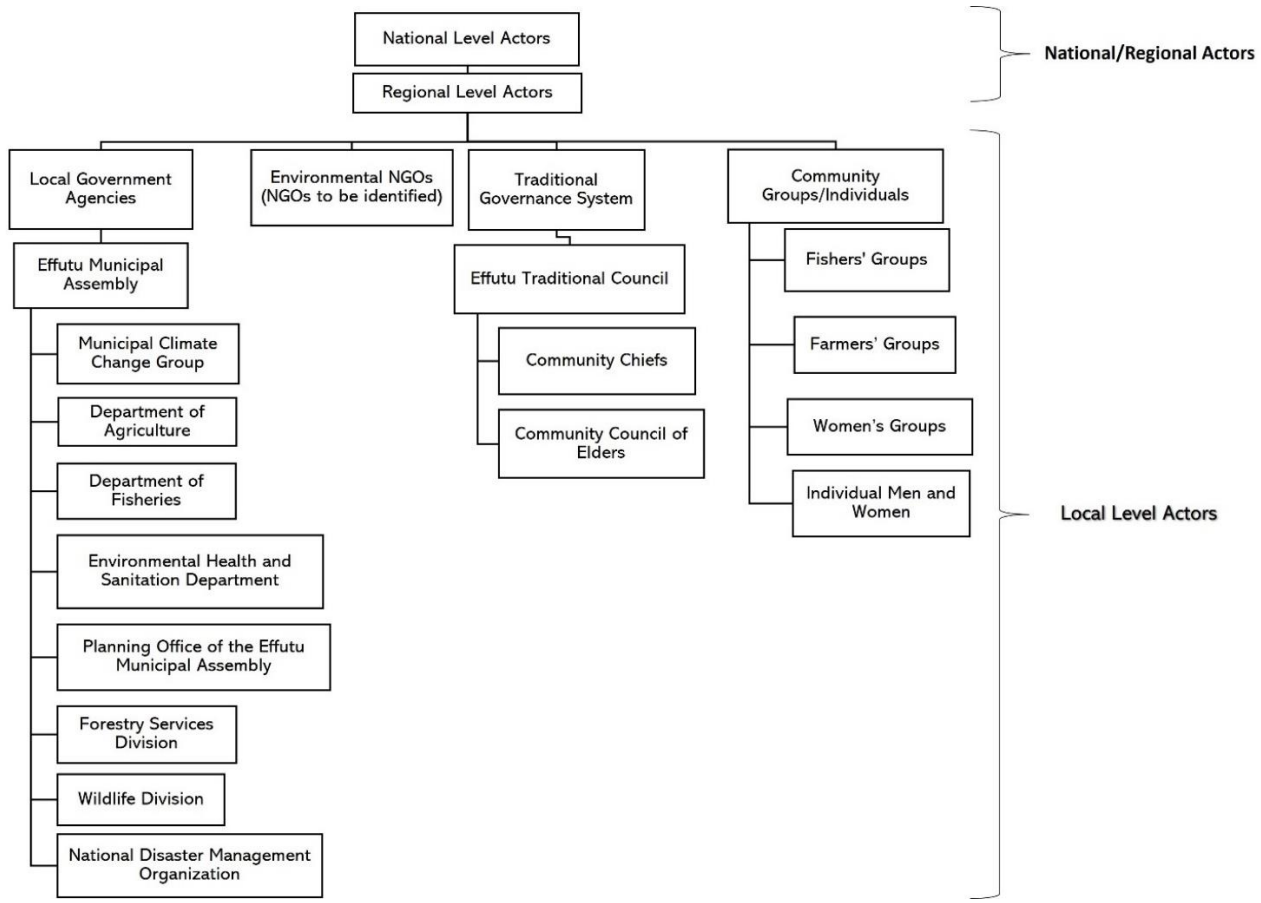
modern, less-smoke fish smoking methods; conservation of Ramsar sites and lagoons; dredging of rivers and construction of high-capacity storm drains; promotion of climate-smart agriculture; more emphasis on livestock raising; vocational skills training for diversified income; and other alternative livelihood initiatives. Due to the local people's experiences with the incidence of climate change impact, the local people's involvement in fishing and farming, and the ongoing adaptation measures, the people in this area appreciate not only the reality that changes in climate are affecting their livelihoods (Ankrah, 2018), but they are also aware that some measures can be taken to mitigate the effects of climate change.

The municipality is administered by the EMA, headed by the municipal chief executive nominated by the president of the Republic of Ghana and confirmed through a vote by a 28-member assembly. The Assembly coordinates the activities of all government agencies in the municipality. The traditional governance system runs alongside the constitutional government. Traditionally, the municipality has one paramountcy with its paramount chief located at Winneba—the municipal capital. Each village in the municipality has a traditional council headed by a chief (usually male), who rules with the assistance of a queen mother, with counsel from a council of elders (mostly men). The various actors in these governance systems and structures play diverse roles in climate change adaptation planning and implementation. The diversity of local and external actors involved in the climate adaptation initiatives also made the area suitable for examining how actors' power differential and sociocultural systems and structures shape the various actors' involvement and roles in participatory climate adaptation. Figure 3 below is a chart of key climate change adaptation actors in Effutu Municipality.

taungya system was introduced to deepen local participation in decision making in forestry management and benefits distribution (Adjei et al., 2020, p. 1188).

Figure 3

Key Climate Change Adaptation Actors



Local Participation in the Effutu Municipality

Ghana's 1992 Constitution makes provisions for decentralization and a framework for citizens' participation in decision-making and local governance (Institute of Local Government Studies, 2010). The devolution of powers regime in Ghana requires democratic decision making at the local level. The people of Effutu Municipality participate in the election of their assembly members to represent them in the municipal legislature. They also elect the members of the unit

committees[3] to represent the Effutu Municipal Assembly in the communities. In the context of climate change, the Ghana national climate change policy stipulates the inclusion of diverse local people, including women, in climate adaptation planning (MESTI, 2013). Donors and development partners also require local people's involvement in climate adaptation initiatives. For instance, projects funded by the United Nations Capital Development Fund in collaboration with the Ministry of local government require the EMA and other participating agencies to conduct vulnerability analysis in consultation with grassroots people.

The Effutu Municipal Department of Agriculture is participating in the Modernizing Agriculture in Ghana program, which promotes gender-sensitive and climate-smart agriculture (Government of Canada, n.d.). This Canadian government-sponsored program requires the involvement of diverse local people, including the marginalized, in planning and implementing the project. These requirements and local government actors' recognition of the virtues of bottom-up planning encourage local government agencies to involve local people in the governance and development planning processes. Thus, local people participate in public forums, education, training, and sensitization programs to identify developmental challenges and how they may be addressed. Yet, some stakeholders do not have enough information to appreciate the workings of the local governance system to effectively participate in the local decision-making process (Institute of Local Government Studies, 2010).

[3] The unit committee is the lowest and basic unit in Ghana's 4-tier decentralized local governance structure (Institute of Local Government Studies, 2010). Article 25 of Ghana's 1992 constitution provides for the creation of local government systems to devolve the governance and administrative functions of the central government to the local level. Hence, the unit committee model was established to strengthen the local government system. Unit committee members operate as representatives of the district assemblies at the grassroots level. Unit committees are the focal point for discussing local community problems and channeling them to the metropolitan, municipal, or district assemblies (Anderson, 2022).

Study Design

This dissertation was designed as a three-part case study on how local government agencies and environmental NGOs involve local communities (including women and other marginalized groups) in planning climate change adaptation projects in the municipality. The first part focused on the strategies local government agencies and environmental NGOs employ to ensure the adequate involvement of local actors with local knowledge of climate change in the planning and implementation of adaptation projects. The second part examined the extent to which local government agencies and environmental NGOs leverage the value of LEK in the design and implementation of their adaptation projects. And the third part assessed women's involvement in climate change adaptation project planning and implementation in the municipality. The following sub-sections provide details on the design and execution of the dissertation.

Case Study

The researcher found the case study method appropriate for this study, as he sought to thoroughly appreciate a phenomenon of interest in its natural context (Crowe et al., 2011; Yin, 2014). This research approach has been variously defined. To Crowe et al. (2011, p. 2), "A case study is a research approach that is used to generate an in-depth, multi-faceted understanding of a complex issue in its real-life context." Thomas (2011, p. 513) defines it as follows: Case studies are analyses of persons, events, decisions, periods, projects, policies, institutions, or other systems that are studied holistically by one or more methods."

Yin's (2018, pp. 16–17) definition of a case study begins with the scope of a study: "A case study is an empirical method that investigates a contemporary phenomenon (the "case") in depth and within its real-world context, especially when the boundaries between phenomenon

and context may not be clearly evident." This implies the suitability of the case study method for studying the real-world phenomenon of participatory climate adaptation planning, which involves significant contextual elements and social conditions that are worth exploring in the study. Also, the subject matter of interest and the questions that the researcher pursued in this study required comprehensive information to address it thoroughly. The case study method involves a comprehensive study of a phenomenon from several perspectives, using multiple and complementary means of data collection and analysis to arrive at a thorough appreciation of the phenomenon (Yin, 2014, 2018). Yin (2014) adds that the case study approach is suitable for exploring the *why* and *how* questions that this study posed. Since this study had a social justice dimension, the mixed-methods design helped to provide a fuller understanding of the complex dynamics of local participation in climate adaptation decision making by placing observed actions in context to demonstrate how people experience or impose inequities (Denzin & Lincoln, 2018).

Since the questions at hand required deep diving to generate data that helped to address the subject, it the study benefitted from the unique strength of case study's "ability to deal with a full variety of evidence—documents, artifacts, interviews, and observations—beyond what might be available in a conventional historical study" (Yin, 2014, p. 12). The multiple data sources helped to enrich the data and increase the internal validity (Thomas, 2011) as well as the overall reliability and validity of the study (Wimmer & Dominick, 2013; Yin, 2014). Combining these data from these sources made for a broader and deeper understanding of how sociocultural systems and structures influence diverse local people's involvement in climate adaptation planning and generated insights to explicate the findings in a way that none of the methods standing alone could generate (Denzin & Lincoln, 2018). Case study researchers recommend

combining multiple data sources to enrich the study and permit data triangulation to deepen the analysis (see Denzin & Lincoln, 2018; Yin, 2016, 2018).

Like other methods, the case study method has limitations, mostly due to its predominant use of qualitative approaches in data collection and analysis. There is the case of inadequate data and time restrictions that impact the depth of analysis (Crowe et al., 2011) and leads to ungeneralizable findings (see Aguinis & Solarino, 2019; Elsahn et al., 2020). However, Flyvbjerg (2006) and Golafshani (2015) contend that the point of generalizability of findings from large samples is overrated, given the understanding that scientific progress is cumulative and can be advanced by individual scientific studies in the human and natural sciences (Flyvbjerg, 2006). Case studies are also said to be susceptible to researcher bias. But that is not exclusive to case studies, as other research methods are not immune to researcher bias (Flyvbjerg, 2006). Playing to ethical rules of objectivity and reporting evidence as found (including contrary evidence) addresses the problem (Yin, 2014). A researcher's transparency and provision of details about every step of the research process—case/participant selection, data collection, acknowledgment of the researcher's positionality and level of involvement and how that has influenced data collection and interpretation—"help readers to judge the trustworthiness of the case study report" (Crowe et al., 2011, p. 8) as it allows for verification. Despite its potential limitations, the "strengths of the case study method outweigh its limitations" (Vissak, 2010, p. 384), where it is the appropriate approach for investigating a phenomenon and if the study is professionally designed and conducted (Yin, 2014).

Data Collection Methods

Preliminary Research

Before embarking on the actual data collection, the researcher undertook a preliminary study to understand the setting of the study. At this stage, the researcher visited the rural communities and also observed the participants at their workplaces and meetings. He also selected and interviewed some of the local government officials, local male and female leaders of the fishers' and farmers' groups, and community leaders from selected rural communities in the municipality. The interviews focused on the participants' knowledge about climate change and its impact on the occupations and livelihoods of the local people, ongoing adaptation initiatives, the general and adaptation-specific decision-making processes, the culture and traditions in the area, and gender involvement in decision making.

The people interviewed were selected to reflect typical informants or participants in the actual study as envisaged. Relevant informants at this stage improved the validity and reliability of research outcomes (see Cossham & Johanson, 2019). The responses from these participants provided the researcher with insights about the setting of the study, including the "history, customs, and rituals; the local 'lingo'; the identities and actions of the key players; and so forth" (Lindlof & Taylor, 2011, p. 7). The insights gathered during the preliminary phase guided the researcher in developing the interview guides (attached as Appendix C) and subsequent survey instrument.

Qualitative Interviews

As earlier indicated, in phase two, the researcher conducted in-depth interviews with local leaders (men and women) from selected fishers' and farmers' groups and officials of local government agencies that work with the local communities on climate adaptation initiatives in

the municipality. The interview method is suitable for this study because it is "especially good at describing social and political processes. That is how things are and why they change" (Rubin & Rubin, 2005, p. 2). The depth of information needed to answer the research questions in this study required in-depth interviews to generate "more intensive than extensive" information. For this reason, detailed information provided by a few relevant respondents was preferred (McCracken, 1988, p. 17). In-depth interviews create an environment that encourages respondents to freely and frankly express themselves, as they are engaged individually without the intrusion of others (Boyce & Neale, 2006). As Markham (2009) argues, research remains an abstraction from specific lived experiences. Because ideas are often "not disconnected from personal experience," evidence from small samples cannot be discounted in qualitative research if the participants have relevant experience and understanding of the subject under investigation (Altheide & Johnson, 2011, p. 589). Altheide and Johnson add that qualitative evidence consists of extracts from unique experiences of limited but relevant sources to highlight patterns or meanings of a specific situation that may be useful for understanding other similar or related problems. Thus, this aspect the data collection methods in this study focused on comprehensively understanding individual cases (Markham, 2009, p. 139).

Sample and Sample Selection

The selection of participants involved a multi-stage sampling procedure. First, the heads of local government agencies were purposively sampled from departments that work with the local farmers' and fishers' groups on climate adaptation initiatives in the municipality (see Englander, 2012; Yin, 2016). The resultant six agencies included the department of agriculture, department of fisheries, environmental health and sanitation department, the planning office of the Effutu Municipal Assembly, and Forestry Services Division (FSD) and Wildlife Division

(WD) of the Forestry Commission of Ghana. The next step involved exponential non-discriminative snowball sampling for additional participant identification (see Etikan et al., 2016), but the identified participants had to meet specific criteria for inclusion in the final sample. The researcher asked the identified officers for the list of local fishers' and farmers' groups they work with the communities. The researcher then contacted the leader of each identified group to request their group's participation and referral of other similar groups.

The researcher then conducted screening interviews with the leadership of all 39 identified groups and purposively selected those that met the criteria of active groups (see Englander, 2012; Hyman & Doolittle, 2022)—those with established leadership structures and held regular meetings—at least once a month. The 12 selected local groups were based in 10 communities: Sankor (two groups), Gyahadze, Nsuekyire (two groups), Ateitu, Gyangyanadze, Woara Beba, Kookrom, Effutu Ekroful, Silverkrom, and Atekyedo. There was one all-female group. The highest-ranking male and female leaders in each group (e.g., chairperson, secretary, treasurer, or financial secretary) were selected and interviewed. These selection criteria ensured that the participants had demonstrated adequate leadership traits and willingness to be involved in decision making. They were also expected to have relevant experience and the ability to speak to questions about their involvement in climate adaptation decision making (see Englander, 2012; Yin, 2016). The researcher asked each selected leader to rank the six local government agencies regarding how much engagement occurs between their group and the agencies. The reported extent of engagement between the agencies and the local people informed the number of interview slots allocated to each agency. The department of agriculture was, by far, the highest ranked, followed by the department of fisheries and FSD. Hence, participants from the local

government agencies were distributed as follows: four from the department of agriculture, two each from the department of fisheries and FSD, and one each from the others. Overall, the researcher interviewed 34 participants—11 local government officials, 12 local female leaders, and 11 male leaders of fishers' and farmers' groups.

The researcher engaged each participant in a semi-structured interview using open-ended questions (Lincoln & Guba, 2013; Yin, 2016). The interviews lasted between 44 to one hour and 16 minutes, with an average of 49 minutes. The interviews allowed the researcher to get into the lifeworld of the participants (Englander, 2012) to elicit intensive information about the participants' awareness, understanding, and concern about climate change, as well as their experiences and observations regarding the dynamics of local people's involvement in climate adaptation decision making. Participants also answered questions about how local sociocultural systems and political structures of privilege, power, and patriarchal norms shape diverse local people's participation in adaptation decision making. The interviews with the locals were conducted in Fante—a local language spoken by the participants—which the researcher is fluent in to make the participants comfortable. Interviews with government officials were conducted in English. The interviews were audio-recorded with participants' permission to ensure the responses were securely captured.

Field Notes from Ethnographic Observation and Document Analysis

As noted above, the researcher collected additional data to complement the interview data. Daymon and Holloway (2002) note that collecting data through interviews comes with potential gaps between participants' responses and their actual experiences due to social desirability or other forms of interviewer effect that may lead to inaccurate responses. During the interviews, the researcher took notes of outstanding ideas and experiences that participants

shared about the research questions. He also recorded participants' significant body language as they answered the questions, which could be used to provide context for quotes presented in the findings. The notes also captured ideas that kept coming up, contrasting views, and responses that needed follow-up.

The researcher gathered additional information from publicly available documents—including official documents (annual plans, budgets, and reports) from the EMA and its development partners' websites, project reports, media reports, and previous scholarly works—and field notes from the researcher's ethnographic observation of the local groups' meetings and visits to participants' workplaces (see Akinsemolu & Olukoya, 2020; Chávez, 2012). Where available, the documents were accessed online. Information gathered from these sources was used to complement and enrich the qualitative data (Akinsemolu & Olukoya, 2020), which allowed for data triangulation to enrich the analysis (see Denzin & Lincoln, 2018; Yin, 2016, 2018).

The documents analysis was used to gather information that helped the researcher to understand how the local people and officials of local government agencies made sense of "who they are, and how they fit into the world" of the climate change adaptation planning processes (McKee, 2003, p. 1). It helped the researcher to explore the sensemaking processes of the actors involved in the participatory adaptation process—i.e., how do the local and external actors perceive themselves, the other players, and the roles of each group in the adaptation initiatives?

Surveys

Given the insights in the literature about the potential influence of social inequalities and existing sociocultural systems and structures on local people's participation in civic activities like climate adaptation planning (e.g., Buggy & McNamara, 2016; Mansuri & Rao, 2013; Sprain,

2017), a survey of the leaders and members of local fishers' and farmers' groups were conducted to examine how individuals' views about their groups' inclusiveness shape their participation in climate adaptation decision making. The survey also covered the experiences and perceptions of the local people in the context of their engagements with external actors. The survey method was used in this study due to its suitability for capturing and describing the distribution of a population's perceptions about its circumstances or its members' attitudes toward their situations (see Reinard, 2001).

Population, Sample, and Sampling Procedure

As already explained, the researcher conducted the surveys in the rural communities of the Effutu Municipality. Respondents were selected through a multi-stage cluster sampling procedure. The initial step involved purposively selecting the most active groups (see details under interviews) for the relevance of their members' experiences with the dynamics of local participation in adaptation decision making within their groups and communities (Patton, 1990). Altogether, the selected groups had 659 members (N = 659). Based on Krejcie and Morgan's (1970) required sample size table, a sample size of 243 was determined to be sufficient, with a 95% confidence level and a 5% margin of error. With an average of 58 members per group, a quota of 22 respondents was allotted to each of the 12 groups that participated in the survey, yielding a sample size of 264 (which exceeds the required sample size of 243) to make up for potential incompletes, dropouts, and other unforeseen situations.

The final sample was drawn using the simple random sampling technique for each group to give every group member an equal probability of selection (see Latpate et al., 2021). The researcher obtained a list of group members from each group through their leaders. A copy of each list was then cut into pieces to have one name per piece. The pieces of paper for each group

were then placed in a bowl and randomly drawn one by one until 22 names were drawn. This was repeated for each group to generate 264 samples to be surveyed. The remaining cutout names were kept in separate files, one for each group, to allow the researcher to replace unavailable or unwilling participants. Where respondents were not immediately available, the researcher made three attempts to get them to take the survey as a way of maximizing the response rate (see Phillips et al., 2016; Smyth et al., 2010), given that the sample size was not large but adequate. In the end, 225 people responded, yielding a response rate of 85.23%. The 225 people sampled comprised 33.33% males, 66.22% females, and one with no sex indicated. In terms of educational level, 35.6% had no formal education; basic (primary and junior high) school: 53.8%; senior high school: 7.6%; and tertiary: 3.1%. For leadership status, 10.75% were leaders, and 89.3% were non-leaders. The majority of respondents (79.1%) fell in the category of old people and the rest (20.9%) were young.

The researcher administered the surveys face-to-face with the respondents in their homes, workplaces, or public place of the individual's choice. The researcher read and translated the questionnaires to the non-literate respondents, endeavoring to minimize any social desirability effect (see Bergen & Labonté, 2020). Literate respondents were given the questionnaires to complete and return. The one-on-one administration of the surveys lasted between 40 to 84 minutes, with an average of 50 minutes[4], mainly due to the need for translation.

Survey Instrument and Pre-Testing

The survey instrument included items about group inclusiveness, cultural openness, gender inclusivity, the use of LEK for climate adaptation, participants' participation in their

[4] The duration of instrument administration did not influence the outcome variables of interest in this study.

groups' activities, and demographic characteristics. Additional items help to place participatory climate adaptation planning within the context of social relations in the ongoing negotiations and contestations among actors with unequal power in participatory adaptation planning. Those items covered feedback provision, perception of flexibility, response to exclusionary decision making, perceptions of actors' relevant knowledge and power expressions, and leaders' likelihood or openness to modify adaptation plans. Most of the items in the questionnaire required participants to rank or rate their experiences, observations, and perceptions on a five-point Likert-type scale. The complete survey instrument is attached as Appendix D. The researcher pre-tested the instrument with 12 people from the target groups to determine the suitability and comprehension of the items. An analysis of the internal consistency of the items meant to be used to generate composite variables was conducted, and they were found to have internal consistency. After that, the researcher made the necessary edits based on his observations and pre-test respondents' feedback. The measures used for the variables are presented below.

Measurement of Variables

Concern about Climate Change. This variable was measured by asking respondents to rate their level of concern about climate change by asking, "How concerned are you about climate change?" Respondents rated their concern level on a five-point Likert scale, ranging from 1 = "Very concerned" to 5 = "Very unconcerned." The response options were recoded to range from 5 = "Very concerned" to 1 = "Very unconcerned" (M = 4.90, SD = .49). An upward movement on the scale reflects an increase in the level of concern about climate change.

Concern about Climate Change Impact. This variable captured respondents' rating of their level of concern about the impact of climate change, using the question: "How concerned are you about the impact of climate change on your economic livelihood (fishing or farming

activities)?" The ratings employed a 5-point Likert-type scale, ranging from 1= "Very concerned" to 5 = "Very unconcerned." The response options were reverse coded to range from 5= "Very concerned" to 1 = "Very unconcerned" (M = 4.94.06, SD = .32). A higher score was indicative of a higher level of concern.

Contribution Capacity. The variable measured respondents' self-assessment of their capacity to contribute meaningfully to climate adaptation planning, using the question, "How do you view your ability to make meaningful contributions to climate change adaptation plans?" Participants rated their capacity on a 5-point Likert scale starting from 1= "Very high" to 5 = "Very low." The options were recoded to range from 5= "Very high" to 1 = "Very low" (M = 4.06, SD = .87). A higher score was indicative of a higher level of concern.

Perceived Official View of Local Capacity. This variable captured local people's rating of their perception of how local government officials view local people's capacity to contribute meaningfully to adaptation plans. It used the question**,** "How do you think officials of local government agencies and NGOs view your community members' ability to make meaningful contributions to climate change adaptation plans?" The response options ranged from 1 = "very high" to 5 = "Very low." These were reverse coded to range from 5 = "very high" to 1 = "Very low" (M = 4.16, SD = .81), where an upward movement on the scale reflects the respondents' higher rating of their perception of positive views about local capacity among the officials.

Actual Participation. The participation variable captured respondents' actual group participation by asking the respondents: "Approximately how many times did you participate in activities (including meetings) organized by your group in the last year?" Responses for this question were: 1 = "1", 2 = "2 – 5," 3 = "6 – 8," and 4 = "9 – 11." An upward movement on the scale reflects an increase in actual participation in decision making.

Willingness to Participate. This variable measured respondents' willingness to participate in their groups' activities based on effort and was obtained from the responses to the question, "What is the level of effort you are willing to make to ensure that your leaders receive and consider your views when designing climate change adaptation plans?" Responses for this question were: 1 = "Very low," 2 = "Low," 3 = "Neutral," 4 = "High," and 5 = "Very high." An upward movement on the scale reflects an increase in willingness to participate based on effort.

Feeling Encouraged to Participate. This third participation variable depicts respondents' willingness to participate in their groups' activities, based on feeling of encouragement and was captured with the question, "How often do you feel encouraged to contribute your ideas during group meeting meetings to decide on climate change adaptation?" Responses for this question were 1 = "never," 2 = "rarely," 3 = "sometimes," 4 = "most of the times," and 5 = "always." An upward movement on the scale reflects an increase in willingness to participate based on the respondents' feeling of encouragement to participate.

Cultural Openness. The study employed a binary cultural openness measure to assess how general community support for gender inclusion enhances gender inclusion in groups of fishers and farmers (Yes=1; No=0). This was based on the question which asked respondents: "There are aspects of our culture that do not encourage women to be involved as women would desire. To what extent do you agree or disagree?" Responses to this question are arranged on a five-point scale ranging from 1 (strongly agree) to 5 (strongly disagree). To obtain the binary measure for the regression analysis, responses (4) and (5), which include "disagree" and "strongly disagree," were coded as 1 (Yes) to reflect communities with open culture orientation that supports gender inclusion, while (1) to (3) which start from "strongly agree" to "neutral" were coded as 0 (No) to indicate otherwise.

Group Inclusiveness. Following previous studies (see Jansen et al., 2014; Russell, 2002), the *group inclusiveness scale* was generated by applying principal factor analysis (PFA) to the five indicators of inclusiveness— frequency of feedback from leaders, satisfaction with the use of members' views in decisions, frequency of soliciting members' ideas, frequency of including members in external meetings, and the likelihood of getting views considered. A principal factor analysis was applied to the items to retain only factors with eigenvalues greater or equal to one. Based on the Bartlett test of sphericity reported in Table 2, the null hypothesis of non-collinearity among the inclusiveness indicators was rejected (at the 5% alpha level). The Kaiser-Meyer-Olkin (KMO) value of 0.789 is above the 0.5 threshold considered adequate for factor analysis and sampling adequacy (I. Koomson & Churchill, 2021; Lahai & Koomson, 2020). The rotated factor loadings displayed in Table 3 indicate that all the inclusiveness indicators make adequate contributions to factor 1. This means that the group inclusiveness scale generated using factor analysis is appropriate. A unit increase in the group inclusiveness scale reflects an increase in inclusiveness within groups. Cronbach's alpha was then computed to test for internal consistency among the indicators. The Cronbach's alpha for the five indicators is .789 (see Table 2), which is higher than the reliability coefficient of .70 that is considered acceptable (see e.g., Adadan & Savasci, 2012; Heryana & Yasa, 2020), indicating internal consistency among the inclusiveness indicators.

Table 2

Principal Factor Analysis of Inclusiveness Indicators

Factor	Eigenvalue	Difference	Proportion	Cumulative
Frequency of feedback from leaders	2.12968	1.96892	1.1356	1.1356
Satisfaction with use of members' views in decisions	0.16075	0.21182	0.0857	1.2213
Frequency of soliciting members' ideas	-0.05106	0.11	-0.03	1.19
Frequency of including members in external meetings	-0.15965	0.04	-0.09	1.11
Likelihood of getting views considered	-0.20428	.	-0.11	1.00
Cronbach's alpha				0.789
Bartlett test of sphericity (Chi2)				328.243***
Kaiser-Meyer-Olkin (KMO)				0.789

*** p<0.01, ** p<0.05

Table 3

Factor Loadings (Pattern Matrix) and Unique Variances

Indicator	Factor1	Uniqueness
Frequency of feedback from leaders	0.622	0.6131
Satisfaction with use of members' views in decisions	0.4325	0.8129
Frequency of soliciting members' ideas	0.7037	0.5048
Frequency of including members in external meetings	0.7668	0.412
Likelihood of getting views considered	0.6874	0.5274

Gender Inclusivity. Following previous studies (see Jansen et al., 2014; Russell, 2002), a *gender inclusivity index* was generated by applying principal factor analysis (PFA) to the five indicators of gender inclusivity. Item 1 (women's adequate involvement frequency) captured

respondents' views of how often women are adequately involved in adaptation decision making, using the question, "In your view, how often are women adequately involved in the planning of the climate change adaptation initiatives you have been involved in?" The response options ranged from 5 (Always) to 1 (Never). The second item—leaders' gender-induced planning likelihood—elicited respondents' opinions about their group leaders' likelihood of modifying adaptation plans to reflect women's interests based on women's requests. It used the question, "In your opinion, how likely are the leaders of your group to modify adaptation plans to incorporate the views of women if women think the plans do not reflect their interests?" The response options for this item ranged from 5 (Very likely) to 1 (Very unlikely). Item three (male leaders' gender-induced planning likelihood) captured respondents' opinions regarding male leaders' likelihood of modifying adaptation plans to reflect women's interests based on women's requests. It measured this using the question, "In your opinion, how likely are the male leaders in your group to modify adaptation plans to incorporate the views of women if women think the plans do not reflect their interests?" with response options ranging from 5 (Very likely) to 1 (Very unlikely).

Item four (estimated gender-interest planning frequency) elicited respondents' motivation to request their groups to modify adaptation plans to reflect women's views and interests based on their estimated chances of success. This indicator was measured using the question, "Based on your estimation of the chances of getting leaders to modify adaptation plans to incorporate the views and interests of women, how likely are you to request a modification of adaptation plans to reflect women's interests?" Response options ranged from 5 (Very likely) to 1 (Very unlikely). The fifth item (satisfaction with women's views inclusion) measured respondents' satisfaction with their groups' inclusion of women's views, using the question, "Overall, how satisfied are

you with your group's inclusion of women's views in climate adaptation plans?" Response options ranged from 1 (Very dissatisfied) to 5 (Very Satisfied). To produce an index for which a unit increase reflects an improvement in gender inclusivity (i.e., the inclusion of women's views in adaptation planning), items 1 to 4 were reverse coded to be consistent with that of item five, which clearly captured the concept of inclusivity with a positively-phrased statement. Item 1 was recoded to range from 1= "Never" to 5= "Always," and items 2 to 4 were transformed to range from 1= "Very unlikely" to 5= "Very likely." An upward movement on the transformed scales reflects an increase in the incorporation of women's views in adaptation planning.

The researcher proceeded to conduct a PFA to determine the factor structure of the gender inclusivity index. Only the factors with eigenvalues greater or equal to one were retained. Based on the Bartlett test of sphericity shown in Table 4 ($p<.05$), the null hypothesis of non-collinearity among the gender inclusivity items was rejected. The Kaiser-Meyer-Olkin (KMO) value is .789, which is above the 0.5 minimum threshold considered adequate for factor analysis and for sampling adequacy (Kaiser, 1970; I. Koomson & Churchill, 2021). The rotational factor loadings (in Table 5) show that all the gender inclusivity indicators contribute adequately to the gender inclusivity index. This implies that the gender inclusivity index generated using factor analysis is appropriate. A unit increase in the gender inclusivity index reflects an increase in gender inclusion among the groups studied. The Cronbach's alpha was then computed to ascertain the internal consistency among the items. The Cronbach's alpha for the five indicators is .74 (see Table 4), which is higher than the acceptable reliability coefficient of .70 (see e.g., Adadan & Savasci, 2012; Heryana & Yasa, 2020).

Table 4

Principal Factor Analysis of Gender Inclusivity Indicators

Factor	Eigenvalue	Difference	Proportion	Cumulative
Women's adequate involvement frequency	1.777	1.76642	1.2734	1.2734
Leaders' gender-induced planning likelihood	0.01058	0.07879	0.0076	1.281
Male leaders' gender-induced planning likelihood	-0.06821	0.0493	-0.0489	1.2321
Estimated gender-interest planning frequency	-0.11752	0.0889	-0.0842	1.1479
Satisfaction with women's views inclusion	-0.20642	.	-0.1479	1
Cronbach's alpha				0.7354
Bartlett test of sphericity (Chi^2)				224.695***
Kaiser-Meyer-Olkin (KMO)				0.789

*** $p<0.01$

Table 5

Factor Loadings (Pattern Matrix) and Unique Variances

Indicator	Factor1	Uniqueness
Women's adequate involvement frequency	.5712	.6737
Leaders' gender-induced planning likelihood	.7081	.4986
Male leaders' gender-induced planning likelihood	.6036	.6357
Estimated gender-interest planning frequency	.574	.6705
Satisfaction with women's views inclusion	.5054	.7445

Estimation Techniques

To ascertain the association between respondents' rating of group inclusivity and their actual participation and willingness to participate, the researcher employed multiple regression analysis. Multiple regression analysis was also applied to examine the relationship between cultural openness and gender inclusivity. In both analyses, some important socio-demographic control variables—age, gender, leadership status, educational level, and years (duration) of group membership—which have been found to be potential influencers of participation and gender inclusivity (see e.g., Hsieh & Winslow, 2006; Jansen et al., 2020; Nelson & Piatak, 2021; Slade Shantz et al., 2020) were included in the analysis. These analyses are detailed in regression models 1 and 2 for the participation and gender inclusivity regression models, respectively.

Regression Model 1

Since the actual participation and willingness to participate variables were captured with ordinal scales, the researcher followed previous studies (see e.g., Nelson & Piatak, 2021; Tuominen & Haanpää, 2022) by employing ordinary least squares to examine the association between group inclusiveness and participation. The model of interest is specified in equation 1 below.

$$Part_i = \beta_0 + \beta_1 Incl_i + \beta_2 Lead_i + \beta_3 Memyrs_i + \beta_4 Female_i + \beta_5 Edu_i + \beta_6 Age_i + \varepsilon_i \quad (1)$$

where represents participation for individual . is the inclusive scale, is a binary variable for leaders, which is captured as 1 for leader and 0 if otherwise. is the number of years one has been a member of a group, is a binary variable for gender which is captured as 1 for female and 0 for male. is a binary variable for formal educational status, which is captured as 1 for educated and 0 for 'no formal education.' *Age* is also binary, which is captured as 1 for an older person (ages

41 years or over), while 0 is for a young person (ages under 41 years). is the intercept, are parameters to be estimated while is a random error term.

Regression Model 2

Because the gender inclusivity index is a continuous variable, a cue was taken from previous studies (see e.g., Nelson & Piatak, 2021; Tuominen & Haanpää, 2022) by employing ordinary least squares to analyze the association between cultural openness and gender inclusivity in climate adaptation decision making. The model of interest is specified in equation 2 below:

$$Geninc_i = \beta_0 + \beta_1 Culop_i + \beta_2 Memyrs_i + \beta_3 Female_i + \beta_4 Edu_i + \beta_5 Age_i + \varepsilon_i \qquad (2)$$

where is the rating of gender inclusion by individual . is the binary indicator of cultural openness, where 1 represents open culture and 0 if otherwise. is the number of years one has been a member of a group. *Female* is a binary variable for gender which is captured as 1 for female and 0 for male. is a binary indicator for formal educational status which is captured as 1 for educated and 0 for 'no formal education.' *Age* is also binary, which is captured as 1 for an older person while 0 is for a young person. is the intercept, are parameters to be estimated while is a random error term.

Apart from the regression analyses, other variables—concern about climate change, concern about climate change impact, contribution capacity variables, and perceived official view of local capacity—were analyzed and reported as descriptive statistics.

Coding and Analysis of Interview Data

The researcher listened to the audio tapes before transcribing them verbatim to kick off the analysis process. The researcher then listened to the tapes again to verify the content against transcripts and effected corrections where necessary. After that, the data was analyzed, following

McCracken's (1988) analytical framework, which breaks the data analysis broken into three stages. The interview data were analyzed inductively, flowing from what was in the data to conceptual analysis and sensemaking (Creswell & Poth, 2018; Denzin & Lincoln, 2018). At the ideographic stage, the researcher performed a literal reading of the interview transcripts, identifying and noting themes as they came up. The coding drew on the statements, ideas, and explanations that emerged from each transcript. After that, the researcher brought together individual statements in the context of the overall individual interview transcript. At the second stage, the various transcripts were brought together for observation of emerging patterns and themes in the interviews. This process involved comparing the responses from the various interview participants to identify emergent themes that addressed the research questions. Similar themes that addressed a common research question were grouped and categorized along with their subthemes and illustrative quotes.

At the third and final stage, the researcher examined all the interviews broadly together with the supplemental data (including notes from the field observation, analysis of documents, and notes taken during interviews), which was also analyzed within the broad context. The researcher captured frequently occurring themes and contrasting themes, along with participants' explanations or rationalization of their ideas and perceptions. Themes that came up extensively and those that were intensely expressed were captured as the major findings. These themes were then used in the analysis and interpretation of the data to answer the research questions. The most significant quotes, examples, illustrative, and rationalizations of viewpoints and actions were extracted to illuminate the findings in line (see Creswell & Poth, 2018; Lindlof & Taylor, 2019; McCracken, 1988). Quotes from the interviews were presented with participants' assigned code names to protect their identities. Local government officials appear in the findings as

Interviewee LGOG1 to LGOG11; Local male participants are named Interviewee LM1 to LM11; and local females are labeled as Interviewee LF1 to LF12. The findings from the interview data were triangulated with findings from the analyses of relevant, publicly-available documents and notes from the ethnographic observation.

Guided by the theoretical framework adopted for this research—participatory development communication theory, Mansuri and Rao's (2013) conceptual framework for participatory development, and Foucault's theory of knowledge and power, the inductive analysis drew out the respondents' views on the engagement of local communities and the involvement of rural women as well as the leveraging of LEK in climate adaptation project planning and the constraints therein.

Human Subjects Research and Institutional Review Board

All interactions with human subjects strictly adhered to the regulations and ethical considerations set forth by the Research Compliance Services (RCS) at the University of Oregon. RCS reviewed all data collection methods that involved contact with human subjects (i.e., the interview guide and survey instrument). The protocol (RCS#10202020.018 with a copy attached as Appendix A) was granted an exempt status effective November 18, 2020, through June 30, 2022. Paul Koomson was the primary and sole investigator for this study. He passed the necessary Collaborative IRB Training Initiative (CITI) training on November 9, 2020, expiring two years later. Paul's CITI certification was renewed on November 19, 2020 and expired two years later.

Based on the approved IRB protocol, subjects were either systematically or purposively selected, and the invitation letter was provided or read to them and translated where necessary. The invitation letter contained a summary of the research, its risks and benefits, and participants'

right to decline participation and/or completely withdraw from the study at any time. The subjects were then told that participating in the interview or questionnaire administration constituted their informed consent. The informed consent document is attached as Appendix B.

Summary

This chapter has presented the data collection methods employed in the study, the study design, the research site, the population and sampling techniques, and the instruments used for data collection. How the various data sets were processed and analyzed has also been explained. The findings that address the first research question are presented in the next chapter.

CHAPTER IV

POWER PERCEPTIONS AND EXPRESSIONS AS CONSTRAINTS AND ENABLERS OF CLIMATE ADAPTATION ACTORS' ROLES

> We have public announcements. We invite them. Then we discuss the project that the assembly is undertaking or is going to undertake. Then we invite their *input* as well. So we *tell* them we are… we put it before them: 'This is what we are going to do in this area. What are your inputs? *Is it okay*? *Do you want us to go ahead with it*?' *That's how we work with the communities* [Interviewee LGOF6].

Climate adaptation projects are place-based in nature (Vedeld et al., 2016) and are more effective when they reflect the needs and priorities of the local communities they are designed for (Bisaro et al., 2010; Fung, 2006; Hickey & Mohan, 2004). Local people are better positioned to promote their interests and priorities in climate adaptation projects when they are involved in decision-making (Brugnach et al., 2017; Fung, 2006; Smith & Sharp, 2012). Climate adaptation processes are inherently multilayered, and adaptation actors operate within a socio-ecological system that involves cross-level interactions among diverse actors with varying stakes in governing the system (Bisaro et al., 2010) and, therefore, require effective coordination of stakeholders' interests and actions of at all stages (Vedeld et al., 2016). However, participatory processes tend to reflect the power disparities in social relations. Actors' conceived, perceived, and or expressed roles and power can enable, constrain, or moderate their control and the control of others over the decision-making processes (Arko, 2019; Fabricius & Collins, 2007; Lund & Saito-Jensen, 2013).

Ongoing Climate Adaptation Initiatives in EMA

To provide context for the results, it is clear that there have been personal, community-level, governmental, and nongovernmental efforts to improve the resilience of the communities

and mitigate the impacts of climate change on the environment and the livelihood of the people (see Davies-Vollum et al., 2021; EMA, 2018; D. Koomson et al., 2020), such as the promotion of climate-smart agriculture. The municipal directorate of agriculture is encouraging farmers to adopt resistant, early-maturing, and high-yield crop varieties that can better withstand harsh environmental conditions. Farmers are also encouraged to take up or increase livestock raising and tree-crop farming (as tree crops require less water once they are established) to ensure sustainable food production and provide diversified, multi-year income for the farmers. The EMA has been dredging water bodies and constructing high-capacity drains to forestall flood disasters. For example, it dredged the Ntakorfam Stream and planted trees around the stream to reduce evaporation. The resultant dam now provides water for all-year-round (vegetable) farming, which is enhancing the livelihoods of farmers, their dependents, and the municipal economy (EMA, 2018, 2020). The EMA and the directorate of agriculture have also been distributing early maturing and disease-resistant hybrid dwarf coconut seedlings to farmers for planting under the Livelihood Restoration Project (see Dogbevi, 2013). The Forestry Commission of Ghana is promoting afforestation and reforestation under the taungya system. The EMA organizes communities for tree planting under the Green Ghana Project (Aboagye, 2022). Challenging Heights (a nongovernmental organization) and other organizations have also been planting trees around water bodies to protect them (GhanaWeb, 2020; Kumadoh, 2016; Modern Ghana, 2011; Myjoyonline, 2007; UEW Department of Geography Education, 2021). Other adaptation strategies include conservation of community sacred forests (Kumadoh, 2016) and multi-sectoral environmental education and sensitization of the communities against indiscriminate cutting of trees, bush burning, and mismanagement of water bodies. For example, the Wildlife Division of the Forestry Commission has been working with communities to protect

the Muni-Pomadze Ramsar Site, the Muni Lagoon, along with trees and vegetation in their enclaves. The municipal environmental health and sanitation department is promoting modern fish smoking methods to reduce Carbon dioxide (CO_2) emissions and improve public health. The United States Agency for International Development (USAID)/Ghana Sustainable Fisheries Management Project (SFMP) has been promoting sustainable fishing practices and providing improved fish processing facilities, including the *Ahotor* stove—an energy-efficient option for fish smoking that emits less smoke (Hinneh, 2016). Challenging Heights and the Rural Enterprise Program have also been helping people in the communities, including women's groups, with skills training and, in some cases, providing start-up capital to start small enterprises to diversify their income sources (Akutse & Samey, 2015).

Given this context of the extant literature and the ongoing climate adaptation initiatives in the municipality, this chapter presents the findings to address question 1, which asked: "How do the expressions of power and the related internalization of routinized ways of thinking among local and external actors enable or constrain these actors' roles in the participatory process?" It sought to understand how actors in participatory climate adaptation initiatives operate vis-à-vis the power structures embedded in the existing social and political setting of the Effutu Municipality and in the ongoing relationships between the local people on the one hand and the officials of local government agencies on the other hand. Based on the analyses of the in-depth interviews, survey, ethnographic observations, and analysis of documents, the findings here explicate the reasoning and motives underlying the negotiations and contestations that drive the proposition, reception, consideration, adoption, and or adaption of climate adaptation measures in the Effutu Municipality. The subsequent sections present the themes and subthemes that

emerged from the analyses, supported with exemplifying quotes, tables, and graphs where necessary.

Traditions as Constraints on Community Interests in Decision Making

The traditional system of governance (which operates alongside the modern governance system), the land tenure system, and the faith value system of the Effutu people play significant roles in adaptation decision making and implementation, particularly at the individual and local community levels. These systems influence how local actors—including the local elites, the general population, women, and other marginalized groups—think of the roles they can play and how they individually or collectively play those roles in shaping the course of climate adaptation initiatives.

Unwillingness to "Insult the Elders"

The analysis of the interviews indicated that some local participants think questioning their chiefs or taking action against the sand winners who have the blessing of the chiefs would be perceived to be questioning the judgment and authority of the chiefs.[5] Although the respondents indicated that they had concerns about the role of some of the leaders in unhealthy environmental practices, they preferred not to use the avenues available for addressing the problem. The avenues include the traditional council (comprised of the chiefs and elders) or government institutions like the police service, EMA, environmental protection agency, and forestry department, among others. Most of the local participants did not consider any of these as

[5] The researcher's personal observations and interactions with the local people from the communities indicated that the Effutu people, like other traditional communities, have a chieftaincy system that gives the local chiefs the room to operate like local monarchs over their subjects. The system from which the chiefs derive their authority operates on a belief system akin to the notion of *the divine right of kings*—the doctrine that kings derive their authority from God, not from their subjects. This belief manifests in local sayings like, "It is God that establishes kings," and "If God doesn't ordain you as a king, your desire to be a king is vain." It follows from this that rebellion against the chief is rebellion against the will of God or the gods of the land, and that constitutes offensive conduct. This conception makes the subjects revere the position and authority of their chiefs.

a good option to use. They thought that since the chiefs were complicit in the destruction of the environment, seeking redress from the traditional authorities amounted to reporting the chiefs and elders to themselves, which would be counterproductive.

Also, the participants considered it an anomaly or against the norm to seek redress from the modern institutions or local government agencies. They believed it was not a good practice to report the community chiefs and elders to those agencies. Their observation of the practices in the communities has conditioned them to think that it is not right to take such actions against chiefs and that doing so could come with repercussions for them as subjects of the chiefs. Such actions could also humiliate the chiefs and erode the dignity of the office of the chiefs as traditional leaders. Interviewee LM4 summed up this mode of reasoning: "You cannot summon them to the traditional council for what they are doing. Informing the police means you have gone to report the community leaders. They won't take it lightly with you. So you let things be." After all, one would continue to live with the elders in the community. With this mindset, the chiefs and elders are largely left to have their way. They can operate without much resistance from their subjects because "They are the leaders, so if you speak your mind and they refuse to go by it, there is nothing you can do" [Interviewee LF5].

Faith-Induced Subordination[6]

The finding here is closely related to the previous one. It emerged from the analysis of the interviews that some community people suppress their desire to take action to address the

[6] Information gathered through the ethnographic observation and interactions with the local people indicated that the Effutu chiefs are selected from the royal family, and are thought of as the chosen ones of God or the gods of the community. The people regard the chief's throne as the embodiment of the spirit of the land or community. The chief works in close collaboration with the fetish priest—the servant, mouthpiece, liaison, or human agent of the gods. A key part of the priest's duty is to protect the chief spiritually. This system and its operation render the chiefs powerful. It creates in the subjects the sense that they are less powerful or even powerless in relation to the chiefs, as the ruling class is thought to be backed by spiritual forces associated with the authority of their thrones. This helps to preserve leadership and social tranquility in some regards. The chiefs can punish their subjects for offenses, including environmental breaches. The subjects can have their rights protected under the national constitution if they

environmental challenges in their communities because their actions could be viewed as insubordination against their chiefs. Participants from the local communities were disappointed that their chiefs and elders were not taking care of the long-term interests of the larger community. They wished they could take action to help themselves. Yet, the participants either felt there was not much they could do, or they would rather not act for fear of potential spiritual ramifications for acting against the chiefs' interest or will. The respondents barely articulated the spiritual ramifications clearly. An elderly man who gave the most explicit expression to this stated, "You see… in situations like this, *they will deal with you* in ways that… they may not get you arrested and imprisoned or take you anywhere, but if God doesn't intervene on your behalf… your life would be messed up" [Interviewee LM4]. When the researcher pushed for further insights into how the subjects' fear of spiritual ramifications moderated their urge to stand against sand winning and push their chiefs to take the necessary actions to control it and protect the environment, Interviewee LM10 explained how the feared consequences played out:

> …. On spiritual grounds! Because you are opposing what they [the chiefs] are doing, always opposing. But if you are no more, you won't be able to stand in their way. Oh, these spiritual dealings are not things that are overt, but if you are an observant person, you will notice some things, and you will realize some things are not easy. … things will get to a point where you will realize that the way things are going with your very life and livelihood are totally out of your control, and you cannot get things to work any better. Yeah! Oh, (giggles cynically) those things are not rare. They are not rare at all. They happen.

Participants who expressed this view expressed frustration about their inability to push for the adoption of measures that could curtail the activities that harm the environment and worsen the climate situation and its effects on their health and livelihood. The respondents were

want to seek such redress for perceived-unfair treatment from the traditional rulers—the chiefs and the elders of their community. The constitution of Ghana also recognizes the position of chiefs, their ownership and control over the land under their jurisdiction, and their prerogative to determine the activities that can be undertaken on the land.

concerned about what they considered to be widespread, uncontrolled activities of sand winners who were destroying the vegetation and cultivated farmlands. They believed the chiefs and elders could curb the destruction, but they were not doing so because they were benefiting from it. A quote from a respondent captured this when he lamented:

> If you take a look at the trajectory of the sand-winning venture, they started from Akoti, they came to Ojobi, came to Kweikrom, went to Senya, Gyangyanadze, then to Gyahadzi. And now they are here. In all those communities, if you look into it, you find that it's only a few elders in the communities who gave the land out for sand winning. Everyone is looking for money for their pockets [Interviewee LF4].

Interviewee LM10 believed that: "Without the chiefs' authorization, nobody can just bring their equipment to the land and start excavating the sand… no one can obtain permission from the municipal assembly or the environmental protection agency to come and work on the land." However, the respondents believed that their chiefs' complicity in causing environmental harm explained the chiefs' posture in addressing the problem. For them, the chiefs' outlook constitutes a barrier to the people's ability or desire to pursue appropriate civic environmental actions to protect the vegetation and, thereby, safeguard the environment and its effects on the climate.

All the local people and the officials of the government agencies who spoke about sand winning complained about how the uncontrolled sand-winning situation was worsening the impact of climate change in the municipality. An agricultural extension officer lamented how this was frustrating their climate adaptation efforts by pushing farmers away from water bodies they could depend on to mitigate the impact of climate change on farming. Interviewee LGOF4 noted, "The little land they have, the next day they go, the sand had been mined. So they are being shifted far away, sometimes away from the water bodies. So, from the water bodies, where are they going? He explained: "We are still depending on the naturally-available sources of water, so life is becoming more miserable if farming is the only means you have."

Land Tenure System and Competing Land Use

Per the land tenure system in the Effutu Municipality, the traditional authority (headed by the chiefs) and a few clans or individuals own and control the use of most of the land. Being close to the highly-populated national capital of Accra and the peri-urban town Kasoa, the Effutu Municipality has become a "receptacle of spillover population expansion from Kasoa and Accra resulting in Land grabbing and sanitation problems" (EMA, 2020, p. 6). The sprawling urbanization has increased competition for land, as the owners release their lands for other uses like sand winning, building of homes, estates, and companies. Hence, most farmers' hold on farmlands is not guaranteed. The majority of farmers who do not own their farmlands are being displaced from the traditional subsistence agriculture farmlands (EMA, 2020). Interviewee LGOF4 decried the situation, saying: "I don't know if you observed anything about the sand-winning situation there. It is making land acquisition hard. The land tenure system, in general, is a terrible problem."

In response to the poor rainfall pattern, the agriculture directorate is promoting tree crop farming, as tree crops generally need less water once the crops are well established and start yielding and can provide higher incomes to the farmer over many years. However, participants from the agriculture department lamented that they were not getting enough farmers to participate in its coconut planting project because the farmers face land acquisition challenges. They indicated that the landowners tend not to be interested in farming and are not willing to cooperate in that regard. They are interested in ventures that would bring them income in the short term. Though many of the farmers had bought into the tree crop planting idea, most of them had difficulty in deciding to venture into tree crop farming. Those who had decided were also faced with the difficulty of securing safe parcels of land to start their farms.

Many of the farmers explained that they were cautious, as they were guided by their observations regarding the insecurity of farming long term on rented land. The land access situation supports annual crop farming but not tree crop farming which requires larger tracts of land for long-term cultivation. Interviewee LGOF2:

> We went to the Ateitu community and proposed to them that we had the coconut plantation project. We wanted them to take advantage of the coconuts that we are promoting. ... They told us, 'We don't have land.' If you don't have land, how do you cultivate tree crops? They have just small, small spaces—even that is only plot, plot. It means most of the land has been sold [for other uses].

The Forestry Services Division is faced with a similar situation in getting farmers to participate in its tree plantation development program. The departments' promotion of this adaptation initiative and farmers' decision to get involved in it are moderated by the land ownership system and control over land use. In Interviewee LGOF8's words, "They [the chiefs and private landowners] can decide to give you land to plant your trees, and they can decide not to give it to you." Landowners could also be arbitrary in exercising their control over land and its use, often focusing on their own interests without much consideration for the interests of the farmers and the environment. Such practices create a sense of uncertainty for farmers who are considering venturing into farming or agroforestry. Some of the officers from the FSD explained how this hinders climate adaptation, stating:

> You go looking for areas to plant trees… someone may give it to you and say, okay, 'I have given it to you. You can plant your trees.' And the next day or in two months, three months' time, an estate developer or somebody who is interested in land for building or other purposes will come and express interest in the land that has been given to you for tree planting. He [the landowner] can decide to sell the land to the person. So the trees you planted will be uprooted. It's common [Interviewee LGOF8].

The following extracts from a local farmer and an agriculture extension officer who shared their experiences, respectively, demonstrate the arbitrariness associated with the traditional landownership and tenure system:

> There is another case of a woman's farm that we used for demonstration. We placed a signage on the farm to indicate that the farm was being used for demonstration. The chief of the village went for the signage… When I asked the chief about it, he said we needed to go through him before selecting the farm for demonstration and that the land belonged to him. As a result of that incident, the woman stopped farming in the community. She has relocated her farm to another region where her father owns lands [Interviewee LGOF1].

> Sand winning in Winneba has destroyed much of the farming land. If you do not buy the land you farm on, you will go to the farm one day only to find the land destroyed by sand winners, and you cannot do anything about it because you do not own the land [Interviewee LF10].

The community chiefs consider themselves landowners with much power over land use. All land-use decisions— including the agricultural extension officers' selection of individual farmers' farms for agricultural demonstrations—must receive their approval. Otherwise, as the quotes above indicate, a chief can also stop them, even arbitrarily.

Family Representation. Some individuals choose not to participate in climate change adaptation planning meetings because of a default conception of being represented by their family members. Many individuals belong to large, close-knit families with one family head[7] who often represents their family. Interviewee LM6 expressed how this plays out, saying: "With regard to village life… some people like me have two wives with six or eight sons and daughters… So the few who come to listen are the same people who spread the message to the rest of the community." Nevertheless, Interviewee LM6 sounded oblivious to the potential

[7] A family head (usually an adult male in the Ghanaian context) is the leader or head of a family or household and is considered to be the person who provides for a family.

implications of this practice for the diversity of ideas from various segments of society to inform decision making.

Interviewee LGOF4 also shared a similar observation about how the family representation concept shapes local peoples' participation in deliberations at community meetings:

> You see, when it comes to meetings or community meetings, leadership works. In Silverkrom, for instance, it's a group of family members who are there. They have a leader, a family leader. Once he is there, the other community members don't talk much. He is like a sub-chief or a chief there.

Due to the ubiquity of large families and the interconnectedness of families in the municipality, many individuals choose not to get involved in public discussions, as they defer to their family heads and community elders. That also suggests that the locals who choose to be represented by others forgo the opportunity to share their thoughts in the decision-making processes. Such individuals are not excluded by any overt code of practice. It is, perhaps, needless to state that this orientation has considerable implications for the dynamics of local participation, especially for marginalized social groups. The implications of this default arrangement for gender dynamics in local participation are discussed in chapter seven. The next major finding shows how local actors' expectations and disappointments from adaptation projects shape their engagements with external actors in adaptation decision making.

Expectations, Disappointments, and Associated Conceptions about Government Agencies

Many of the farmers and fishermen in the Effutu municipality hold well-ingrained views about the mandate and roles of the local government agencies that engage them in their work. From the information gathered through the interviews and personal observations, some of the local participants' views are consistent with the official mandate of the agencies. Other aspects

of the local people's conception of the mandate of the agencies are informed by the local people's own thoughts about how things should be, the desire for much-needed help, their quest for more, promises made them, the officials' personal or extra efforts to support the work of the farmers or outright misinformation. Whatever the basis of the conception, these create in the local people some expectations of the local government agency officials, some of which are realistic and consistent, while others are inconsistent and unrealistic. The negotiations and contestations that ensue in the local people's quest to have their expectations or desires fulfilled and the officials' ability to fulfill them become the (dis)incentives that drive community peoples' participation in the climate adaptation initiatives in the municipality. Some of the major themes that emerged in this regard are discussed below.

Repeated Unfulfilled Expectations. The interviews with the local people indicated that they participate in climate adaptation initiatives with the expectation of direct material benefits. Some respondents' expectation of gains was based on the promises that project managers made to the participants. Participants also indicated that some of the expectations were their own expectations, sometimes uncommunicated and unknown to the project managers. The following quote exemplifies the case of repeated dashed hopes and expectations and the local participant's reaction: "As a person who needs help and who doesn't have anything and has been treated this way over and again, if you invite me to come for a meeting to listen to what you have to say, I will not show up. So for my enthusiasm to participate in such meetings, *hehe*" (laughs cynically) [Interviewee LM6]. Some respondents even said they lost other opportunities while they counted on the ones that failed them. When this happens (more so repeatedly), the people's hopes and expectations are dashed. They become disappointed. It hurts their feelings and truncates their dreams, making it rather difficult for them to get involved in future initiatives because they are

skeptical that their hopes or expectations will be fulfilled. Hence, they feel they have been taken for a ride and do not want that to recur.

Disputed Mandate and Material Assistance Preference. The officers know the reality of the limited resources available for delivering their mandate. But the people in the communities think that the local government agencies like the directorate of agriculture and the municipal assembly have the capacity and the mandate to help them beyond "providing information and token of inputs" for their work. The Farmers were more interested in material resources compared to the extension services that they received from the agricultural extension officers, but the material assistance was not forthcoming as the locals expect. Farmers protested that when the officers provide some input, it tends to be insufficient, or the officers also deliver them when it is too late. Farmers with this view perceive engagements with the officials as a waste of their time, and they do not entertain meetings with the officers. Quotes extracted from Interviewee LM6 and Interviewee LF7, respectively, demonstrate the community members' standpoint on this situation:

> The inputs that they are supposed to bring to help us… we don't get them. Even if they will-bring some inputs, you could have three farmers, one of whom may be working on a 2-acre farm, another on a 3-acre farm, and so on… then the agricultural officers give them a small can of agrochemical to share among themselves and use it to spray their farms [Interviewee LM6].

> The inputs they bring are usually insufficient, and they also bring them late. If I have money and I can buy my own input, then there is no need for me to participate in any meeting with the officers to come and talk to me. They are just coming to waste my time. If I have some work to do, I will rather go and concentrate on it [Interviewee LF9].

The agricultural extension officers had a different view about the distribution of the insufficient agrochemicals they received from the government. Some officers said the local people seemed to believe the government has a limitless capacity to make things happen, so its agents could not be limited. For them, it was better to ensure that every farmer benefitted, even if the quantity each

farmer received was inadequate than giving it to only a few farmers and excluding some people entirely. Excluding some farmers to ensure beneficiaries got enough of the chemicals was neither acceptable to the farmers. Interviewee LGOF4 explicated the officers' reasoning in the extract below:

> The Food and Jobs Program comes with some chemicals, which are also distributed to the farmers free of charge. But, sometimes, because of the quantities involved, we sort of group the farmers so they can share the chemicals because not everyone will get them. If everyone must get it, then the person must be someone who has registered or given his name to say he will farm based on the Planting for Food and Jobs program. Those farmers get the seedlings from the program. When you get the seeds, then you get the chemicals, too.

With consistent demand for more assistance from the farmers, the agricultural extension officers have come to agree that the farmers need more help beyond the provision of information. They think they should be able to help the farmers better in order to win their trust. The officers wish they could do more to fulfill the farmers' expectations. The officers concede that their limited range of support for the farmers has implications for their ability to get the farmers to accept their adaptation messages. And they blame their weakened leverage over the farmers as resulting from limited resources, as seen in the interview excerpts below:

> So you go there, what are you going to do? Just talk and talk and talk. They are not interested in that. Someone will even tell you, 'every year you come, and you come and say the same thing. Where has it landed us? You have come again this year with the same information.' They want to see material things that can boost their agriculture … [Interviewee LGOF3].

> Basically, what we do when we enter any community is to tell them what we can do and what we cannot do because the first thing any farmer will tell you is: 'We need money to do this. We need money to do that.' But we tell them: 'Our mandate does not get to that level… Our work, basically, is to help you improve upon your production.' So with that understanding, they believe that what you can offer them is not that much. The farmers expect us to help them with money, but we don't have the money [Interviewee LGOF2].

> So if they are looking at getting physical things and we are looking at imparting knowledge, definitely there are differences [Interviewee LGOF4].

False Promises for Persistent Demands. This theme relates to the preceding one about unfulfilled promises and shows how some unfulfilled promises arise. The local people had their own thoughts about outsiders who visited them and interacted with them about their occupations—farming or fishing. The people's default belief that these outsiders could help them out of their occupation-related difficulties leads them to make requests for help, sometimes persistently. Over time, some officers have become accustomed to the local people's pleas for help. The officers have also developed the perception that the locals always demand assurances of material support. Because the officers need the people's cooperation to execute their tasks, officials with this outlook proceed to make pledges to the people without any intention or capacity to redeem the promises. Failure to fulfill the promises tends to jeopardize the relationship between the local people and the officers. The local people become frustrated and think of future adaptation initiators in the same light, thus making them less likely to cooperate and participate in adaptation initiatives, as depicted by two respondents:

> Many of us don't like attending meetings with NGOs and agricultural extension officers because we have needs, and when these people promise us, they don't keep their promises. I have real needs, and I am looking into how I could find something to sell to make some money to take care of my needs, so I won't attend fruitless meetings [Interviewee LM6].

> The agricultural extension officers came and said they had observed that we were hard workers, so they wanted to help us. They said they would give us wellington boots and machines for spraying our farms, together with improved seeds and agrochemicals. We welcomed the pledge… but the officers never came back [Interviewee LM1].

The consequences of the farmers' default of asking for help and the official's unfulfilled promises to farmers manifested during the researcher's requests for interviews with the local people[8].

[8] Some prospective local participants were not willing to speak with the researcher. They thought the researcher was an official from the agriculture department or a non-governmental organization with interest in agriculture, and they

Fruitless Engagements. Similar to the experiences discussed under the previous theme, the respondents referred to many meetings they had had with people who introduced themselves as officials from organizations that were focused on helping farmers to improve their work and its outcomes in light of the changing climatic conditions. Interviewee LF3's statement that "We shared our thoughts to their admiration. They became happy with our thoughts, and they clapped for us, but once they left, that was the end; we didn't *see* anything again" illustrates the local people's displeasure with this experience. Interviewee LM8 also said, "…after they had taken our opinions on the matter, we did not receive from them what we had to get from them." Another respondent, Interviewee LM5, lamented that:

> But … [laughs cynically] when we shared our concerns, and they had to give us feedback or a concrete solution by helping us to get a fix for our challenges, then they said, 'We would get back to you,' but they never returned with any solution.

Thus, if engagements yield no outcomes from the local participants, they lose interest in participating in future engagements with project initiators. As the farmers stated, the local people receive the visitors and dialog with them. However, many of those engagements did not turn out to be what the local people expected, making them feel they have been taken for granted, as Interviewee LF3's recounted experience shows:

> We are often made to form groups for the project. I think that after the initiators have left, the chiefs should invite the leaders and members of the newly formed group to discuss

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related with the researcher as such. The farmers' default of requesting help also played out during the interviews with farmers. Consciously or unconsciously, many of the interviewees in the communities consistently shifted the focus of their responses to the interview questions to talk about their challenges. The farmers, in particular, were quick to talk about their challenges and ask for help from the researcher. Some also encouraged the researcher to forward their issues to the appropriate places from where they could get help. This made the conversations difficult at some points and prolonged some of the interviews. For instance, interviewee LM8 was keen to state before the start of their interview that: "They have treated us this way for long. So even in your case, when my elder brother called to inform me that you wanted to talk to us about farming, I thought it was one of the municipal agriculture officers. … And for you, too, what is it that you will help us with?" After observing this in a few interviews, the researcher clearly stated at the beginning of subsequent interviews that he was not a government or NGO official, and he had no connections or influence with government officials. He reiterated that he was a student who was collecting data as part of his research. Even that did not stop the requests for direct help or to convey their requests for help to the appropriate officials. This observation about the farmer's posture was consistent with those shared by government officials, especially the agricultural extension officers.

> how to ensure that things work for us. That doesn't happen. In one instance, what happened was that we, the leaders and the members, kept meeting and hoping something would come out of it. Nothing happened after some time, and the members got tired; they all stopped attending meetings, and the group died naturally.

Two other informants confirmed the experience narrated in the quote above.

Contrasting Views about Local Decisional Capacity, Agenda Setting, and Community Engagement

The local government agencies acknowledge the need to engage the local communities in their climate adaptation initiatives to gain the people's buy-in and support for the initiatives. The officials employ various community engagement strategies. Generally, the strategies employed serve to *check the box of participation* than provide the local people adequate control over the decision-making process. Consequently, top-down decision-making mechanisms drive the setting of the adaptation agenda and the decisions made. The themes that emerged in this regard are discussed next.

Preference for Top-Down Decision Making. From the interviews with all the local government officials, they acknowledge the need for bottom-up decision making in principle, but the top-down decision-making approach remained their favorite in practice. This is true of the respondents from the municipal assembly, the municipal agriculture directorate, the environmental health department, the forestry services division, and the wildlife division. Interviewee LGOF6 expressed the inspiration for their preference for the top-down approach when he said: "In fact, the abstractness of climate change seems to overwhelm even the brilliant and educated people. So you go in there, and they don't believe in it [climate change]." It is worth noting that this respondent plays the most central role in the planning and execution of all climate adaptation initiatives in the municipality. He is so convinced about his top-down

approach to dealing with climate change adaptation that he would not limit it to his agency but would advise other entities in the climate adaptation space to replicate it. He asserted, “But the advice I will give to that NGO or any organization that does that is, the bottom-up approach that seems to work well, might not work well with climate change …” [Interviewee LGOF6].

However, the thoughts shared by the local community members in the interviews and the surveys contrasted with the general views of the official about the local people’s knowledge about climate change and their capacity to contribute meaningfully to climate adaptation decision making. In the survey, the local people expressed concern about climate change and its impacts on their economic livelihood—fishing and farming activities. Of the 225 respondents, the majority (96.9%) were “somewhat concerned” to "very concerned" about climate change, with 94.7% saying they were “very concerned,” measured on a 5-point scale from “Very unconcerned” to “Very concerned,” about climate change (M = 4.90, SD = .49). The respondent’s expressed concern about climate change is presented in column two of Table 6 below.

Table 6

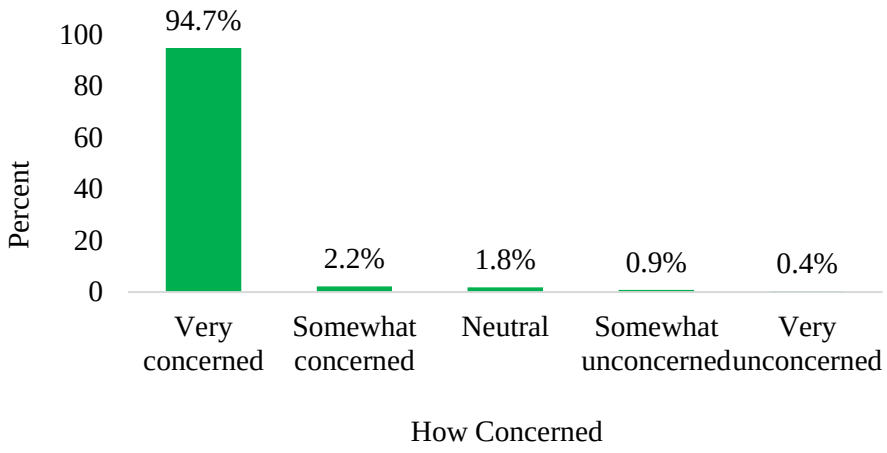
Respondents’ Concern about Climate Change and its Impact on Livelihood

Respondents' Level of Concern	Concern about Climate Change (%)	Concerned about Climate Change Impact (%)
Very concerned	213 (94.7)	216 (96)
Somewhat concerned	5 (2.2)	6 (2.7)
Neutral	4 (1.8)	2 (0.9)
Somewhat unconcerned	2 (0.9)	1 (0.4)
Very unconcerned	1 (0.4)	—
Total	225 (100)	225 (100)

Figure 4, the bar chart below, represents the findings about how concerned the local people were about climate change.

Figure 4

Local People's Concern about Climate Change



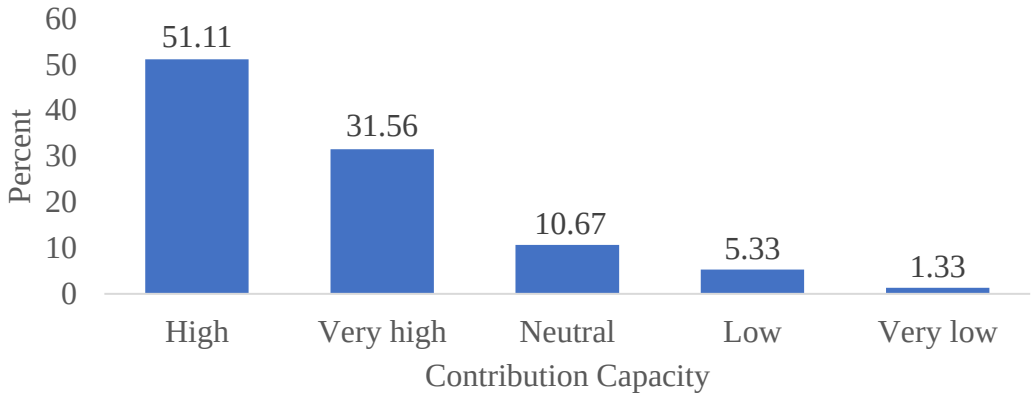
Also, as seen in Table 6 above, the vast majority of the respondents—98.7% of 225 respondents—were "somewhat concerned" or "very concerned" about the impact of climate change on their economic livelihoods, measured on a 5-point scale from “Very unconcerned” to “Very concerned” (M = 4.94, SD = .32). Column three of Table 6 above represents the respondents’ expressed concern about the impact of climate change on their economic livelihood.

The local people also shared their practice-informed solutions for dealing with climate change and its impact on their farming and fishing activities. The people believed they were in a position to make meaningful contributions to climate change adaptation decision making. The results from the analysis of the surveys indicated that the majority of the respondents believed that they were very capable of contributing to climate change adaptation decision making. Out of

the 225 respondents, 82.67% perceived themselves as having a “high” to “very high” capacity to contribute meaningfully to climate change adaptation decision making, measured on a 5-point scale from “Very low” to “Very high” (M = 4.06, SD = .87). Figure 5 below represents the local people’s perceived capacity to contribute meaningfully to climate change adaptation decision making.

Figure 5

Local People’s Rating of Their Capacity to Contribute to Adaptation Planning



Communities as Decision Endorsers. Another theme that emerged from the divergent perspectives on local decision-making capacity relates to how the authorities limit the local people’s roles to endorsing the officials’ decisions. Despite the residents’ views about their decisional capacity (per the survey results presented above), the officials’ uncorroborated view about the community member’s lack of appreciation of climate change drives their decision-making practices. Based on their understanding, the top-down decision-making approach is largely applied in identifying climate change-related challenges and the appropriate solutions for dealing with them, with priorities set from the top, as seen in the next subsection.

The municipal climate committee acknowledges the need to have the communities' endorsement and support for the committee's adaptation plans to succeed. Hence, the committee is conscious of performing a critical box-checking ritual. The approach to climate adaptation decision making in the EMA and the underlying motivation are captured in Interviewee LGOF6's description of the decision-making process: "… when we put everything together, we finish off with the assembly members. And assembly members are more or less representatives of the people, and that is the limit to which we can go." After the municipal climate committee makes its decisions, it holds meetings with the communities and invites their input. In the words of Interviewee LGOF6,

> We have public announcements. We invite them. Then we discuss the project that the assembly is undertaking or is going to undertake. Then we invite their input as well. So we *tell* them we are… we put it before them: 'This is what we are going to do in this area. What are your inputs? *Is it okay*? *Do you want us to go ahead with it*?' *That's how we work with the communities.*

The last words in the extract above are particularly informing about how the communities' role in climate adaptation planning is reduced to the endorsement of decisions that are already made at the top and presented to the communities for endorsement. At the endorsement fora, the important question for the communities to answer is: "Do you want us to go ahead with it?' It was also interesting to note the confidence with which Interviewee LGOF6 declared, "That is how we work with the community." More interestingly, a local elite, who was, until recently, an assembly member (municipal legislator), seemed to sanction the top-down approach the municipal climate adaptation planning group applies in making decisions when he said:

> …the officials from government agencies really give us the opportunity to share our thoughts. There's always dialog. When they present what they have to say, they ask us to present our views, too. They do not bar us from sharing our thoughts… *Once they set the agenda,* they ask for contributions from the community members [Interviewee LM5].

This elite local participant and others thought the decision-making approaches used by the external actors allow the local people to play their roles in decision making to ensure their voices are heard. This became evident when the same participant (Interviewee LM5) recalled how the local government officials were promoting the planting of coconuts as part of the government's adaptation strategies which were formulated without the people's input. The participant said he and other farmers prevailed upon the officials to substitute the coconut seedlings with mango seedlings or, at least, include some mango seedlings as an option, but their requests were not granted.

Based on experiences of this nature, some of the respondents in the communities expressed their preference for a scenario where the officials first asked the community people to present their ideas before any plans are made. They believed that the current arrangement could create a situation where local people would infer that their thoughts have to fit within the *confines* of the "agenda" that is set and put forward by the officials. They believed that the agenda and priorities were essentially set from the top without much local input. The local people are then invited to endorse the adaptation decisions made by the local government agencies. The officers agree that, in such situations, the people's purview is, at best, confined or directed toward sharing their views on the proposals presented to them than restarting the planning process by presenting what may be new priorities of their own. But the officials also believed that engaging the assembly members as representatives of the communities is a plausible substitute for engaging the larger communities to solicit their insights and preferences to guide the planning of adaptation initiatives. However, per Interviewee LGOF6's words quoted above, even the assembly members, as the representatives of the people, are involved to "finish off" the plans, not to plan.

Subject-Knowledge-Driven Choreographed Consent. From the interviews, it was found that though the decision-making process remains essentially top-down, the officers take steps to make the local people feel involved. The analysis indicated that the officials leverage their thorough understanding of the social psychology of the local people to gain the locals' buy-in and support for the climate adaptation plans designed at the top. This becomes possible because:

> I understand my people. And you see, the best tool is to understand the people you work with. If you look at the people with a different eye, they will never get you. So in my case, when we were doing the Ntakrofam Stream one [project], we had the farmers over there, and we used to have constant meetings with the farmers. And I tell you, they bought into it the way that it was desired [Interviewee LGOF6].

In line with the officials' efforts to make the people feel involved, many of the local people have a positive perception about how the officials view the local people's capacity to capacity to make meaningful contributions to climate adaptation. Apart from several local participants like Interviewee LM5 stating during the interview that: "officials from government agencies really give us the opportunity to share our thoughts," the survey respondents also reported a similar perception. The survey results indicated that in the minds of the majority of the local people (88.40% out 225 respondents), the local government officials hold a "High" to "very high" view of the local community members' ability to make meaningful contributions to climate adaptation plans, measured on a 5-point scale from "Very low" to "Very high" ($M = 4.16$, $SD = .81$). Table 7 shows the locals' perception of how the local government officials view the capacity of the former to contribute to climate adaptation planning.

Table 7

Local's Perception of Officials' View of Locals' Planning Capacity

Respondents' Rating of Perceived Officials Views of Local Capacity to Contribute	Frequency	Percent
Very low	1	.4
Low	9	4.0
Neutral	25	11.1
High	108	48.0
Very high	82	36.4
Total	225	100.0

"Chief Palace-First" Community Entry Strategy. As Interviewee LGOF9's said, "Normally, before you can do anything in the community, you will have to meet with the traditional authorities. Then they will also link you to the people." Interviewee LGOF2 also added that: "…our first point is always the chiefs and the elders, and then the assembly member." These statements represent the standard community entry protocol for any non-community member, including officials of local government agencies and NGOs, who want to engage the community with any project. Per the external actors' responses, it is a basic rule in community mobilization for one to first visit the traditional council (see composition under study site and context in chapter three) to seek their permission to work in their community and to solicit their support for the project. A local community elite and farmer, Interviewee LM5, affirms that, "They inform the chief and his elders about their plans for the community, and what they want to do… It is only when the leaders grant them permission that the visitors can enter the larger community itself."

The interviews with local participants indicated that the required starting point for community entry and the structure of the traditional authority constitute a consequential stage in

the decision-making process.[9] Yet, socially marginalized groups (including women) in the community are hardly represented in this forum that takes place at the palace. In many cases, there is only one woman—the queen mother, if the community has one. While most communities have queen mothers, there are instances where the queen mother's seat could be vacant for diverse reasons, including travel, incapacitation due to ill health, or death. The implication is that the community people tend to get involved at the less consequential stages or levels of climate adaptation decision-making, and the priorities of the majority may not be reflected in the decisions that are made.

A female interviewee from a community (Interviewee LF3) that had not had a queen mother for some time complained vehemently about the implications of the traditional governance system and its structure for the women in her community. She stated:

> We need to have a queen mother selected. If we do, this queen mother will be the representative of the women in the place. That way, the women can present their concerns to the queen mother if they have any issues. But currently, there is no woman in the palace.

Even though their last queen mother had been elevated to serve as the chief of the community, this chief was infirm and absent from the community, leaving most decisions at the palace in the hands of the exclusively male elders. Consequently, this did not cure the gender imbalance in participation. How the councils' composition and critical decision-making roles shape the involvement of marginalized social groups like women who are highly underrepresented in the

[9] The composition of the traditional councils and how they operate are central to the patriarchal system in the communities. Traditionally, these councils are the governing bodies in the various communities in the municipality. A council is headed by the chief, who rules with the support of his elders (mostly men), except the queen mother, who is a woman. With counsel from his elders, the chief decides on all important issues for the community. The council sets the rules for the community, including what should be done to safeguard the environment. With only one woman (the queen mother) in each of these councils, women are largely underrepresented in the councils' decision-making processes. More so, this system largely excludes women from decision making, given that the queen mother usually does not contribute to deliberations. She is seen as the *abrewa*—the proverbial, elderly female sage—who is the last resort for consultation on overly complicated or tricky issues.

palace merits further examination. In chapter seven, the gender implications of the councils' structure and their involvement in project planning and implementation are discussed.

Selective Involvement and Non-Transparent Community Engagement

Many non-elite local participants thought the practices of the officials and local elites in involving local people in adaptation activities was not transparent, as they tend to favor some members of the communities over others. The analysis of the interview data indicated that the participant selection was often based on the officials' and local elites' perceptions of the local people, including their social and political affiliations, ability and clouts to influence other people, past involvement, and how cooperative they are. Thus, it is not everyone who catches the interest of external actors to work with them directly in their adaptation projects. The officers do not only predominantly "work with" the local leaders and elite like chiefs, assembly members, and leaders of farmers' and fishers' groups, but they also "work through" the same people "who are good speakers" and "can convince the others." From the interviews, they work more with the elite and community leaders than the general community members. They channel most things through the leaders instead of engaging the community people directly when making major adaptation decisions. Also, much of the feedback goes through the community leaders, who may filter what gets to the officials. While these requirements may seem obvious, the use of this approach has implications for the involvement of the less-privileged members of the communities and the opportunity to put their challenges forward and make their views heard. Beyond this, the few occasions for the direct involvement of the general community in adaptation activities are also fraught with non-transparency. As seen in the subsequent discussions, the participant selection processes are selective and often shrouded in secrecy and the use of opaque channels. The subthemes that reflect this include: nontransparent involvement

and benefit distribution, targeting the prominent, targeting through existing structures, extension service as transaction, and (not) feeling involved.

Nontransparent Involvement and Benefit Distribution. Apart from the default preference of the local elite as project partners, the process for selecting other direct project participants and beneficiaries in the communities is often not transparent. Before the general community members get to know about a project, the participants would largely be selected already, often based on the recommendations of the local elites, who first get notified or coopted. This approach constrains the opportunity of other people to realize their desire to become participants. Similar nontransparent mechanisms are used for the selection of project beneficiaries. This practice results in skewed sharing of benefits, as the process is neither based on equity nor merit but on who has access to the process and its benefits, personally or through their social network. Interviewee LF5 talked about this in the quote excerpted from her interview:

> … Once they finished the training, they left with the promise that they would come later and help us with capital. But we didn't hear from them again. We only heard that they had invited one or two people on our blind side, even without the knowledge of the leader who coordinated things to make the training happen. *The person who oversees these training programs in our municipality was part of the problem.*

Participants also shared observations about how elite community members position themselves to capture local participation in climate adaptation initiatives and the associated benefits for themselves and their relatives or members of their social networks. Interviewees LGOF2 explained what motivates some of the community members to take up leadership roles in climate adaptation initiatives in their communities as follows:

> Because when there are programs, and they are going to get some benefits, you know, the money will not be enough, so they will share from *somewhere*. And *those who will have to get first are the executives*. So everybody wants to be in that *bracket*.

Interviewee LF4 shared her experience with elite capture of project benefits in the following extract:

> Some time ago, an organization brought some money to help the farmers in this community. *Those who compiled the list of beneficiaries included the names of their children and relatives who don't live here and are not farmers*. As a result, the money was not enough for those qualified to benefit from it. That did not help us. When I spoke about it, I was told to keep quiet.

Targeting the Prominent in Project Planning. In the few instances when climate adaptation plans begin with listening sessions to receive ideas from the community people to guide decision making, the invitation to the sessions is limited to the prominent community members. For instance, when the agriculture directorate invites farmers to participate in its annual planning sessions, the officers "…bring prominent farmers" [Interviewee LGOF2]. Also, when the officers visit the communities as part of their community engagement sessions to inform their annual plans, they invite "…the prominent farmers or those who are able to speak, and people listen to them in the community" [Interviewee LGOF2]. They use the same approach in their end-of-year evaluation sessions, where they assign quotas to farmers of various crops. They target the prominent farmers because they believe they are the ones who have more relevant knowledge and can make meaningful contributions. Another rationalization for this approach is that:

> Sometimes because of budget constraints on the meetings, we cannot invite all the farmers. We pick the leaders of the communities or very key farmers who, when they get the information, will act as good trainers to send the information out [Interviewee LGO4].

While targeting prominent farmers for inclusion in major decision making may be effective, this practice is likely to exclude most women, as Interviewee LGOF4 explains, "It's only when you have a bigger farm that you see a man [male farm owner] there. That one is more commercial in

nature. … but those with less than one acre here and there are for the women because of the hardships." In the case of the agricultural officers, they try to address the potential exclusion of women by insisting on a minimum 40:60 ratio for female to male participants. In their understanding, this practice ensures that women are duly represented in their meetings. The agricultural officers concede that this policy faces some application challenges, but it helps to address the gender dimension of the challenge. Yet, they seemed not to consider that it still results in the exclusion of other marginalized sections of the communities.

Targeting through Existing Structures. The practice of constituting adaptation project teams by drawing leaders from existing interest groups serves to perpetuate the exclusion of social groups like women and other marginalized and less prominent groups in project teams. The officials in the Effutu Municipality often constitute climate change project teams by identifying and selecting members from interest groups. The relevant interest groups identified in the project area include fisher groups, various crop-based farmer groups, women's groups, youth groups, and others. Apart from a few women's groups that have female leaders, the leaders of the other groups are mostly men. Hence, this approach to forming project teams invariably results in minimizing women and other marginalized groups' contributions to the planning and implementation of climate change projects and keeping them disadvantaged. It keeps them less engaged in climate adaptation decision making. Relying on the assembly members for decision making, as the EMA does, is also likely to skew participation to men, as the assembly members are mostly men[10].

[10] At the time of writing this piece, the EMA has 24 assembly members. Eighteen of them are elected representatives, comprised of 17 men and one woman. There are eight government appointees—six men and two women. In all, there are 23 men and three women in the 26-member assembly (not counting the municipal chief executive and the member of parliament who are both men).

Extension Service as Transaction. Similar to the previous theme discussed on selective and non-transparent involvement, some farmers perceive their relationship with the agricultural extension officers as a transaction in which each party has to fulfill their role in the deal. The quote below from an Interviewee LM6 encapsulates this view:

> When he [the agricultural extension officer] comes to guide me as to how to go about what I want to do, then if I have some money to compensate him for his fuel expended on coming to me, *I give it to him and move on*.

The farmers refer to the non-mandatory but welcomed token they sometimes give to the extension officers as *fuel money*—a symbolic compensation given in appreciation for the assistance offered. The cost of the officers' movement may be covered by their organization. But this may not always be the case. Fuel money has become a norm due to the farmers' appreciation of the insufficient resources available to the officers for their work. However, not all farmers can afford to participate in the practice, especially subsistent farmers with less money. And this could have implications for who gets the necessary attention of the extension officers.

(Not) Feeling Involved. The final subtheme on selective and non-transparent involvement is about community members' and project managers' understanding of local participation, which could be described as a tri-fold complex. First, the local people want to have a sense that project initiators or managers genuinely want them to participate. When the local people get involved, they want to feel within themselves that, per their experiences in the project, they are seen as a core rather than a peripheral part of the process. At the same time, project managers want to see that when the people are included, they come along and work together as worthy partners. In other words, project managers' efforts to get the locals involved and local people's efforts to get involved must be optimized but not exceeded. Challenges arise when these three expectations do not coincide—such as when community people feel they are not fully

welcome or when the external actors sense that the local people want to take over the control of the project. The extracts below from Interviewee LM4 and LF6, respectively, typify this understanding and posture.

> As a person, if you don't hear a call, you don't respond. It is when you hear that you are being called that you respond. If you don't hear a call, how do you respond? So if I am available, but I'm not invited to participate in deliberations, I do not decide to be part of the deliberations [Interviewee LM4].

> Our elders say if you think you are at the stage where you are capable of carrying your load all by yourself, then you are in a position to lift it without assistance. If you block people from coming close to you, they also deny you their thoughts [Interviewee LF10].

Similar to the posture in the extract above, the officials of the local government agencies also feel more energized when the farmers and fisher folk invite them to work with the local people. A senior officer of the agriculture department shared how he feels excited about visiting a farm when the farmer invites him. He explained that sometimes the farmers do not give the officers the needed attention when the officers visit on their own. But the farmers paid more attention to the officers when the farmers called the officers, and the officers felt they were able to work better in those situations. This speaks to the officers' reservations about the farmers' expression of less need for the officers when the officers visit by themselves. From the officers' experience, "…Often when we go, they are like, 'oh, today we don't go to the farm.' But when they call you, it makes you work better because they need you, and when you are there, they give you better attention" [Interviewee LGOF2].

Hence, the officers prefer to hold back until the farmers need them. The two quotes below reveal a farmer's mixed feelings about the officers' preference for visiting the farmers upon invitation. Some farmers believe they have to establish a relationship with the officers and offer "fuel money" to ensure the officer would be available when the farmer needs them. The

ability to establish this kind of relationship gives the farmer some level of control, but not all farmers are able to do this as it requires some social skills to form such relationships and resources to make the token payments. This tends to favor the well-established farmers who also tend to be relatively better resourced in the communities. Interviewee LGOF4 acknowledged how this differential relationship with farmers works for some, but also disadvantages others in the extract below:

> With climate-smart agriculture, timeliness is key. So for those who are close to me, they feel at ease to call if I am not there. They can call me anytime. Those ones get the information they need from me as soon as they need it. For the others, we reach them as we visit them.

Interviewee LM6 felt good about being in charge and having the officers visit when he so wished, but he also did not understand why the officers were not visiting by themselves as they used to do. From this perspective, he thought the officers were either demonstrating less commitment to their work or trying to be imperious. At different points, Interviewee LM6 said:

> The agricultural extension officers that we have. … if you don't invite them to your farm, they will not come to you. During the days of ADRA[11] and PAMSCAD[12], the agricultural extension officers knew every farmer's farm. So before you know it, they have arrived on their bicycles or motorbikes to join you on your farm. That is no longer the case. It's only when you invite them that they will come to you.
>
> If I choose to, I invite the agricultural officer with whom I have established a friendly relationship, and he comes to help me do my work.

Another routinized way of thinking that enables or constrains local participation is seen in the local and external actors' divergent priorities and rationales for choosing adaptation measures, which are discussed next.

[11] The respondent was referring to the Food Security Program of the Adventist Development and Relief Agency (ADRA). It was implemented in selected districts of Ghana by ADRA Ghana from 1997 to 2001.
[12] PAMSCAD is the abbreviation for the Ghana government's Program of Action to Mitigate the Social Costs of Adjustment. As the name suggests, PAMSCAD was to mitigate the social costs of adjustment.

Adaptation Options, Divergent Priorities, and Choice Making

The analysis indicates that the priorities and goals of the local people and the local government agencies must align as a condition for the local people to take up the adaptation ideas and technologies the officers introduce to them. In many instances, this is not the case, and that reduces the chances that the local people would adopt the new ideas. While the local government agency officials engage the local people with initiatives that they believe could help to improve the output and income of the community people, the local people have their own priorities that inform their choices. These are discussed thematically in the subsequent subsections.

Divergent Priority Goals. This finding pertains to crop yield versus produce preservation priorities of the individual farmer. The priorities of the farmers influence their adaptation decision making, independent of the adaptation option itself or the messaging used to introduce it to the farmer. For example, the agricultural extension officers tend to promote high-yielding varieties of crops like maize with the proposition that those will enhance farmers' income. For some farmers, however, higher incomes do not seem to be the priority. Deciding to adopt a crop variety depends on whether the farmer wants a high-yielding variety or if they are more interested in the post-harvest storage requirements of the given crop variety and the farmers' capacity to store the produce. The majority of the farmers do not have the facilities to store their produce for long. They also do not have the means to sell off large volumes of produce. At the same time, they need to store some of the produce to feed their families over time until their next harvest, usually after a year. For them, this means they have to cultivate crop varieties that they can easily store with their traditional storage techniques for about a year. Though they understand that growing high-yielding varieties would increase their output and

income, that does not serve their peculiar needs. The farmers have got the agricultural extension officers to understand this, and the latter appreciate it. One of the officers stated:

> You know, farmers want to use the local variety [of maize] because they say the kernels are hardier, so insects are not able to tunnel a lot of them. So for the choice of that one, the person is already thinking about preventing spoilage of the maize after harvest. That's one of the reasons why they are not using the improved maize seeds [Interviewee LGOF2].

In the context of agro-forestry, while the FSD is promoting tree planting as a long-term measure to support the environment, the farmers who are its partners in the implementation of the taungya system are more interested in their short-term food needs. This makes the farmers intent on cultivating food crops that are unaccepted in the tree plantations. The farmers seek to protect their interests, while the officers stand by their policy. This becomes a source of friction in the relationship between the officers and the farmers. The parties find a middle ground to work together toward their disparate priorities, albeit with misgivings. As Interviewee LGOF7 says: "It's not easy. You want to achieve your objectives through this initiative [the taungya system], and the farmer also thinks he wants to get a lot of foodstuffs from the land allocated to him. So, there is this friction."

Unshared Burden of Failed Adaptation Measures. Farmers' decision to take up an adaptation option is filtered through their considerations about who bears the consequences of the decision to be made. For the farmers, they are the ones who are directly impacted by any negative or positive outcomes of the decisions they make. Failed adaptation will wither their investments and livelihood. This is not the same for the agricultural extension officers, who the farmers believe would continue to take their salaries regardless of the outcomes of an adaptation initiative. The farmers think there is much more at stake for them than the officers. Failure does not only erode the investments of the farmers. It also wipes out their potential income and

produce they could store to feed their families. Hence, they tend to expect a high degree of certainty about adaptation options that the officers introduced to them. Otherwise, they are skeptical about the options, which makes it difficult for them to decide, given that the officers are not always very certain about the adaptation ideas and technologies they introduce to the farmers. An extract from Interviewee LM6 demonstrates this:

> …the extension officers may choose not to come to the field, but at the end of every month, they will be paid. For me, my only option is my farm. So If I monitor the timing and realize it is time to start my work, then what I have to do is to embark on my work so that I can take care of my wife and children.

The officers understand this as one of the reasons the farmers sometimes resist the ideas the officers introduce to them, so they do not "force" their adaptation options on the farmers. How the officers' uncertainty about their adaptation options shapes their communicative practices when promoting them to the farmers will be presented in chapter five.

Perceptions about Responsibility for Environmental Protection Enforcement

Another routinized ways of thinking that shapes local and external actors' power consideration and expression is linked to how they feel about the local people's economic circumstances. The analysis of the interview data indicates some similarities and divergences in how the local people and the local government officials reason and talk about the responsibilities for environmental protection toward climate change mitigation. These thoughts revolved around "poverty as acceptable excuse" for environmental breaches and "ultimate responsibility" for environmental protection.

Poverty as Acceptable Excuse. The local people know that the enforcement of environmental protection laws is meant to protect their health and the environment, and the environmental health department is tasked with the enforcement of the laws that restricts the

emission of smoke into the atmosphere. Fish smokers mostly use firewood which produces lots of smoke. The department is encouraging fish smokers to switch to alternative energy sources to reduce smoke emissions and also curb the cutting of trees for firewood. Some community members have also been agitating against the destruction of the vegetation and the associated pollution caused by sand winners. However, the community people generally seem to prioritize the satisfaction of their immediate economic needs. As Interviewee LGOF6 recounted, "We got to Akosua Village. They were cutting the trees from the mangroves for fish processing. We have had constant interactions with them concerning cutting down the mangroves and the drying up of the [Muni] Lagoon." In his understanding, "…some seem to have understood, but they balance their understanding with their bread and butter [concerns]… so it is very difficult for them to toe this line."

Similarly, the fishers use illegal fishing practices to enhance their catch due to frequent low catches resulting from climate change and other factors. The breaches occur even when the fishers participate in instituting the regulations. The officers concede that fishers do not breach the fishing laws merely because they want to, but they are forced to do so due to their economic circumstances. In the conception of Interviewee LGOF10,

> So the issue most of the time is not that they don't recognize the laws but abiding by them in the face of economic hardships is the problem. When you go to the community right now, every fisherman will tell you that using the smaller net causes problems, including killing the fingerlings and depleting the fish stock. You know. … Every fisherman will tell you that.

Yet, the local people think they are too poor to adhere to the laws or switch to relatively more expensive but more environmentally-friendly alternatives. In the view of the officials, some of the community people simply do not want to switch even if the cost involved would be within reach. Interviewee LGOF9 shared her experience from working with the community members,

saying: "… it's just that they always use poverty as an excuse… They say, "We need it to survive. That is why we go and cut [the trees].'"

Nearly all the officers indicated that the community people inform their departments about their needs and seek assistance with alternative livelihood. The officials wished they could help beyond what they do for the community members, but they also conceded that they had limited resources for their work. They think their inability to provide alternative sources of livelihood for the people weakens their ability to enforce the environmental rules. "If we are able to do that for them, then it means they will also help us to protect the wildlife resources," stated Interviewee LGOF9. Consistent with this view, Interviewee LGOF5 also said:

> You know, if you are moving somebody from one level to the other, you should be able to support [them]. If you are not able to support them, and the person has to do it on their own, it will take a long time.

Having dealt with this over the years, the officials seem to empathize with the poverty situation in the communities and thus temper the discharge of their responsibilities to stop activities that harm the environment. The mandate of the Wildlife Division, the Environmental Health Department, and the Forestry Services Division gives them a range of options, including prosecutorial powers, to enforce the environmental bylaws. With their empathetic posture induced by their views about the poverty situation in the communities and their own inability to support the economic livelihood of the people, the officers largely limit the enforcement of environmental rules to education and sensitization of the communities.

Fulfilling Ultimate Responsibility. While the local government officials are willing to accommodate the realities of the people, they also know that their positions place responsibilities on them. They acknowledge that the buck stops with them, so they step in when locals refuse to

do what is right, and the officers believe looking on without action could cost irreparable harm to the environment. The interview extracts below demonstrate this thinking:

> … it's a two-step thing. You have to do education and still give them the room; you give them the room for them to have that self-realization, and it also gets to a point where you have to coerce them to do what is right [Interviewee LGOF9].

> And just as climate change is getting worse, we all have to start putting in mitigating measures. Then the responsibility now falls so much on us that we have to apply our authority. So there are times when we exert our authority if the compromise is not getting results, and we are clearly seeing that these activities are going to affect public health. *We are there to protect public health. So in that sense, we have to ensure that public health is protected* [Interviewee LGOF5].

> But after all the talk, talk, talk, sometimes we just invite our higher-level team. And then early in the morning—maybe the fishers went with generators, light, chemicals, and other things. … our people will seize the generators and the other illegal gear. That is when the fishers get angry, and they will. They feel our actions should only end at the dialogue level. That is what they believe, sometimes [Interviewee LGOF11].

Summary

This chapter has presented the key findings in response to research question one, addressing the existing sociocultural systems and power structures in the Effutu Municipality that shape local and external actors' power and roles in participatory climate adaptation decision making. The foremost themes were: "traditions as constraints on community interests in decision making;" "expectations, disappointments, and associated conceptions about government agencies;" "contrasting views about local decisional capacity, agenda setting, and community engagement;" "selective involvement and non-transparent community engagement;" "adaptation options, divergent priorities, and choice making;" and "perceptions about responsibility for environmental protection enforcement." These findings are discussed and related to the literature in chapter eight.

CHAPTER V

ACTORS' POWER AND ROLE DYNAMICS IN PARTICIPATORY CLIMATE ADAPTATION

> You are going to work with a farmer. The farmer trusts in you. He has 20 acres of maize farm, and you want the person to practice climate-smart agriculture. Brother, if you don't practice it beforehand and become about 98% sure, *and you go there, and there is a fiasco, this [agriculture directorate] office will close. They will not accept your input anymore, and you will become useless* [Interviewee LGOF4]

The extant literature largely projects the view that external actors in participatory processes suppress their local counterparts, leaving little room for local actors to promote local priorities (see Buggy & McNamara, 2016; Brugnach, Craps, & Dewulf, 2017; Mosse, 2001). Years of subjecting local communities to external control render them "passive recipients" of externally-packaged adaptation solutions that often do not reflect local contexts and interests (Brugnach, Craps, & Dewulf, 2017; Mosse, 2001). At the local level, local elites also dominate participatory processes with their ideas and capture the benefits to serve their interests (Mansuri & Rao, 2013; Lund & Saito-Jensen, 2013; Rao & Ibanez, 2005). These observations suggest a unidirectional, top-down decision-making approach enabled by knowledge and power. However, emerging scholarship indicates that the way actors in participatory processes conceive of their power in relation to other actors' power and how actors express their power can enable or constrain the power and agency of other actors (Arko, 2019; Lund & Saito-Jensen, 2013).

Given these insights from the literature, research question two asked: "How does power differential among local actors and between local and external actors shape the dynamics of local actors' participation in climate change adaptation planning?" This chapter addresses how adaptation actors' power differential shapes local actors' participation in adaptation decision

making and implementation. The researcher also presents the findings on how external actors' power shapes the posture and activities of local actors and vice versa in the participatory adaptation process. The findings are organized thematically, based on the analysis of the interview data and supported with relevant insights from field notes where applicable. Findings from the analysis of relevant aspects of the survey data are also presented.

Local Leadership and Local People's Roles in Adaptation

This subsection focuses on how the local leaders' conception of their roles in adaptation processes shapes local participation in climate adaptation decision making and implementation. Local elite's leadership outlook and style, in various ways, serve to filter who gets to participate in adaptation decision making and implementation. Local leaders' posture also influences the roles non-local elites play in participatory adaptation, as outlined in the subsequent sections.

Local Elites as Status Preservers. Often**,** the local elites are not only the default local partners in adaptation project planning and implementation, but they also position themselves to maintain that privilege. Hence, the local elites do whatever it takes to please their external partners during the planning and management of adaptation projects in their bid to maintain their favored status in the eyes of the dominant externals. Two local leaders, a former municipal assembly member (legislator) and a farmers' association leader, respectively described their working relationships with the external actors as follows:

> "…when they meet me, they also realize that things work out for them. No one gets offended. They get the chance to collect all the information they need from me, and I also respond to them patiently in a manner that makes things turn out peacefully and not the other way around [Interviewee LM5].

> When they tell me they will come today, being a Friday (day of the interview), by the time they get here, I would have put in place everything we agreed on. So for me, as a person, any outsider that comes to this community, *even if they don't already know me, because of my character and the way I speak, they don't forget about me when they leave* [Interviewee LM5].

Both participants' responses demonstrate the posture of the local elites, generally. Such individuals are predominantly the leading local partners of the external actors. While the attributes projected in the extracts make these elites the reliable partners that external actors would prefer, those attributes also impact their role execution and enable the external actors to maintain control over decision making. This posture keeps the local elite pliant and less likely to do anything that disrupts the decision-making arrangements. They tend to be uncritical of the external actors and demonstrate limited commitment to pushing their ideas for consideration. For example, Interviewee LM2, another farmers' group leader, recounted that:

> Some time ago, the agricultural extension officer recommended some chemical in a bottle to spray on my crops, and it harmed my crops. I took the officer to the farm and showed him what had happened. Because the chemical did not work but actually harmed my crops, he absolved himself by saying I did not apply the appropriate quantity of the chemical. I knew I used the dosage he recommended. This made me angry, and I lost confidence in him, but I did not say anything. I did not insist on letting him understand I used the right dosage. We all react to things in our own ways. You know, people have different ways of communicating. I let go because I did not want any confusion with the agricultural extension officer. That would destroy my relationship with him. I have other things going on with the same person and his colleagues. But next time, I will be careful with his advice.

In the view of another local leader, farmers have to subject themselves to the direction of the local government officials and not challenge them because they carry the mandate of the government:

> Nobody would come to your house and tell you what to do if you were at home. You see how these things work? But because I am into farming, all I have to do is listen to the government's instructions and do what they tell me to do. But if I do that and it doesn't work, then I would call them to come and see what is happening to my farm after I applied their teachings to my farm [Interviewee LM7].

This last quote, in particular, demonstrates how powerless the respondent seems to feel in relation to government officials because of the perceived superiority of the national

government's power and, by extension, the power of its agencies and officials. This posture is even more significant, considering that this respondent is the chief of his community. One can imagine his ability to help his people resist or pursue their interests.

Unlike some of these kinds of leaders characterized above, whose actions tend to preserve their status as the link between their people and the external actors, some of the so-called ordinary members of the community tend to talk about their difficulties to their local association leaders. Some of them also confront local government officials directly, or they call the officers' superiors and appraise them of what has gone on. However, the field officers complained about how some farmers only seem to talk when things go wrong. In reaction, an agricultural extension officer was reconsidering his approach:

> After two weeks, they [the local farmers] all came back to me and said: "Your maize did not germinate." You see? That is their approach. They saw one sign of rain, and they planted. When it didn't work, they came back to complain. I am not even sure that if the new seeds come, I will take them to the farmers like I did last year because these same seeds... others planted, and they did well. You see, *there is no polished way of addressing some of these complaints to you. They hurt!*

This quote demonstrates how ordinary farmers can make their concerns known to the officials when the locals have challenges and the conflicts that can arise in such circumstances.

Local Elite Leadership of Servility. Local leaders' leadership style, in many regards, serves to encourage the external actors' domination of the local actors in adaptation decision making and implementation. These leaders tend to enable the suppression of other local actors' ideas by moderating the local people's urge to push their ideas for consideration or react when they feel their ideas are not receiving the needed consideration that could culminate in the utilization of their ideas in adaptation projects. The local leaders seem to be averse to any form of local contestation of the officers' views and position on issues. They prefer the path of easy

cooperation than bringing up differences for resolution. The interview extracts below from a local woman and man, respectively, demonstrate this.

> Such situations happen, and we leaders have to speak to our people. Sometimes when farmers' crops fail, we talk to our brothers and sisters before the officers come here. I tell them not to confront the officers because we will continue to need their help [Interviewee LF4].

> Last three years, the officers asked us not to plant our maize early when the first rains came. So we waited and planted at the time they recommended, but we had only a few rainfalls during that time of the year, so the sun burnt our maize. Those who planted early got something out of their work. When the agricultural extension officers came to the community, some farmers started casting aspersions and blaming them for giving us wrong advice. One farmer insisted he was usually one of the early planters, but the officers strongly discouraged him. He almost destroyed the meeting. So I had to come in and calm the farmers down. I told the farmer to desist from arguing with the officers because that would make the officers withhold from us any potential benefits we stood to gain from them. I advised the farmers that we should listen to what the officers had to say because they were the government's representatives. They were helping us, and if we didn't listen to them and they stopped visiting us, we would be the losers [Interviewee LM1].

As seen in the quotes above, their favored approach does not allow them to make the officers know when the officers are wrong about something. They do not only apply this approach, but they also leverage their influence over the community people to discourage them from speaking up, with the rationale of avoiding confusion with the officers. The local leaders' posture and practice of reining in their fellow locals amounts to whipping the local people into line, and that renders the local people pliable.

Politicized Involvement. The analysis of the interview data points to how politics has crept into the arena of climate change adaptation decision making. Some respondents' perceptions about the influence and posture of the political actors like the member of parliament, his assistants, political party leaders at the local level, and the leaders of the district assembly, influence their involvement in adaptation decision making. Beyond the perceptions, some

political actors at the local level selectively identify individuals whose political leaning aligns with theirs and involve such people in adaptation initiatives. Interviewee LM6 lamented how political considerations determine who gets involved and who benefits from adaptation initiatives in the following interview extract:

> These days, they have conflated everything with their politics, so the chemicals are with the assemblyman. Though it is with the assemblyman, it is the [political] party chairman and unit committee people who are in charge of the chemicals. If they don't consider you to be part of them, you will not even get one can of the chemical.

Local leaders may coopt non-elite individuals into adaptation initiatives or marginalize them based on their known or perceived political affiliation. The individual may also keep at bay or be unwilling to get involved because they are politically opposed to the local leaders of the initiative, or they may feel that the leaders will not welcome them due to their political differences. This may also be based on their own past actions or posture when they were in a position of control for which they believe others would retaliate. A respondent, Interviewee LF3, who had benefitted from this political approach to local involvement during the reign of another political party, demonstrates this in the quotes (extracted from her responses at different points during the interview) below:

> We have participated in many training programs in the cities. I was *always* part of these training programs. We have had the opportunity to meet the president of Ghana, his vice, members of parliament and all. We have met people, people who matter in this country.

> With the coming into power of the current government, I don't know what is going on. They tell us one thing, and then, out of the blue, one learns that some farmers are going for a training program here or there, and they are receiving one thing or another. As a person, I don't stress over certain things in life..., so I don't force myself to become part of things like that.

Similarly, Interviewee LF5 bemoaned the effects of politicizing climate adaptation initiatives, saying:

> Now we are not getting the real help that we need. Another farmers' association has been formed in the community to try and mobilize help for the farmers. I have decided to stay in my corner and watch them. I cannot understand them. They are always lamenting that they would have got what they have been looking for if I was their leader.

Others also indulge in self-exclusion due to politics. An agricultural extension officer recounted how some local people deny themselves of opportunity due to their own political considerations, perhaps concerned that their fellow-party members would tag them as being in bed with their opponent. Such local people exclude themselves from adaptation initiatives to avoid being accused of disloyalty. Interviewee LGOF1 noted:

> For some women also, politics is a major problem. For instance, when I gave out coconut seedlings to the women leaders for distribution to the women for planting, some women refused to take the seedlings because they had heard the seedlings were from a political party. I had to go to the communities and tell them that the government had used their tax money to produce the seedlings and that it was in their interest to benefit from the project.

Resisting Unfavorable Adaptation Ideas: Rejection as Power Expression

Another major theme that emerged about how adaptation actors' power differential shape the local actors' involvement in climate change adaptation decision making revolves around how local people make decisions in accepting or rejecting adaptation policies and measures introduced by the local government agencies. From the interview analysis, local people are able to adopt measures to protect their interests where it matters to them. In this regard, even though farmers, for example, may not be involved in the planning of adaptation initiatives, they sometimes consider their priorities and promote them when they participate in the implementation of initiatives. In some instances, the local actors may not speak up to express their stand-point on adaptation decisions, but they use various strategies to resist external control when things do not go

the way they want. Some of these strategies—boycotting activities, impelling compromise and renegotiation, circumventing policies with counter strategies, and parrying external imposition—are highlighted in the next paragraphs.

Boycotting Activities. The farmers and fisherfolks sometimes use boycotts of activities involving external actors to register their protests. They employ boycotts when they are not pleased with a decision or when they are dissatisfied with the outcome of an adaptation option that has been introduced to them. The boycott may be covert or overt.

Overt Boycott. As the label suggests, in this kind of boycott, the local people openly confront the external actors and let them know their stance as the reason for refusing to participate in a proposed activity. An instance of this was presented in an agricultural extension officer's account:

> I started by saying, 'this year, whoever wants to plant…' Then one person arose and said, 'Last year, you promised to give us maize, but you failed to do so. This is what you do all the time, and you have come again this year. Well, I can't sit in this meeting.' He just walked out of the meeting. *He boycotted the meeting. Then the rest of them followed* [Interviewee LGOF4].

Silent Boycott. In this instance, the local people may not say anything to the external actors about their disappointment, mainly because the locals involved may not be comfortable with confronting the external actors or countering their views. The locals do not complain if something does not go as expected, but they would also not cooperate. However, the officers may not realize it until it is rather late, as the locals seem to be involved and playing along. These locals choose to silently boycott the officers and their activities rather than speak up. This situation has caused some projects to fail in the municipality without easy remedy. An example is the case where fish processors rejected a fish-smoking facility at Akosua Village which did not

suit their needs after their advice was not taken on board by the sponsors and project initiators (more details on this project, including the gender dimension in chapter seven).

In another instance, farmers boycotted the municipal event of the National Farmers' Day that was organized to reward farmers, even when it was hosted in their community because they believed their agricultural extension officer had not helped them to succeed in navigating the challenges that climate change is posing to their farm work. The next extract illustrates this:

> On the Farmers Day, … The farmers didn't attend, and I was hurt. And more so, it was held around where I did a lot of work, and they were the reason why I even prevailed upon management to shift it [the event] there because I wanted them to get involved… They [the local people] didn't come. Even the people in the community did not represent them, and what was the reason? Things didn't work out well. Their crops didn't do well that year [Interviewee LGOF4].

The agricultural extension officers are even more apprehensive about the reputational implications of the reaction of a category of local farmers who may seem less offensive because they do not confront the officers but spread their displeasure with the officers when the officers' proposed adaptation measures fail to meet the expected outcomes. Interviewee LGOF4 lamented about this as follows: "… they are shy, so they may not say it to your face. They tell another farmer, who tells another farmer, and it spreads. Then it's all over the place 'The maize the officer brought is not good.'" They do not give the officers a chance to know what has gone wrong and to fix them where they can. The officers are concerned that spreading negative experiences makes it less likely for others to try the given adaptation option, and that makes their work difficult.

Impelling Compromise and Renegotiation. Farmers can successfully resist aspects of adaptation initiatives that do not favor them and cause modifications to be made to policies. For instance, a group of farmers involved in the FSD's agro-forestry project under the modified taungya system opposed the intervention's policy against planting in tree plantations specified

food crops that compete with the tree crops for water and other nutrients. The farmers wanted to plant cassava on the land and thus viewed the policy as unsuitable for their peculiar situation in the municipality. They approached the FSD to allow them to intersperse the trees on the plantation with cassava, but the FSD declined the request as untenable. For the farmers, cassava was their staple food, and they needed to plant it to be able to take care of their short-term needs while waiting for many years to benefit from the trees when they were mature for harvesting. The extract from Interviewee LGOF8, a forestry official, below demonstrates this situation:

> So we demarcated areas for the farmers, and we told them, 'we don't allow cassava.' They also told us, 'No. For this area [the municipality], the staple food is cassava.' They use it for everything within the municipality. So it means if we are denying them from cultivating cassava, then they cannot do the farming. If they don't do the farming too, they can't plant the tree.

The farmers resolved to cultivate cassava on the tree plantation. Otherwise, they were ready to forgo the agreement, regardless of the initial investments they had made in preparing the land for cultivation. Eventually, the officers came to terms with the farmers' determination. At that point, the municipal officers thought the situation was beyond them—they were torn between their institutional policy and a challenging practical situation. Hence, they consulted their superiors at the regional level with a proposal to relax the rules around the planting of cassava in the field. Consequently, a compromise solution was created for the farmers. They were allowed to plant the cassava with increased planting distance to reduce the density of cassava in the field. That way, "… there will not be so much competition [with trees for nutrients]. So that was what we used. They were happy about it, and they accepted it. And they did the planting for us" [Interviewee LGOF8]. The officers compromised not because they were empathetic to the needs of the local people but in acknowledgment of their dependence on the

local people for the taungya system to continue. Two forestry officials explained why they compromised on their policies in the following quotes:

> So those were the differences in opinion—we said, 'don't plant the cassava in the plantation,' and they were also saying if they don't plant the cassava, then it means we are denying them from farming. *And if they don't farm too, they won't plant our trees for us. So it was a difficult situation. But we were able to manage them* [Interviewee LGOF8].

> We try to manage them. … they want to stay on the land because land is scarce here, but they don't follow the rules, and we have to manage them. So if it is not something that is so bad, then we have to accommodate them [Interviewee LGOF7].

Circumventing Policies with Counter Strategies. This strategy is closely related to the preceding one. While some farmers caused the policy change to suit them, others quietly flouted the rules and unilaterally planted the disallowed crops on the plantation, estranging the relationship between them and the officers. Another set of farmers stealthily adopted their own measures to safeguard their interests. As a forestry officer [Interviewee LGOF7] recounted, the policy of the taungya system requires farmers to relocate to another parcel of land where their food crops will thrive when the canopy of trees on a given plantation closes. Farmers unwilling to relocate to another land employ various strategies to hinder the growth of the trees on the plantation. For instance, "Some of the farmers even pour hot water on the seedlings of the trees to prevent them from growing well. Some also cut the trees at the tapers to stunt their growth and keep them short" [Interviewee LGOF7].

Parrying External Imposition. Both the local people and the local government officials acknowledge the principle of not imposing adaptation ideas on the local people. The locals appeared to value their role in determining when the officers get to meet them, a privilege they do not easily yield. A WD official, Interviewee LGOF9, explained how they cooperate with the local people in this regard, noting: "We organize with them. They give us the time. We don't

want to impose time on them. They give us the time and day that will be convenient for them." But in reality, this is not just because they don't want to impose things on the local people. It is also because "… when we are told the agricultural officers are visiting us in our community, we don't cooperate. By the time they come, there will be no one to meet," Interviewee LM8, a farmer, said with pride and dismissive glee.

The choice of cooperation is informed by the officers' acknowledgment of the agency of local people. This is manifest in Interviewee LGOF10's explanation quoted below:

> They know when their activities are illegal. So, we dialog with them. We make them tell us what they think about their illegal activities. They tell you it's unlawful, and they deny doing those things. We try to get closer to what will help us and make them understand … Then they come to understand you and try to cooperate. But if you go and impose: 'The fisheries law says *this and that…* no this, no that.' Well, they also know the law. So, we try to be patient with them. That is why most at times, we engage them more than taking action [confiscating illegal fishing gear].

A similar logic is evident in Interviewee LGOF9's statement: "If you impose date on them, you will go, and you won't get them. But if you tell them to give you a date that is convenient for them, that one, you will go, and you will see them." Regarding the introduction and acceptance of adaptation ideas and technologies, Interviewee LGOF4 noted: "I am sure whatever we push to them, if it is good, they will adopt it." The determination of "if it is good" is based on the farmers' assessment of the given adaptation idea or technology in terms of its suitability to their peculiar location, circumstances, and the cost involved. The officers work with this understanding of the local people's agency in choosing for themselves, and "So we don't impose. We give them the options, and they choose; they do, and we observe" [Interviewee LGOF2].

Managing Relationships in Adaptation Planning and Promotion

The next broad theme that emerged about how adaptation actors' power differential influences the dynamics of the local actors' decision-making roles is about

how the actors manage their relationships while promoting adaptation measures. The outcomes of adaptation initiatives tend to have implications for the relationship between the local government officers and the people in the local communities. Success enhances these relationships. But when a project fails, “Some farmers will even be at loggerheads with you. He will see and will not even greet you” [Interviewee LGOF2]. “When they see you coming, they say all sorts of things. But our work is just to go there and help them” [Interviewee LGOF4]. Knowing this, the officials of local government agencies adopt various strategies to manage their relationship with the local people in order to maintain the level of cooperation that is needed to keep their work going, as seen in the subsections that follow.

Navigating Resistance. The agriculture extension officers employ relationship-building strategies to navigate resistance from the community members. The officers endeavor to maintain close and cordial relationships with the farmers and explain their uncertainties about proposed adaptation options upfront. The quotes below illustrate this:

> So when they fail like that on the field, sometimes they want to lose their trust in you but for your relationship with them. If you go there, they won't mind you. I am very close to those I am close to – they are my sisters and my brothers. So if it doesn't work, they approach me. They will tell me that ‘this didn’t work,’ but they may not hate me [Interviewee LGOF4].

> We have learned our lessons, so we tell them the plain truth: ‘We didn’t grow this thing. They [the speakers’ superiors] have brought it. They say, ‘it’s this. It’s this or that.’ We have not tested it, but we believe what they have said may be true. So we are selling at this price.’ Those who are interested, come and buy [Interviewee LGOF2].

These strategies help to forestall or moderate the possible development of animosity between them and the community members. Similarly, the community members also recognize the authority of the officials and adopt ways of avoiding needless confrontations with them.

Avoiding Confrontation. Closely related to the preceding relationship management strategy, the local government officials consciously avoid direct confrontations with the local people to protect themselves while maintaining their control over the local people. In the case of the fisheries sector, the fisheries officials perceive the fishermen to be daring and risky to deal with when it comes to protecting their business and resources against the enforcement of climate adaptation measures that do not support their immediate economic needs. When the fisheries officers embark on enforcement activities previously discussed, the fisher folk can react, and "Anything can happen. So you can't do enforcement without security" [Interviewee LGOF10].

The officers, therefore, prefer dialog to other actions to enforce fishing rules that could lead to confrontation, knowing that the fisher folks do not take kindly to such actions. Thus, the officers let them be and only take action occasionally to stop non-conformists' activities "When things get out of hand" [Interviewee LGOF10]. The officers do so indirectly through their team that is not locally based and with security reinforcement. A fisheries officer explains:

> We cannot do that by ourselves. If we do that, we are at risk—without any security and everything. I can't just go and stand there and say, 'this net is not supposed to be here. Seize it. Pack it here.' These fishermen are very rowdy. They are very rowdy. I tell you [Interviewee LGOF10].

The extract above indicates that the local government officials regulate their work, at least, in some regard, in response to the local people's agency not only to protect themselves but also to promote their interests. Another local government official, Interviewee LGOF11 (deputy to LGOF10), also explained how the local people's agency makes the officials cautious when engaging the local people: "In doing that, it doesn't bring any confrontation and those things. *Not that we try to avoid it. We manage it within our limits*. There's no way we could do certain enforcements alone, looking at the people. We need security." Interviewee LGOF4 also expressed his anxiety about farmer's reactions when things go wrong:

> You are going to work with a farmer. The farmer trusts in you. He has 20 acres of maize farm, and you want the person to practice climate-smart agriculture. Brother, if you don't practice it beforehand and become about 98% sure, *and you go there, and there is a fiasco, this [agriculture directorate] office will close. They will not accept your input anymore, and you will become useless.*

Treating Locals with Diplomacy. Most of the local government officials interviewed believe they need the continued cooperation of the local people to prosecute their adaptation agenda. Treating the locals with respect, the officials observed, is the surest way to maintain their cooperation to enable them to work together. Any obvious attempt to discount the intelligence and capacity of the local people to contribute to adaptation decision making can result in the loss of the local people's cooperation. Hence, the officers make conscious efforts, albeit sometimes superficial, to make the locals feel their views are valued. The external actors understand that managing their relations with the local people requires more diplomacy than the expression of authority, even while enforcing their control over the locals. Quotes from two participants' responses illustrate this approach below:

> You know, with these fishermen, mostly *what they don't like is for you to go and be talking as if they know nothing*. If they see that attitude in you, they will not *listen* to you. They believe they know the work, but it's just by your *book knowledge* and other things that you are their leader. They respect you if you treat them with respect [Interviewee LGOF10].

> When they tell us, 'we don't do it this way; we do it that way.' That is not the right time to argue. You may have a contrary view. … So you ask, 'oh, okay, is that how you do it? Okay, I have noted it. I also think that if you do it this other way, it will help.' But you don't rubbish their ideas [Interviewee LGOF4].

Prioritizing Personal Trust over Institutional Integrity. The agricultural extension officers' experiences with farmers make them work toward safeguarding their personal relationships with the farmers and maintaining the farmer's confidence in them, even if the

approach to this end undermines the credibility of their institution. Based on an officer's experience,

> … Because all his efforts have gone into producing a particular commodity, but he has not been able to sell the produce to meet his imagination or expectation, then that enmity will come. Then they say, 'the agric[ulture] officer has deceived me; the officer didn't tell me the truth' [Interviewee LGOF3].
>
> Like when you tell them to plant a [crop] variety that will give them high volumes of yield, and the farmer does it, but it doesn't meet his expectations, *you are dead*. Or if he gets the expected yield but cannot market it, they will say, 'you have deceived me. You have forced me to go into this thing, and now look at where it has landed me' [Interviewee LGOF2].

Such reactions become a source of conflict between the extension officers and the farmers. Hence, the officers are cautious about "pushing" or forcing adaptation ideas onto the farmers, especially when the officers have not had the chance to experiment or test the idea, input, or technology they are asked to propagate. The extension officers said because they often do not get the chance to try the inputs they have to promote, they end up being less successful in getting farmers to adopt their ideas than their superiors expect, which leaves the officers in a dilemma. This dilemma is reflected in the language they use in communicating proposed adaptation ideas to farmers, including the use of caveats to absolve themselves in case of failure. In the process, they make the farmers aware of the weaknesses in their organization. They tell the farmers about the imperfections in the approaches their superiors use in selecting adapted or improved crop varieties for introduction to the farmers to cultivate. Two senior agriculture officers said that they told the farmers that even though they believed the seeds they were supplying to the farmers were good, the seeds had not been tested at the local level. The offers adopt these approaches because "We want to play safe. Initially, we just went and said, 'it's good. It's this or that.' We

don't do that anymore. If you don't handle things well, the farmers will *blast* you in your face. It's not easy.[13]" [Interviewee LGOF2].

The officers understand that this practice prioritizes their personal integrity over their institutions' integrity. Yet, they rationalize their approach with the view that they are the people on the ground and need to maintain the trust of the local people. For them, the farmers' trust in them could offset their weakened institutional trust. They believe their practice was virtuous — speaking the truth makes the local people trust them. An officer recounted his observation of a situation in which farmers were supplied with rice seeds that were mixed varieties and how the farmers reacted. After the harvest, the farmers struggled to sell the produce. He explained how that occurred:

> Sometimes, you see, the [national] government will just invite bids for seeds, but they don't ask people to go and investigate the authenticity of the seeds that they are bringing. They just say, 'Oh, I want this.' Then the person will just supply. Unfortunately, they are also not able to grow the seeds and observe them. So, they bring it. We also go and give it to the farmer. So, if there is a problem, it comes to us [Interviewee LGOF2].

Accommodating Political Meddling. The analysis of the interviews showed that influential members of the communities, including chiefs and politicians, sometimes meddle in the selection of who gets to participate or benefit from adaptation projects. They also interfere with the enforcement of sanctions for breaches against environmental laws meant to mitigate climate change. They have a habit of approaching officials of local government agencies and pleading for mercy or requesting the acquittal of their associates when they fall foul of environmental laws like cutting trees for firewood in reserved areas or along river bodies. These people tend to have political clout, especially when their party is in power at the national level,

[13] *Blast* is slang in this context, and it means to confront or rebuke someone for wrongdoing or a mistake. It often connotes harsh rebuke.

which they leverage to shield their supporters from facing the law in return for votes. Likewise, the members of the traditional authority, particularly the local chiefs, possess much control over what happens within their jurisdiction.

Yet, the politicians and members of the traditional authority often approach the officers in a friendly manner. The local government officials, many of whom tend to be non-natives, endeavor to contain these practices of the traditional authorities and the politicians as a measure to maintain cordial relationships with these groups of people. Resisting the interference could also have ramifications for the officers themselves. Over time, the officers have generally developed the habit of relinquishing their prosecutorial power. Hence, "… there are some few occasions that we prosecute" [Interviewee LGOF9]. Some of the officers prefer to ask traditional authorities to punish their subjects when they become offenders. The community people are aware of this, and so they invite their politicians and chiefs to intervene when they have to face the law. A fisheries officer recounted how this outlook among the community people plays out and frustrates the officers' enforcement of the fishing adaptation rules:

> So it brings divisions most at times because people go and arrest those who have done that [engaged in illegal fishing practices], and immediately the people will start saying: 'Oh because you think I am not from this [political] party, you are arresting me. Meanwhile, it has nothing to do with party [affiliation], and it is just about doing the right thing. [Interviewee LGOF11].

The local government agency officers believe this practice weakens their ability or desire to enforce the rules to the letter out of reverence for the politicians and traditional rulers. With an anxious and calm voice, a senior municipal officer with the Wildlife Division of the Forestry Commission expressed concern about the effects of this practice on their ability to do their work, saying:

> They were arrested, and we made them carry the wood [unauthorized timber they cut from the forest] here. We wanted to prosecute them, but here is the case we get our politicians coming in and pleading for them. So, we *just* let them sign a bond that they will not do that again [Interviewee LGOF9].

The question that arises from this practice is whether the traditional authorities and local leaders would evenly punish offenders in line with the laid down rules, given that they plead for some offenders. One can guess a good answer to this question when they consider that politicians generally protect their followers to safeguard their votes. The political meddling and the consequent delegation of enforcement roles to the traditional leaders make it difficult for the officials of the local government agencies to enforce the environmental management rules and to do so fairly. Interviewee LF7, a local woman, provided support for this stance, as laid out in the next interview extract:

> Most of the fishing boats belong to the leaders in the Effutu Municipality and other leaders in the country. And most of the things we do in the country have been politicized. That is our orientation in Ghana: 'If I don't do things 'right,' they won't vote for me. If I don't let them off the hook, they will not do this or that for me.'

Delegating Roles to Traditional Leaders. This theme is related to the finding about political meddling previously discussed, but it deserves a substantive analysis. As stated earlier, political meddling in the work of local government officials has made them adopt the practice of enlisting traditional leaders to punish their subjects who breach environmental protection measures. The officials feel safer not going to the communities and punishing people by prosecuting them through the law courts. They think doing so would make them come across as adversarial in their relationship with the local people than employing the traditional system, a system the people already know, to exact punishment. The officers wish not to be perceived as usurping the chiefs' authority to discipline their subjects. One respondent likened this approach

to situations where a child puts up offensive conduct in public, and their parent is invited to address the child's behavior than allowing an unfamiliar person to deal with the child for their misconduct.

In the conception of the officials, this practice helps foster better relationships with the traditional authority and the larger community, as it enables cool heads to prevail. It also allows them to leverage the authority of the community leaders to punish their subjects and ensure that the offenders do not repeat their offensive conduct. Interviewee LGOF9 repeatedly stated: "We at times take you to the traditional authority to punish you, but if we see that it is something that you are fond of doing, then we have laws. We will just bring you to the police station." Another official also describes how the fisheries department involves the local leaders to enforce the fisheries rules: "… for each community, my team and I had to go to the ground with the chief fisherman to talk to their people. So, during the two-month close season for fishing, we had strict compliance" [Interviewee LGOF10].

Mechanisms for Encouraging Uptake of Adaptation Options

In addition to the various strategies for managing relationships, the local government officials employ various means to encourage the farmers and fisher folks to take up their adaptation ideas, inputs, and technologies that they introduce to the local communities. These include inspiring adaptation uptake through awardee selection, adoption of macro-level buy-in strategies, neutralizing resistance with the exhibit of their successes, and going the extra mile to make it easier for farmers to adopt new strategies and technologies.

Inspiring Adaptation Uptake through Awardee Selection. The officers leverage their control over the selection of annual best farmers for awards to encourage farmers to cooperate and take up the adaptation ideas introduced to them. This strategy also serves as a mechanism for

inspiring others who are interested in being recognized to follow suit. An agricultural extension officer stated: "You know we have this farmers' day programs that we also organize. When you identify a farmer who is cooperating very well, we reward such people and encourage others to emulate them" [Interviewee LGOF2]. Similarly, officials of the fisheries department resort to the selection of awardees as a mechanism for encouraging compliance with adaptation measures that are in place.

> … When it comes to the issue of awards and things, we try to look into the records of whoever is nominated as an awardee to see if he is not involved in any of these notable illegalities. If your canoe is dealing in light fishing, which we preach against, why should you be awarded? [Interviewee LGOF10].

Neutralizing Resistance with Success Exhibition. The agricultural extension officers think about the exhibition of the outcomes of their climate change adaptation measures as a mechanism for neutralizing farmers who resist proposed adaptation options. As demonstrated in the extracts below, they also leverage the evidence of success with adaptation options as a source of inspiration to encourage others to take up the adaptation ideas and technologies they propagate, as exemplified in:

> I think the practical approach is the best. You do a demonstration with farmers who agree with you. The rest will pick it from there. … a demonstration of climate-smart agriculture in a community with a farmer or two. *The outcome of the demonstration speaks for us* [Interviewee LGOF2].

> … at such [demonstration] events, we announce whatever the person was able to do and the results. And we always advise that all *such* award winners come with people from their community – either your friend or your wife or somebody. So, when you see people coming with a group of people, at least you know that the thing [adaptation idea or technology] is not fake. People come from their community and say, 'Oh, *in fact, once this man has done this, and he has been awarded, or you have appreciated him, the following year, I will also do it.' You see, those kinds of things, as it were, shape their attitude to our adaptation programs* [Interviewee LGOF2].

A farmer affirmed the effectiveness of this mechanism, saying: “Initially, I didn’t believe it [a proposed adaptation idea], but when I saw what another farmer had gotten from applying it on his farm, I believed it. So, I asked the officer to help me also achieve similar results” [Interviewee LF6].

Adoption of Macro-Level Buy-in Strategies. Rather than seeking to obtain individual-level buy-in for their initiatives, the local government officials work toward macro-level buy-in that brings communities on board. They view showing respect to the community leaders and involving them in decision making as a critical requirement for gaining the cooperation of the communities. The officers believe the local people revere their community leaders and opinion leaders, and they largely follow what their leaders tell them. The local government officials concede that their initiatives work best when the leaders buy into them and encourage their followers to follow suit. With this understanding, the officers work to gain the community leaders’ support. Interviewee LGOF10 articulated this recognition thus:

> The way these people behave, if you don’t work with their leaders first and you go saying something, they don’t value it. Most of them, before they even talk to you, they will make sure that their leader is there, which means that he is part of that decision before they will buy into it.

Making sure their leaders are present when they talk to the officers is one of the local people’s ways of protecting their interests. Working through the local leaders also helps the officers to obtain multi-community-level buy-in, which helps weaken the chances that a community as a whole would successfully resist an initiative. Interviewee LGOF10 indicated how this works for the officials: “And sometimes too, along the line… some communities will resist, but looking at the majority, you just can’t say that only one community can reverse the whole thing.”

Going the Extra Mile. The officers believe that sometimes the local people accept the adaptation ideas they introduce to them and would like to apply them, but some factors like finance

and access hinder the uptake of the ideas. **"**I am sure they like to adopt good ideas. But sometimes they don't have the wherewithal, and their motivation is down as you keep talking. So at the end of the day, they cannot act on it," lamented Interviewee LGOF4. Such inhibitions require extra efforts on the part of the agricultural extension officers to get the farmers to move along. Hence, some of the officers go the extra mile to encourage the farmers to try or take up their adaptation ideas. They facilitate the farmers' access to adaptation technology or improved input materials and also help the farmers to do the planting. Interviewee LGOF4 shares his extra efforts in the excerpt below:

> Sometimes I have to buy seeds [for them] from my own pocket. Last year the seeds cost 3 Ghana Cedis per pack—the government-subsidized ones— some farmers come and say, "officer, I don't have money; please give me two. I have 5 Ghana Cedis." I have to give it to them for less and come and balance [pay] the difference.

The researcher witnessed a version of this practice. This officer quoted above went with the researcher to an agro-input shop to buy some inputs and gave them to the researcher to deliver to some of his farmer clients in their villages when the researcher went to interview them. That incident occurred a few days before the interview with this participant, so it is unlikely that it was stage-managed to make a point. The researcher inquired from the recipients if this was a norm, and they confirmed it was part of the officer's practices to buy and deliver inputs to them at no extra cost to them. The officer's residence and office were in the urban part of the municipality where the agro-input shops were located.

Group Inclusiveness as Driver of Local Participation

The next theme that emerged in relation to how adaptation actors' power differential influence local actors' participation in decision-making is about how inclusive the local fishers and farmers groups are. At the local level, individuals' decision

to participate in adaptation decision making is influenced by their views about their group's inclusiveness. Based on the survey data, this section presents the findings about how group inclusiveness of farmers' and fishers' groups shapes their members' and leaders' willingness to participate and actual participation in their group's activities. The researcher also presents how other control variables like leadership status, years of membership, gender, educational status, and age influence the relationship between group inclusiveness and participation. At the local level, an individual's decision to participate in climate adaptation decision making is influenced by their group's inclusiveness.

Column 1 shows that 36.9% of the variations in participation are explained by the model, which contains the inclusiveness scale and other covariates. In column 1, a unit increase in inclusiveness is associated with a 0.437 increase in times participated. In columns 2 and 3, 21.9% and 41.8% of the changes in participation based on effort and participation based on the feeling of encouragement can respectively be attributed to changes in the inclusiveness scale and other covariates. In column 2, a unit increase in inclusiveness is associated with a 0.405 increase in a member's willingness to make an effort to participate in their group's climate adaptation planning. In column 3, a unit increase in inclusiveness is associated with a 0.826 increase in a member's feeling of encouragement to participate in their group's design of climate adaptation plans. Overall, an individual's participation in their group's climate adaptation decision making increases with their group's inclusiveness.

The results for the control variables also provide interesting insights worth discussing. The more years an individual spends with a group, the more the person is willing to participate. The positive association between years of membership and actual participation is 0.269 and is significant ($p < .001$). This means when leadership status, gender, education status, and age are

controlled for, individuals with more years of membership in their groups are likely to be the ones who participate the most in their group's decision making.

As column 2 shows, leaders are 0.530 more willing to make an effort to participate in their group's decisions on climate adaptation ($p < .001$). An individual's leadership status has the expected positive relationship with both actual participation and feelings of encouragement to participate, but these are not statistically significant. This is expected because a leader's actual participation is associated with the individual's role. The propensity of actual participation based on role also overrules any feeling of encouragement, thereby rendering it insignificant. Gender does not make a statistically significant difference in determining an individual's *actual* participation and *willingness* to participate. This holds when the other variables of interest are controlled for.

Overall, education status plays a role in an individual's willingness to participate but does not influence their actual participation. Those educated up to the basic level (elementary and junior high school) have 0.259 more feeling of encouragement to participate compared to their counterparts who have no formal education to feel encouraged to participate or be willing to participate ($p<0.1$), when other predictors of interest are controlled for. Respondents educated up to the secondary (high school) level are 0.516 more willing to put in an effort to participate compared to their counterparts who have no formal education to feel encouraged to participate or be willing to participate ($p<0.05$), controlling for all other factors of interest.

Also, individuals educated up to the tertiary level have 0.619 more feeling of encouragement to participate compared to their counterparts who have no formal education ($p<0.1$) when leadership status, years of membership, gender, and age are controlled for. Age

also plays a role in the efforts individuals make to participate. Older people are 0.382 more willing to make an effort to participate in their groups' climate adaptation planning ($p < .001$).

Table 8

Inclusiveness and Willingness to Participate

	(1)	(2)	(3)
	Actual	Willingness to make	Feeling
Variables	Times participated	effort to participate	encouraged to participate
Inclusiveness scale	0.437***	0.405***	0.826***
	(0.061)	(0.074)	(0.092)
Leader (0=No; 1=Yes)	0.170	0.530***	0.136
	(0.189)	(0.140)	(0.135)
Years of membership	0.269***	-0.012	0.066
	(0.040)	(0.049)	(0.053)
Female (0=male; 1=female)	0.051	0.172	-0.001
	(0.118)	(0.145)	(0.143)
Educational status (Base=No education)			
Basic	-0.004	0.101	0.259
	(0.115)	(0.144)	(0.144)
Secondary	-0.086	0.516**	0.459
	(0.243)	(0.261)	(0.293)
Tertiary	0.403	0.348	0.619
	(0.275)	(0.254)	(0.317)
Age (0=young; 1=old)	-0.045	0.382**	0.096
	(0.143)	(0.193)	(0.209)
Constant	2.115***	3.568***	3.511***
	(0.207)	(0.267)	(0.308)
Observations	224	224	224
R-squared	0.369	0.219	0.418
F(8, 215)	22.53***	7.08***	13.64***

Robust standard errors in parentheses *** $p<0.01$, ** $p<0.05$

Language Use as Indicator of Adaptation Actors' Power Conceptions and Expression

Beyond the expressed thoughts of the participants, the language they used in responding to the questions that were posed to them also provided some important insights into their thoughts about themselves and their abilities relative to the skills of the other actors engaged in

adaptation decision making. The language used by the external and local actors serves as an indicator of the addresser's perceived ability and roles when they speak about themselves or the other actors. Below are three kinds of language use—educating and sensitizing; teaching/learning; local contributions as thought-sharing—that provide a window into the speakers' thoughts about themselves (or their group) and other actors in participatory climate adaptation decision making.

Educating and Sensitizing. The external actors' views about the local actors make the former employ one-way communication in their engagements with them. This follows from the external actors' perception of the value of their knowledge and decision-making capacity, compared to those of the local actors, and how these perceptions position the external actors to contribute more meaningfully to climate adaptation planning. Considering their knowledge and capacity to be superior, the external actors perceive themselves as "educating" the local people or *depositing* knowledge into them. This results in the predominant application of top-down decision-making approaches. Here are some extracts from the participants that reflect this: "We educate them to stop cutting down trees…," "…we go to those communities and educate them" [Interviewee LGOF9]; "And then we also educated them [about] the importance of planting trees," [Interviewee LGOF8]; and "…when you go there, you need to be very tactical to be able to put into them these realities about climate change" [Interviewee LGOF6].

These excerpts above demonstrate the power of superior knowledge holders to educate those they consider to be less knowledgeable about the subject. The extracts also give an insight into the communicative practices employed in the engagement between the external actors from the local government agencies (including the Effutu Municipal Climate Change Group, which coordinates all climate adaptation efforts in the municipality) and the community people. They

hardly suggest the use of dialog in their engagements, and the thought of educating the community people essentially translates into an act of *telling* them.

Teaching versus Learning. On the part of the local actors, many of them believe the officers know better and thus view them as the teachers in the relationship. This is manifest in the local people's use of expressions like "The agricultural extension officers are *teaching* us a lot of things about farming " [Interviewee LM5]; "The other day, the agricultural extension officer for our area came to *teach* us how to use a new chemical for maize farming" [Interviewee LF10]; "Lately, the agricultural extension officers who come to *teach* us more about farming… [Interviewee LM3]; "Honestly, they have been *teaching* us a lot of things we can do to improve our work" [Interviewee LM5] and "I also *learn* from the extension officers' teachings" [Interviewee LM2]. Interviewee LM7 likened the information delivery in this teaching and learning process to teacher-student exchanges in an elementary school setting, saying:

> They [the officers] teach us how we should approach our farming. What they teach us is what I listen to, and that is what I apply on my farm. They teach us how to plant our crops. They come with their plans in hand. *It's like how you are taught when you are in school*. So, they come with their arrangements as to how things should be done… When they teach me, I follow their advice and do as they tell me so that it will work for me.

This respondent is the chief of his community. He is not educated beyond the first few years in elementary school, and that may inform his conception of the dialog in the teaching and learning process that he applies in his analogy. Though this is a community leader, he reported that he does as the officers decide for him without his input. But this mindset is not exclusive to him or the local actors only. Agricultural extension officer Interviewee LGOF4 also concluded his explanation on how he and his department involve the local people in decision making by stating that: "… ours is more of education. Like teachers, we are taught to also teach. So, when you open the floor for participation, *they* [the local people] *always ask very useful questions, and they*

always appreciate what you tell them" [Interviewee LGOF8]. It is instructive that the speaker only referred to the local people's questions but not the ideas they put across. This pattern was obvious in most of the interviews with the officials. With this orientation among both the local and external actors, the agency of the local people to get their LEK onto the decision-making table is moderated, along with the chances of getting LEK leveraged in climate adaptation. The officials also perceive themselves as "teachers."

Local Contributions as "Thought-Sharing." Related to the above, both local and external actors refer to the contributions of the local people as "*sharing our thoughts," "making our views known,"* "*sharing their thoughts and ideas," or "letting us know their concerns."* According to Interviewee LM5, when the locals have meetings with the local government officials, "They [the officials] seek *our thoughts*, and they also share *their knowledge* with us." With this posturing, what is supposed to be a dialogue turns into one-way, top-down communication between the external actors who have the *knowledge to teach* the local people who only have *thoughts to share*. The actors' language use is indicative of their confidence in their ideas for climate adaptation; it also reflects the actors' view of their place in the settings within which adaptation decisions are made and implemented. Hence, the ideas from local actors are not considered *knowledge* but simply *thoughts*, while the ideas of the external actors are considered *knowledge*. These considerations of the external actors' ideas as knowledge connotes that those ideas are better informed and well-established and should be regarded as superior by default. This perception of the *local's ideas as thought* and the *officials' ideas as knowledge* is relevant, as it informs how the actors' ideas are presented, received, and processed. In the context of decision making, the "thoughts" of the local actors come against the formidable "knowledge" of the external actors, making the local "thoughts" less likely to prevail.

Consequently, the local people have less control over whether their LEK-based adaptation strategies get factored into adaptation plans because, after all, they only *share their thoughts*.

Summary

This chapter presented the main findings from the data gathered through in-depth interviews, field observation, and surveys to address how local and external adaptation actors' power differential shapes local actors' participation in participatory adaptation decision making and implementation. It also presented the findings on how external actors' power shapes the posture and activities of local actors and vice versa in the participatory adaptation process. The major themes discussed include local leadership and local people's roles in adaptation, resisting unfavorable adaptation ideas: rejection as power expression, managing relationships in adaptation planning and promotion, mechanisms for encouraging uptake of adaptation options, group inclusiveness as driver of local participation, and language use as indicator of adaptation actors' power conceptions and expression. In chapter eight, these findings are discussed in relation to the extant literature. The theoretical and practical implications of these findings will also be pointed out.

CHAPTER VI

ACTORS' PERCEPTIONS OF KNOWLEDGE SOURCE AND LEK APPLICATION IN CLIMATE CHANGE ADAPTATION PLANNING

> "Oh, for an *okrakyenyi*[14] [intellectual or educated person], when they come here, they don't come to consult you for anything. They have nothing to learn from you" [Interviewee LM4].
>
> "Whatever we say carries weight. There are few of them [local farmers] who think that they know a lot through experience. Sometimes they forget that we are always researching, and new things are coming up. So, for those ones, sometimes they are reluctant to take your ideas about climate-smart agriculture and other things" [Interviewee LM4].

This above declarative quote extracted from Interviewee LM4, an elderly local farmer, defines the local people's perception of the external actors' attitude toward the local people's ecological knowledge, experience gained through their occupations, and their ability to contribute to climate adaptation decision making. It also points to how the local and external actors receive and process LEK and, hence, the local people's willingness to present their LEK for consideration in adaptation planning.

Klepp and Fünfgeld (2022) have argued, "In many adaptation processes, forms of power are enacted and effectuated primarily by actors accepting or dismissing certain

[14] *Okrakyenyi* is a Fante (Language) word used to refer to an intellectual or educated male person. Its usage connotes the blended status of being reasonably educated and having a relatively high social standing. The inherent combination of okrakyenyi's masculine denotation with the connotations of the referent's intellectual, elite, or privileged status infuses the word with undertones of embedded power. Hence, okrakyenyi is not a power-neutral word. The consideration and labeling of a person as an okrakyenyi imbue them and their affiliated institution(s) with the privilege to exercise relative control over less-privileged individuals and groups in social engagements.

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forms of knowledge, which legitimizes adaptation and influences its processes and outcomes" (p. 759). The local government officers in this study generally reported high regard for the value of LEK in addressing the impact of climate change on local economic activities, but they also expressed some concerns about LEK, mainly in terms of safety and reliability. These included participants who believed the local people neither understood climate change nor believed climate change was occurring and that local people, generally, could not proffer solutions for climate adaptation. The way the external actors think about LEK and how they relate to its use has implications for the local people's view of their LEK as they see the externals to be better informed.

In this chapter, the researcher presents, thematically, the findings regarding how the differences in power and perceptions about LEK among local and external actors shape the use of LEK in climate adaptation planning. The findings here address research question three, which asked: "How do local and external actors' differential power and perceptions about local knowledge influence the leveraging of LEK in climate change adaptation planning?" The major themes discussed include perceptions about LEK and use of LEK as adaptation strategies (merits and demerits of LEK); bureaucratic division of planning roles: problem observation, data collection and adaptation decision making; the effects of climate adaptation solution promotion policies and use of LEK; hegemonic knowledge generation, valuation, and LEK usage in climate adaptation; and presentation and reception of local adaptation strategies.

Perceptions about LEK and Use of LEK as Adaptation Strategies

This section presents a general overview of the local and external actors' perceptions of the value of LEK in climate adaptation and how that informs the use of LEK in adaptation planning. The analysis of the interview data indicates that the local and external actors'

perceptions about the relevance of LEK in climate change adaptation and local people's capacity to generate strategies to navigate the impacts of climate change are intertwined and mutually reinforcing. The explication of the actor's perceptions about the attributes of LEK helps to understand what informs the actors' tendency to leverage LEK in adaptation decision making. Generally, both local and external actors believe that using LEK in climate adaptation has more demerits than merits. The merits and demerits identified by the participants are presented in two broad sub-sections.

Merits of LEK as Adaptation Strategies

The merits of LEK as adaptation strategies include their effectiveness as adaptation solutions, usefulness as alternate or strategic adaptation options, provider of contingency measures to salvage farmers' investments, relative affordability, and environmental sustainability of LEK as appropriate adaptation strategies. Generally, these perceptions make both the local and external actors likely to leverage LEK in climate adaptation options, as discussed below.

Local Adaptation Strategies as Effective Solutions. Both the local and external actors acknowledge that some of the strategies or approaches developed by the local people in response to the threats from the changing climate to their economic activities and general livelihoods are effective. "Our farmers have really good indigenous knowledge and strategies that have been working for them. Against the climate change situation, they have developed their own effective solutions rather than what we are even bringing," stated Interviewee LGOF3, an agricultural officer. LGOF1 (an agricultural extension officer) also acknowledged that "… some of the local strategies they [the farmers] apply actually work. It's been working. We have seen them, and we realize it." In addition, Interviewee LGOF4 conceded that "I have learned from the farmers a lot of ways to adapt farming to climate change. You know, some have actually farmed for a very

long time, so if I investigate their strategies and they're proven right, I keep them." The officers provided examples of local strategies farmers use on their farms. These include farmers' successful use of self-produced neem extract (from various parts of a neem tree, also known as *Azadirachta indica*), dissolved SoKlin (powder detergent) as a pesticide, and wood ash both as pesticide and fertilizer on their farms. Interviewee LGOF4 recalled that: "The farmers were using even SoKlin, just soap. They dissolved it in the water and sprinkled it, and it was killing the [fall armyworm] larvae. They had other alternatives. People said they were even using wood ash."

On the part of the local people, participants said they believed in the knowledge they have gathered from their forebears and through their own experience in farming and from interactions with their peers. The local people talked about applying a mix of their ideas and those from the agricultural extension officers in their work, as seen in the extract below:

> We have observed that just before or after Christmas, there is a certain wind that blows. Because of that wind, when you cultivate tomatoes at that time, it doesn't really do well, so we no longer plant tomatoes at that time in anticipation of harvesting when the price of tomatoes is favorable to us. The officers advised us to time our planting so that our harvest would coincide with the best prices on the market. So we tried it. We observed that the tomato plants at that time would produce a lot of flowers, but all the flowers would wither instead of producing fruits [Interviewee LM8].

LEK as Enabler of Strategic Adaptation. Apart from developing their own ideas, the farmers also apply the adaptation ideas and technologies that the agricultural extension officers introduce to them in strategic ways by blending the two, considering the climate situation, their peculiar circumstances, and their priorities to maximize benefits. As Interviewee LF3, a local farmer, put it, "In all that I do, I use the agricultural extension officers' ideas and a bit of my own ideas from my experience and observation." For example, some of the farmers combine the cultivation of local and improved varieties of maize. They grow the local variety of maize for its flavor, taste, and relative ease of storage. Though the improved varieties give them more yield,

the farmers prefer not to focus on those varieties because they also tend to pose storage challenges to the farmers. However, the farmers cultivate the improved main variety for its big cob and grains when they intend to take advantage of the market value of fresh corn. On the other hand, when the farmers intend to store their maize produce for their family's consumption or sale during seasons with the best market prices, they choose to grow the local variety, which they have the knowledge and resources to store. A farmer rationalized the strategic blending of his own ideas with those from the extension officers, saying:

> I plant a bit of the local [variety] and a bit of the improved [variety]. I store and eat the local variety because it's organic and easy to store. For the improved variety, I cut it fresh because people like that variety. It's also bigger, so it brings me more money. [Interviewee LF11]

This way, the farmer can maximize their income from improved crop varieties when necessary while avoiding post-harvest losses that could result from their inability to store what they consider to be less-resistant but high-yielding crop varieties with their less-advanced and limited storage facilities.

LEK as "First Aid" That Saves Farmers' Investments. The local and external actors believe LEK serves as a source of security for farmers when scientifically-proven solutions are unavailable or when those solutions fail to solve a given problem, especially when the problem is novel and not much understood. Though the farmers tend to prefer that new solutions be scientifically proven, they try to protect their crops by relying on LEK and their own ideas to address challenges on their farms until they find a "proven" solution. They also use LEK to protect their crops when farmers face a problem to which there is no known proven solution. A senior officer of the agriculture directorate talked about the approach that one farmer described as "first aid" in the following extract:

> Sometimes when there is a situation, they look around to find their own solutions rather than wait for ours. The recent fall armyworm that invaded Ghana—maize farms across the country. … while the researchers were starting the trials, clinicals, and all those processes, the farmers themselves had alternatives in their own backyard [Interviewee LGOF3].

The farmers are able to do this because "Some of these inputs like neem extracts, wood ash, and others are readily available in the communities" [Interviewee LGOF4].

Also, the farmers and the officials fall back on LEK when "expert solutions" fail. In the words of Interviewee LF12, "If I do what they tell me and it doesn't work, I use what I already know." Interviewee LM4 also recalled: "The officers taught me to try some chemicals for the fall armyworm. But it did not help solve the problem on my farm. I tried out some of our own approaches. Then I compared the two to see which was better." Thus, falling back on LEK is not only a way to salvage one's investment. It is also an opportunity to compare the effectiveness of LEK and scientifically-proven and industrially-produced adaptation options. In some of such situations, it is the agricultural extension officers who initiate the return to LEK as Interviewee LGOF2 explained: "If we don't find a solution after going through our channels, we return to the farmers and tell them, 'Let's see how we can mobilize resources and ideas as a group to solve this problem. What are your ideas?'" Occasions like this help to reinforce the value of LEK when they actually work where the proven solutions have not been effective. However, while this approach makes room for the use of LEK, it also relegates LEK to a secondary position by default—as an option to be tried when "scientific" knowledge is unavailable or not working.

LEK as Source of Affordable Adaptation Strategies. Both the local and external actors agreed that LEK provides less expensive adaptation options for farmers relative to solutions that are "imported to the place" [interviewee LGOF3], like inorganic weedicides and fertilizers. Because the farmers are mostly into subsistent agriculture, they are often looking for cheaper

materials and strategies to work with, as they hardly have the resources for procuring agrochemicals. A farmer, Interviewee LF6, shared this view that is generally held among the farmers: “Some of the interventions the argic[cultural] officers have introduced to us are good, but they are expensive for me. They did the demonstration. It worked, but it was expensive. The chemicals are too expensive for me.” Interviewee LM11 also stated:

> The chemicals are expensive for me and most farmers to procure. At some point, the government even came in and was giving us free chemicals, but the chemicals were not enough for us. And we had to go and buy it, but I didn’t have the money.

Most of the participants from the agriculture directorate also echoed this sentiment, as demonstrated in words extracted from Interviewee LGOF3’s response: “I have observed that most of the solutions that we give them are expensive. In practicing those solutions, they need to commit more money. So they look for their own alternatives which are cheaper, preferably cheaper, local materials.” In line with Interviewee Lf6’s observation, Interviewee LGOF1 (an official), also conceded: “We do the demonstration. They [the farmers] really see that your approach has worked, but it is expensive. … So they had to look for alternatives.”

Hence, the officials generally believed the relatively higher cost of non-local adaptation strategies made it less likely for the farmers to do the “right thing” by adopting the “proven” technologies and ideas the officers introduce to the farmers. Interviewee LGOF2’s words: “They dissolve it [SoKlin and wood ash], and then they drop it in the funnel of the plant, and it’s able to control the pests at virtually no cost” represents most of the officials’ understanding of the situation. Interviewee LGOF1 noted that: “So sometimes they accept our interventions, but they are more expensive to the farmers. In spite of that, the relationship continues. Whether they accept what you have brought or not, we continue working together.”

LEK as Source of Environmentally-Sustainable Adaptation. Participants generally hold the view that LEK is a source of environmentally-sustainable options for adapting farming to climate change. They mostly compared organic agriculture and organic farming inputs to their inorganic alternatives, describing the latter as generally unhealthy for humans and the environment. Interviewee LF5 stated: "The fertilizers and chemicals people use on their farms wash off into the water bodies and kill the fish. Now it's not safe to drink or cook with water from Onyinampokua and other streams we grew up depending on." Participants also thought the use of inorganic chemicals was causing a reduction in biodiversity and depriving the soils of microorganisms that help to make the soils richer in nutrients to better support plants. Two quotes from Interviewee LGOF1 and Interviewee LM10, respectively, captured the observations and reasoning that inform this stance:

> Our forefathers' ways of farming didn't destroy the environment like people do today. Everything coexisted. They didn't destroy everything just to produce food. They knew they needed other things apart from food. They knew the success of their crops depended on rich biodiversity. Plants need rich soil. You get rich soil where the soil is rich in those small, small living creatures [microorganisms]. Their excrement enriches the soil; they help decompose other biomatter. All that makes the soil rich. But what do we see today? Chemicals in every aspect of farming because of poor soil and low rainfall. But what caused that?... Nothing is safe anymore! [Interviewee LGOF1].

> … because of the agrochemicals that farmers spray on farms, these days, one doesn't come across wild mushrooms, snails, worms, and other organisms in the soil that promote soil fertility by feeding on leaves and other plant parts. All those organisms have been eliminated because of the use of chemicals. So the nutrients that the soil provides for the crops are also reduced. And that means farmers need more chemicals. It's a terrible cycle. We need to reduce the use of chemicals and return to our old ways [Interviewee LM10].

Participants who held such views also tended to be more supportive of adaptation measures based on LEK, but they also expressed misgivings about depending on LEK, pointing to several demerits of LEK. Thus, even though the officers understand the farmer's reason for pursuing alternative solutions based on their LEK, many of them wish farmers could find ways to procure

the solutions the officers introduced to them. The officials who held this view thought that farmers needed to be helped to improve their finances and resource management so they could afford the adaptation options that the officers introduce to them and thus practice them. Interviewee LGOF4's response encapsulated this view: "In our quest to help them [the farmers] adapt, we should also help them manage their finances—not even necessarily to give them more ideas. … so that they can adopt these policies, or else they do their own thing." On this note of the officers' desire for the farmers to adopt the non-local adaptation ideas and technologies despite the merits of LEK, the discussion now switches to the (perceived) demerits of LEK that inform that desire.

Demerits of LEK as Source of Climate Adaptation Strategies

Beyond the virtues of LEK outlined above, the local and external actors also referred to multiple disadvantages of LEK as adaptation strategies that moderate their use in adaptation planning. While some local strategies for climate change adaptation are generally agreed upon, the local and external actors hold divergent views about many of the strategies. This tension manifested in the views that the local actors and external actors shared on some local adaptation strategies that the researcher presented to the participants as having been shared by other participants. The basis of the differences in perspectives on LEK ranged from actors' considerations of LEK's efficacy, scalability, biosafety, environmental sustainability, and the impact of LEK on the modernization drive. Though some local people talked about the demerits of LEK, it was mostly the local government officials who highlighted the LEK's demerits as what makes them less likely to recommend adaptation options based on LEK. The most negative attributes and demerits of LEK that participants (mostly the officials) highlighted are discussed thematically.

LEK Unsuitable for Large Scale Application. The officials thought the local adaptation strategies were mostly unsuitable to apply on large-scale farms. For them, the processes involved in producing most LEK-based farm inputs are cumbersome. They also expressed misgivings about the difficulty in obtaining the materials used for creating local adaptation options. For instance, participants could not imagine how farmers could produce enough neem extracts, SoKlin solution, or wood ash for use on large-scale farms. Some of the officials expressed their reservations about LEK as follows:

> Sometimes too, with the local technology, the process involved in getting the material to use is quite cumbersome. Let's consider the neem extract from the leaves and fruits of the neem tree, for instance. The process of getting the extract for application is very cumbersome. You need to go and harvest a lot of the leaves or the fruits, the mature fruits. You come and pound them. You then sieve it and ferment it overnight. And then you put it in your machine and spray. That's a lot of work [Interviewee LGOF2].

> Imagine you are supposed to use wood ash; how much ash can you collect? So every evening, you have to be moving from house to house to collect ash from homes that use firewood for cooking. And even those homes would also need the wood ash [Interviewee LGOF1].

Some local participants also held similar views about LEK, as seen in a quote from Interviewee LM10's words: "Now they say organic, organic. Where are the plant materials and the animal droppings to go and apply? I have a large maize [farm]. How am I going to get the poultry manure?" Interviewee LF11 also said: "A few years ago, a friend told me to use neem extracts to control pests on my 2-acre maize farm. I tried. It worked, but it's demanding—too difficult. I don't have the strength to do that." This farmer thought the neem extract was an effective solution against the fall armyworm infestation but found it cumbersome to apply on a large scale. This is particularly interesting, as it represents many local actors' attitudes toward the application of LEK. The labeling of LEK as *"Old Testament"* by Interviewee LM3, a farmer who is advanced in age, exemplified the views of farmers who were not inclined toward LEK use.

Likewise, an officer (Interviewee LGOF4) referred to LEK as "*old ways of doing things."* The participants with this inclination conceived of LEK as belonging to the past and not advanced like the commercialized adaptation solutions based on formal scientific knowledge, which Interviewee LM3 labeled as *New Testament.*

The officials' reservations about the cumbersome nature of producing farm inputs based on LEK for large-scale use are interesting in another sense. The reservations are based on their conception of large-scale production as a process to be undertaken by farmers, using basic technology as they do for use on their small-scale farms. But some local actors and a few external participants disagreed with this conception as a reason for not encouraging LEK use in climate adaptation. They counterargued that industrial producers, not individual farmers, handle large-scale production of scientifically-proven solutions against climate change. Hence, the local strategies could have mechanized ways of production once they have been found to be effective, citing the example of SoKlin. A participant argued that SoKlin is an industrially-produced detergent for which there is a liquid formulation that could be applied if further investigations found it effective and safe for use on pest-infested plants. Some participants also contended that most of the farmers in the Effutu Municipality are subsistent farmers who do not need these chemicals in large quantities. The small-scale farmers do most of the work on their farms manually, so producing the input based on LEK is just another activity.

LEK as a Terrain of Unverified Risks. The officials thought some of the local strategies, such as the use of SoKlin (a laundry detergent) that some farmers were applying, might work, but their biosafety is unknown, and farmers needed to avoid such methods until they are verified. The farmer reported that they usually observe the weather and try to sow their seeds not long before or after rainfall. This ensures the soil is wet enough to make it difficult for

rodents and birds to dig up the seeds from the soil. But lately, the farmers cannot be sure when the rains will come, even when the weather suggests there will be rain. Hence, the farmers use seed dressers to coat their seeds before planting to prevent pests from noticing the seeds and feeding on them. Some farmers reported that they don't buy commercial seed dressers; they had improvised the use of gentian violet. Others also pound the extremely poisonous roots of *Cascabela thevetia* (lucky nut, commonly called milk bush in Ghana), mix it with water, and soak their seeds in it before planting to kill any pest that dug up and ate the seeds. The officials are concerned about these local seed dressers for safety reasons. Interviewee LGOF 3 explained: "We don't know whether when the plant germinates and fruits, the consumer will be affected by the poisonous substance it was coated with, especially for vegetables with short maturity cycles. One cannot tell." Perhaps this fear is rather improbable, but it is enough basis for the officers to discourage the use of the local seed dressers without investigating it.

LEK as Source of Contestation and Resistance. The local and external actors talked about LEK as a subject of contention among various actors. In some instances, some of the local people agreed with the officials, while others held different views and provided divergent rationalizations for their choices. For example, many of the local actors interviewed spoke about the benefits of burning the slashed weeds on their farm after clearing the land— slash-and-burn agriculture. Those who subscribe to this approach believe that burning the slashed vegetation leaves ash on the land that provides potassium, phosphorus, and other important nutrients plants require to grow. Interviewee LM6 claimed that: "… we know that if you raise a bed on a piece of land where charcoal has previously been produced, the crops do very well even without fertilizer. We have observed this for so long." The local people argued that the source of nutrients that made crops flourish on such lands was cheaper and safer than inorganic fertilizers and

weedicides. Those farmers also believed that burning the weeds killed pests on the land, some of which would otherwise feed on the cleared bush and then transition to feed on their crops. As Interviewee LF9 explained, "What I know is that if you don't burn the weeds after clearing it, there are some animals that come and feed on the weeds. They remain there and continue to eat your young crops."[15]

Some of the farmers also held contrary views about the burning of slashed weeds on the farmland, with multiple rationalizations. Those against burning believe that slashed weeds could be used as mulch which could be placed around the base of crops to protect the soil from direct sunlight. A farmer rationalized his decision to shift from the practice of weed burning as follows:

> I used to burn slashed weeds after clearing the weeds on my land. It has advantages. But from my experience, I have learned that not all slashed bushes should be burned because the weeds can serve as mulch to shield the soil from direct sunlight, and they also decompose to fertilize the soil. … Burning the cleared bush leaves the land bare and exposed to the sun. The weather is too hot these days, so not burning the weeds helps the crops to flourish [Interviewee LM3].

They also believe that burning the slashed weeds kills other microorganisms in the soil that provide essential nutrients that promote plant growth. They added that apart from the possibility of fires spreading into other unintended areas and becoming wildfires that can destroy other people's farms, burning farmlands, generally, killed other plants that farmers deliberately preserve on their lands when clearing the land for cultivation. In the view of farmers with this orientation, burning reduces biodiversity along with its merits in a way farmers cannot control when burning weeds on their farms.

[15] Some local farmers explained that based their long observation and lessons from their forebears, the farmers who follow this method said they do not clear their farmlands for the year's cultivation until after the initial rainfalls in the year, usually in February or March, to allow the vegetation to use the early rains to blossom and develop more branches and leaves. They expect the increased foliage to leave behind more ash on the land when slashed and burnt to make the soil richer in nutrients.

The agricultural extension officers subscribe to the second school of thought, and they try to discourage the farmers from burning weeds on their farmlands. In some places, this has led to disagreement between the officers and the farmers who believe in the benefits of burning weeds on their farms. A farmer recounts how he disputed the agriculture extension officers' advice against bush burning and challenged the officers to an experiment. He recalled:

> When they [the agricultural extension officers] recommended the non-burning of slashed weeds, we also told them burning the weeds is good for the farm in some ways and that that was what we were doing before agrochemicals were introduced to us. So I threw them a challenge. Together with the officers, we conducted an experiment. Later when they came and inspected it, they saw that the crops at the place where charcoal had been produced had flourished far better than the ones at the place where charcoal had not been burnt. The tomato plants in the charcoal place also had no pest infestation, but the other tomatoes were suffering from leaf rot. So they realized that what we were telling them was true [Interviewee LM6].

LEK as Barrier to Modernization. Similar to the previous theme, some of the officers thought that expressing openness to the use of LEK (conceived as farmers' experience) in adapting farming to climate change would pose more challenges to the modernization of agriculture, as that would make farmers more confident in LEK. Such officials (e.g., Interviewee LGOF1 and Interviewee LGOF4) characterized the farmers' experience as "old ways of doing things" which were not necessarily helpful and should be substituted with "improved methods." Such officers perceive farmers' experience as a barrier to the promotion of proven adaptation strategies. Hence, they think encouraging farmers to implement their local ideas would make the farmers more confident in LEK and thus become less likely to apply the "proven" adaptation strategies and technologies. A quote illustrating this view came from Interviewee LGOF4, an agricultural extension officer, who said:

> But you know our farmers, sometimes some of them are even more experienced than us. They are *used to the old ways of doing things*. It becomes *difficult sometimes to adopt the improved methods* that we give to them through demonstrations and whatever we have also done over the years that have contributed to the experiences that we share with them.

From Interviewee LGOF4's experience, farmers with more experience usually rely on their experience, which frustrates the officers in their quest to promote what they consider to be proven adaptation ideas. He sees the officials' adaptation strategies as superior to the local farmers' LEK and thus has more confidence in the former. With such a conception, the officers are more likely to push for the uptake of their ideas and suppress the use of the farmers' LEK in adaptation initiatives.

So far, the discussion has focused on how the local and external actors' perceptions of LEK inform how local adaptation strategies and technologies are leveraged. The remaining sections focus on how these perceptions about LEK interact with actors' perceptions in the interactions between the local and external actors and the prevailing decision-making structures and orientations to inform the use of LEK in adaptation planning and implementation.

Bureaucratic Division of Labor and Effects on LEK Use in Adaptation Planning

The process of collecting data, analyzing it to understand problems, and formulating solutions to address the impact of climate change on the environment and socioeconomic activities in the EMA constitute a significant determiner of the likelihood of infusing LEK into adaptation decision making in the municipality. The bureaucratic processes and channels of information flow play a significant role in determining the locus of LEK in adaptation decision making. The making of consequential decisions by officials at the higher (regional and national) levels has implications for how local adaptation ideas and strategies are treated. From the analysis, the following themes emerged as the major ones that influence the inclusion or use of LEK in climate adaptation initiatives. These include labor division in data provision and decision making and centralized decision making.

Labor Division in Data Provision–Decision Making. At the municipal level, local government officials generally categorize the burden of understanding the impact of climate change on socioeconomic activities and the formulation of solutions as roles that are naturally divided between the local people and the officials. The officials believe the local people are the ones who are directly on the grounds to know the problems, while the officials are positioned by their knowledge and capacity to proffer solutions to the problems. The officials named the local people's occupations as what positions them as the providers of information about the problems they face. Interviewee LGOF 1 and Interviewee LGOF6, respectively, explained the positioning and role of the local people as the providers of information to inform the officials' decision making as follows:

> Mostly they [the local people] give us the raw data to work with because they have been farming in those areas for quite a long time. So they give us the number of years, what the place looked like, and what has happened. And that gives us the advantage also to proffer the kind of solutions that we can help them with [Interviewee LGOF1].

> They are the basic information givers. They give you the information—how the place has been for the number of years they've been there and how things have changed, and the effects that the change is having on them. And we ask them: 'How will you be able to solve it?' And in most cases, you realize that they are oblivious of the solution [Interviewee LGOF6].

The logic behind the conclusion that the local people are oblivious of the potential solutions to the challenges that climate change poses is interesting. In arriving at this conclusion, the participant quoted in the last extract above and other officials who hold this view mostly seemed to be thinking about situations requiring more sophisticated solutions. They tended to think about adaptation solutions like civil works that involve engineering knowledge to improve communities' resilience against climate change impacts rather than situations that revolve around or impact the people's everyday lives, where the local people are likely to be observing closely

and trying out solutions. This logic largely informs the officials' perception of the farmers and fisher folks as the data providers, as the locals are considered incapable of contributing ideas to develop solutions.

The agriculture and fisheries officials who work more closely with the fishers and farmers generally think the local people are experienced in what they do and, therefore, have some ideas for addressing the problems associated with climate change. However, in practice, those officials also largely consigned the fishers and farmers to the role of providing data for decision making. The following extracts indicate how the decision-making processes result in the roles assigned to local people and local government officials:

> During our annual planning meetings, we also ask for their [the farmers'] constraints during the period under review. … the farmers tell us what [the challenges] they are facing, and we put them on paper, and that is what we work with as a document. And there should be a linkage between the farmers and us because we are not doing everything by ourselves. So that is how we involve the farmers in decision-making [Interviewee LGOF4].

> We start [planning] from the bottom up… We hold annual review meetings with the farmers. For example, we have a challenge with erratic rainfall. So we look at processes or things that we can do to, as it were, mitigate that problem. We look at crop varieties that are tolerant to drought—early maturing varieties. We look at every commodity or the major commodities that we produce within the municipality and draw a program along that tangent [Interviewee LGOF2].

In Interviewee LGOF4's thinking, asking the farmers to share their problems amounts to a sufficient involvement of the local people in decision making, as the farmers' reported problems inform the decisions that the officers subsequently make by themselves. How the deliberations at these fora proceed also shows how the local people's contributions are held within the straits of what is already proposed by the officers, constricting the local people's opportunities to present LEK as possible solutions to some of the challenges identified. The people are free to discuss

their problems, but the solutions discussed are those proposed from above—by the officials. One can see this in Interviewee LGOF3's description of the deliberations process:

> … When we meet, based on the farmers' areas of specialization, we group them *to discuss the problems* that are associated with it and *the possible solutions that we have proposed*. We look at each. … If it is workable, we implement it. So those are the things that we do to come out with solutions.

Thus, those planning meetings are reduced to collecting the farmers' problems with little to no room for soliciting their adaptation ideas. Hence, the meetings become *problem-collection engagements* rather than *forums for thinking together*. Consequently, the type of *bottom-up planning* approach the officers apply restricts local participation to the problem-identification stage. As the foregoing discussion indicates, the officials allocate the problem identification and decision-making roles by themselves and oversee the performance of the roles without alternatives for the local people to decide which role(s) they want to play. In the end, this division of labor between problem/data and solution providers means that the LEK of the people has little or no chance of becoming the preferred or applied adaptation solutions.

Centralized Decision Making. A similar pattern of the decision-making process and the division of roles that are observed at the local level are also observed between the local and higher (regional and national) level officials. The local government officials pass on the data they collect from the local people (fishers and farmers) to the regional office for onward transmission to the national level, where the most consequential decisions are made. In many instances, the officials at these higher levels make the adaptation decisions for implementation at the local level, using data received from the local levels across the regions and nations. Interviewee LGOF2 outlined the process as follows:

> You know, every year, we collect challenges or problems that we encounter as a municipality or district. Then we categorize them into those that should go for research

> and those that should come to extension or training [officers]. So we put them into those groupings. Then when we relay that information to the region, they collate and prepare a national this thing [report] and send those that need to be sent to the researchers.

While this is a regular reporting and planning procedure, it comes with challenges, including the potential of glossing over the nuances of peculiar local-level realities of the communities. Even though the local government officials might be involved to some extent, that involvement seems insufficient to ensure that the peculiar needs of the local people are met in some important adaptation decisions. Per the interview data analyzed, the government officials at the municipal level have little control over some of the decisions made at the national level. Many of the local government officials and the farmers and fishers expressed frustrations with the introduction of adaptation options that did not meet their needs but to which no change could be effected at the local level. Thus, the data collection and decision-making processes result in situations like the ones described here by Interviewee LM11 and Interviewee LF5, respectively:

> Sometimes when we who are engaged in farming and who know what we need tell them [the officers] what we know will help us because government is the decision maker, the officers tell us what we want is not part of their plans. When it so happens, the officers who work with us make us understand what the government's plan is and that they (the local officers) cannot do much about the government's policy [Interviewee LF11].

> … about four or five years ago, the Municipal Assembly proposed that we plant coconuts as part of the government's program. They said we should plant coconuts because of the many benefits that could be derived from coconuts. Some of us also made them aware that even though coconuts have many benefits, coconuts thrive where there is an adequate water supply. We told them our area was not ideal for coconuts due to the limited rainfall here. … But they said the truth was that mangoes were not part of the crops they were distributing. The government had only given them coconut seedlings for distribution, and that was what they could bring. In situations like this, no matter what you say, they insist on giving you what they have [Interviewee LM5].

The quotes above demonstrate the potential challenges with the centralized approach to decision and policymaking. Even though the planting of coconuts falls under the adaptation strategy of encouraging tree crop planting, many of the local participants did not see coconuts as

their preferred crop. In such situations, the local officials find themselves unable to decide on adaptation options or modify them to suit the local realities or preferences, but they have to see to the successful implementation of decisions made at the national level. Incidents like this impact the working relationship between the local government officials and the local people, as the local people tend to think the officials are either unwilling to consider their peculiar local needs or advocate for them. Both the local government officials and local people expressed the desire for more decision-making power at the local level, as the following interview extract illustrates:

> It would be helpful if the fisheries officers were able to make their policies reflect our needs and preferences when we inform them about what we want. I would really like it that way. But in some cases, the government wants them [the officers] to do what they have planned to do, so that's what they insist on. They don't bend to our views. That's one challenge for us. [Interviewee LF8].

Again, this indicates how the bureaucratic decision-making process constricts the space available for the local people to make inputs into the possible solutions to the problems that may be peculiar to local communities. Reserving the consequential decision-making roles to the non-local level officials constrains the space available for leveraging LEK and utilizing local adaptation strategies and options in climate adaptation decision making and the consequences thereof.

The Effects of Climate Adaptation Solution Promotion Policies and Use of LEK

The existing policies for promoting climate adaptation solutions and the officers' attitudes toward those policies also have implications for how much LEK is incorporated into adaptation planning. These are discussed below.

Policy to Propagate Only Proven Ideas/Technologies. Per the participants' responses, the official policy of the agriculture directorate only supports the propagation of *proven*

ideas/technologies—those that are *scientifically* tested and proven. Participants from the agriculture directorate indicated that they are not allowed to propagate local adaptation strategies until those strategies or solutions have been *researched* and proven through the *scientific method*. As discussed earlier, the officers mentioned examples like the spraying of neem extracts or SoKlin (detergent) solution and the sprinkling of wood ash on plants for pest management as local strategies they have observed to be effective. Yet, the policy bars them from propagating those local strategies openly. Interviewee LGOF2 stated, "Our mandate is also to disseminate proven technologies. So even if the thing [local solution] is good, you don't have the authority or the mandate to propagate it." Thus, this policy limits the propagation of LEK and influences the officers' reception and consideration of LEK and the likelihood of infusing such ideas into adaptation plans.

Institutional Pressure to Meet Convert Quotas. The institutional requirement of officers to meet their allocated quota for the number of farmers converted to given adaptation ideas or technologies is another factor that constrains the space for LEK utilization in climate adaptation. The agricultural extension officers, in particular, thought that pressure from their superiors on them to win converts for their adaptation options does not help the local officers to explore local strategies as adaptation measures. Some officers said they appreciate the farmers' situation and their right to choose for themselves when the farmers are reluctant to adopt some adaptation options introduced to them. Yet, the officers must report good numbers of farmers as *new converts* to their adaptation ideas, crop varieties, and technologies. Interviewee LGOF3 recalled having to respond to a query like: **"'**Why are these people planting local variety when you are talking about improved variety?' Sometimes pressure also comes from the office. ... from government policy." To avoid such queries, the officers said they have to try and get the

farmers to adopt the policy-supported ideas. Some officers recounted instances in which they had to put pressure on the farmers to adopt particular adaptation ideas or crop varieties. Some of those situations have resulted in conflicts with the farmers, especially when the adaptations options did not suit the farmers' needs, failed to yield the expected results, or when the farmers perceived the officers as being unreasonable in the face of constraints that the farmers believed the officers were supposed to appreciate. The officers' discomfort with this situation is also captured in this quote extracted from Interviewees LGOF 2 and LGOF1, respectively:

> They [the agriculture officers at the higher levels] don't want to understand that the person [farmer] has the right to choose. Because they will say, 'Go and tell them and get them involved in the program.' If I don't, they will say I am not performing [Interviewees LGOF 2].

> Some of these projects that come, like the climate-smart agriculture, sometimes you know they [the higher level officers] look at your performance based on the number of farmers you have been able to influence to undertake it. Sometimes it's just like those who sell insurance policies. ... You have to get the numbers. So you have to give them [the farmers] some sweet words so that they look in your direction [Interviewee LGOF1].

This orientation of the officers at the top who do not understand the local realities sufficiently makes the local officials focus more on *working toward the local people's buy-in***.** They aim at getting the farmers to take up the adaptation options introduced to them and not necessarily working together with the locals to formulate collaborative solutions to climate change, even though the officers recognize "the farmers know a lot," as interviewees like LGOF2 and LGOF4 acknowledged. These tendencies largely reduce the engagement between farmers and the officers to a monolog dominated by the intention to win converts to the officers' ideas.

Contrasted Promotion of LEK and "Proven" Adaptation. The agricultural extension officers use very disparate ways to communicate about LEK and "scientifically-proven"

adaptation strategies, based mainly on the official position on the two forms of adaptation strategies. They openly talk about the scientifically-proven adaptation strategies and technologies on their promotion platforms so that as many farmers as possible can learn about them and apply them. But "when farmers come up with some of these indigenous strategies, and we see they're okay, we tell other farmers about the strategies. It's only that we don't stand on the platform and talk about it. It's not allowed" [Interviewee LGOF3]. Unlike the formally-sanctioned strategies, the local strategies are only promoted at the "one-on-one" level. Even the restricted promotion is also laced with caveats that can moderate the farmers' likelihood of taking them up. When the target farmers ask questions about whether the local adaptation strategies actually work, the officers provide answers like: "Oh, well, somebody applied this strategy and said it's good. So you can try it" [Interviewee LGOF 2]. This officer does not vouch for the effectiveness of the local solution as based on evidence they can speak to. Obviously, this will not be as effective as asking the farmer to apply it because verifiable evidence proves it is effective, as the officers do in the case of "scientifically-proven" strategies.

Also, as previously observed, the officials resort indirectly to LEK when they face difficult situations and, sometimes, refer farmers to more experienced farmers to share their LEK-based solutions. For instance, "If something is going wrong on someone's farm, they make me accompany them to the farm to share with the affected farmer how I would deal with such problems and the chemicals I would apply" [Interviewee LM8]. The officers' rationale is to avoid being the ones directly promoting the LEK solution, as their institutional policy frowns upon it. On the contrary, in the case of proven technologies, the officers declare to the farmers, "This is the technology that we want you to practice" [Interviewee LGOF 2].

This differential promotion of LEK as "unproven" and officially sanctioned measures as "proven" adaptation strategies and technologies prevail because the officers are not allowed to, as Interviewee LGOF 2 put it, "champion the indigenous ones [adaptation strategies] in our messages as a department. We don't do that until it has been proven. As for the use of neem extract as a pesticide, it has been proven, so we talk about it." The official disapproval of promoting "unproven" adaptation strategies while informally allowing and encouraging its moderated promotion (with individual officers' discretion and responsibility) has implications is worth noting. This treatment of local adaptation strategies implies that those strategies receive less exposure and are less likely to be taken on board in formalized adaptation plans.

Hegemonic Valuation of Knowledge Generation and LEK Usage in Climate Adaptation

The local and external actors' conceptions about the processes for acquiring knowledge and experience to inform decisions are also relevant for the application of local knowledge in climate adaptation planning and implementation. Generally, the officials and local people believe that the officers' knowledge is superior because of the established formal and systematic procedures involved in generating such knowledge. The many ideas the local people shared about how to adapt to climate change and the officers' acknowledgment that the local people have good adaptation ideas did not translate into a level playing field for LEK in adaptation planning. Rather, the import of Interviewee LGOF4's view that "Whatever we say carries weight. There are few of them [local farmers] who think that they know a lot through experience. Sometimes they forget that *we are always researching*, and new things are coming up" seemed to drive the actors' thinking in adaptation decision making. This was variously echoed by the local participants, as seen in Interviewee LF1's *concession* that "They [the officers] have investigated theirs; we just keep doing ours" and Interviewee LM8's *agreement* that "We accept

theirs [the officials' ideas] because they are the ones who have conducted research. For us, we do the fish smoking; we don't undertake any research." Many of the other local and external participants also expressed similar views, demonstrating the actors' attitudes toward local adaptation strategies, compared to the adaptation options from the external actors. These views about the sources of adaptation knowledge determine, to a large extent, the likelihood of using LEK as climate adaptation measures. The formation of these views about LEK results from several factors, including:

LEK Needs to be (but Hardly) Researched. As already noted, the existing policy enjoins municipal agriculture officers to propagate only "proven" ideas and technologies for climate adaptation. That requires LEK to be scientifically tested and approved before it can be considered for inclusion in official adaptation plans. The municipal agriculture officers expressed the desire to propagate some of the LEK that they have witnessed to be effective, so they pass the LEK on to their Research and Information Directorate. However, the local solutions hardly get tested. The officers cited the bureaucratic processes involved in their work, which does not give them direct access to the researchers, excuses based on the nonavailability of resources, and limited commitment to the investigation of LEK-based adaptation strategies as the primary reasons for not getting the local solution verified and proven or otherwise. An officer's account helps to understand how this happens:

> You see, sometimes we the technical people and the highly knowledgeable people, especially researchers, will reject some of the indigenous knowledge instead of investigating them and adopting them so that we can commercialize those things. We don't. That is the problem I have. For instance, the 'SoKlin' [detergent] solution to the fall armyworms… it has worked. I have witnessed it on farms, but the researcher will tell you that they still need to do more investigations to see whether the 'SoKlin' does not have any side effects on the growth and development of the plant. These are some of the issues. These stories have been told. And these pests have been with us for about five years now, I think. But no researcher has gone back to the station to collect data and investigate it [Interviewee LGOF2].

Consequently, systematic investigations have not been conducted to verify the potency and safety of the local pesticides for commercialization or promotion for large-scale use[16]. Some of the officers expressed their frustrations with the requirement for research, but this does not happen, despite their efforts at the local level. The following quotes from Interviewees LGOF2 and LGOF3 exemplify this:

> The only thing is that when we give the information to the regional officers, we expect them to follow up because we don't have a direct linkage with the research people. So, sometimes, when we meet, I'd ask them, 'what has become of this idea we mentioned to you?' They will say, 'oh, we have given it to them.' Then the other people will tell you 'no funding' [Interviewees LGOF2].

> When I send the information about the local people's indigenous ways of protecting their crops from pests and ask for feedback, they [higher level officials] tell me, 'yes, but we have not investigated them, so we cannot tell you that it could be used on a commercial basis.' They are only bent on pushing the inorganic chemicals they have tested in their laboratories or their fields and have proven. This is one of the biggest problems we are having. Our research systems are not doing enough with indigenous knowledge [Interviewee LGOF3].

With the requirement for scientific testing of local adaptation strategies before they can be promoted in a situation where the testing is unlikely to occur, the local people's ideas for climate adaptation are denied the scientific evidence needed to prove their efficacy and safety. Local adaptation strategies are, thereby, suppressed in the adaptation decision-making process. Many of the local farmers, on the other hand, do not wait for such scientific investigations to apply LEK-based strategies that they have observed to work for them or other farmers. Once they know of a solution, they will use it unless it has immediate side effects they can observe.

[16] Neem extract has been proven and commercialized.

Persistent Explanation as Insistence. Generally, both local and external actors think that the knowledge generated through the scientific method is superior to local ecological knowledge. The local people's confidence in their LEK viz-a-viz their officer's knowledge for adapting farming and fishing to climate change is summed up in the following quote:

> Things have changed over the years. Our elders say when things change, you also have to change to suit the times. Continuing to apply *Gold Coast*[17] approaches to farming will not help us. … continuing to do things the same way doesn't help. I think the agricultural extension officers' ideas are better for my farming work [interviewee LM3].

Even though the local people tend to believe that the external actors have better-informed ideas for improving fishing and farming, they do not always agree with the officers. In such instances, some forms of power expression from the officials of local government agencies aid in projecting the external actors' knowledge for adoption in adaptation planning. For example, the officers resort to repeated explanations of their stance and invoke the science behind the knowledge that informs their ideas to ensure that the local people acquiesce to what the officers present to them. Interviewee LM2 stated, "If a farmer does not agree with something, they [the agricultural extension officers] will explain and explain to be sure that person understands what has been taught, so the person will apply it on their farm." The following excerpts also illustrate the officials' strategies for ensuring the dominance of their ideas in the context of adaptation planning:

> Because of the way they [the officers] do their things, we tend to accept their ideas more than ours. As for *akrakyefo*[18] (the elite or educated men), they tend to think that their thoughts and options are the best, but that's not always true. [Said in a slow, lowered voice and thoughtful speech]. We are supposed to be operating democratically [Interviewee LF2].

[17] Gold Coast is the former, colonial name of Ghana. It's usage in this context implies outmoded and discredited ways of doing things.

[18] *Akrakyefo* is the plural form of *okrakyenyi.* It means intellectual or educated male person.

> Most times, the agricultural extension officers try to force us to leave behind the *old ways* of doing our work and take up *modern* approaches which could help us. Two years ago, the extension officer who works in this community put so much pressure on me to use their improved maize seeds. Even though I told him I knew about it but didn't like it, he kept pestering me [Interviewee LM3].

Deferring to *Mpanyinfo*[19]. The local farmers and fisher folk use mpanyinfo in reference to their forebears, leaders, or general elites in their communities. Mpanyinfo is a Fanti (or generally Akan) word. It is the plural form of *Opanyin*. Mpanyinfo is a dynamic word with multiple but intersecting meanings that revolve around the concept of *elders*—the primary denotative meaning of the word. It is from this conception of elders that mpanyinfo draws its connotative meanings, with implications for how people relate to other persons who are considered elders, given the default of deferring to elders in social interactions in Ghanaian society, including climate adaptation planning engagements. Interestingly, they also refer to the agricultural extension and fisheries officers or anybody who is affiliated with any governmental agency or even NGO official as their "mpanyinfo." All of these categories of people represent the sources of knowledge about farming and fishing, and the local people look up to such people's knowledge and experiences for guidance in performing their occupation, as seen in the following extract:

> Everything that our mpanyinfo [elders] have said is true. Knowledge is not possessed by one entity or person. … if you look at the way we do farming, our mpanyinfo (forebears) had their own ways of planting and tending their crops, which we have learned. The agriculture mpanyinfo [extension officers] also come to teach us modern and different ways of farming [Interviewee LM3].

[19] There is a link between the concept of mpanyinfo and respect in Ghanaian society, particularly in rural communities. In van der Geest's view, "To be respected is the prerogative of the ***o****panyin*, the elder… Respect shows and delineates social categories: those who *give* respect and those who *receive* it. The categories are relative and change, depending on the context. Young people respect older ones, women respect men, children their parents… laymen respect *sacred people…"* (van der Geest, 1997, p. 535). Officials seem to belong to the category of *sacred* people, relative to local farmers and fisher folk, for which reason the locals invariably *respect* officials as their *mpanyinfo*.

The reference to local elders and agricultural extension officers as mpanyinfo symbolizes the speaker's deference to both the local (or traditional) and modern sources of farming knowledge or best practices. Local participants' use of mpanyinfo during the interviews suggested a trifold meaning of the word—elders, leaders/superiors, in-charge. In general usage, these could be separate meanings of the word. However, each of these meanings connote the referents' position of superiority, power, or authority, thus eliciting some form of reverence by necessity. Despite the diverse meanings of mpanyinfo, local people's use of the concept during deliberative decision making evokes the combined notions of elders, leaders, and superiors. Hence, local people's reference to the local elite and the external actors as mpanyinfo suggests the local people's concession of their relative subordination to the referent due to the referent's connections to formal knowledge or access to (or control over) resources. The mpanyinfo reference also evokes the need to defer to the referent. Hence, local people's conception of the officials of local government agencies as mpanyinfo contributes to the formation of a paternalistic relationship between the local people and the external actors—a relationship in which the mpanyinfo are the authorities to revere and subject to. The local people's perception of their place in this relationship shapes their agency and willingness to contribute and push for the infusion of their LEK-based adaptation ideas and strategies into climate adaptation initiatives.

Officers' Ideas as Power-Sanctioned. The local people perceive ideas from local government officials as ideas from *educated* people and, therefore, better informed. They hold the belief the officers' ideas are also supported by the government in whose name the officers operate. These perceptions of the officers' ideas as superior and government-sanctioned make the local people more confident in what the officers tell them. They believe that the officials'

ideas carry much weight and hold better prospects for successful adaptation to climate change. This way of thinking and operating is illuminated in a participant's response quoted here:

> Now the situation is that it is the government that sends the agricultural extension officers to visit us and educate us. So it is their ideas that prevail. Their ideas are from the government. We have been doing our farming already and for a long time. ... When government sends someone to come and tell us that the farming we are doing should now be approached in a particular way, I just go by what the government says. The government's people understand these things more [Interviewee LF9].

This perception informs and permeates the locals' relationship with other actors from officialdom, not only government officials. The locals think of the officials as the bearers of the government's voice and the authority that comes with it. In other words, the officials' identity as government representatives favors them to hold sway over the local people during deliberations. Thus, the combined effect of the officials' locus and the local people's perceptions of the officials' ideas as backed by *government* results in the prioritization of the external people's knowledge over local ideas, even by the locals. In essence, despite the locals exhibiting agency in some ways (as shown earlier), they also *obey* the agriculture officers even when the officers' ideas are contrary to the locals' lived experience. Interviewee LM8's acknowledgment of the locals' posture in this regard can be seen in the following:

> When my agricultural extension officer taught me the best time to plant my okra and tomatoes, I realized that the idea he was giving me would not help. My experience had taught me to plant them earlier, but I felt obliged to follow what he told me. But when I tried it and realized that it did not help me, then I applied my own experience the next year [Interviewee LM8].

In the case of the fishmongers' relationship with SFMP, the locals acknowledged that their own approach to fish smoking has shortcomings, including the amount of smoke it emits into the atmosphere. Similarly, the fishmongers also identified shortcomings with the improved technology that SFMP introduced to them. Even though the new technology improved the smoke

emission, it also reduced their productivity—only a small quantity of fish could be smoked at a time, and it needed their dedicated presence and attention to keep the fire burning. In addition, it costs them more in terms of having to procure charcoal for use in the oven. Thus, the fishmongers thought dialog and openness could have led to the creation of a hybrid solution that would better serve their needs by widening the ovens to enable them to smoke more fish at a time and also reduce the smoke emission. But, in the local people's view, the officials were not open to dialog, and the locals also did not put up adequate resistance. They allowed the officials to have their way and rather advised themselves. In the end, only a few fishmongers adopted the technology, with some of the converts abandoning it soon after.

Presentation and Reception of Local Adaptation Strategies in Adaptation Planning

The analysis suggests that the approaches the local and external actors employ in presenting their climate adaptation ideas influence how those ideas are received and considered for inclusion in decision making. The actors' presentation approach, in turn, is influenced by the actors' attitude toward LEK and other sources of adaptation knowledge and the actors' confidence in their ideas in relation to other actors' ideas. These factors shape the actors' perceptions of their ability to share valuable ideas for consideration in adaptation decision making. The factors also have implications for how the various actors react to or treat their own ideas and other actors' ideas when presented for consideration. The major themes that emerged are discussed here, namely: ambivalent reception of local people's ideas and "not in a hurry to document" LEK.

Ambivalent Reception of Local People's Ideas. The local government officials employ a double-edged strategy of handling the ideas farmers share with respect and, at the same time, treating them as passing comments while projecting the officers' ideas to farmers. This strategy

leaves little to no room for the farmers' ideas to receive proper consideration in decision making. "So even though you don't know, you don't rubbish their [the farmers'] ideas; you take it at face value, and then whatever you have brought to them, you stress that one," said Interviewee LGOF4. This approach of taking the local adaptation strategies at face value does not change even after the officer has had the chance to assess the local adaptation strategy and found it effective. As Interviewee LGOF4 stated: "So I come back to assess that knowledge. I surf the Internet, look through books, and consult senior officers. When it is proven that whatever the farmer said still holds, we add it to our climate-smart methods. No argument." By *no argument*, the officer means not going back to talk to the farmers about what they find about the farmer's idea. This essentially implies avoiding conversations about the farmers' ideas. Some officers' choice of avoiding conversation around the local people's expressed adaptation strategies is informed by two reasons— (i) discomfort with exhibiting ignorance about the given strategy or (ii) to avoid coming across as disregarding the local people's strategy. Though this approach may be well-intended on the part of the officers, the local people thought the approach precludes the opportunity for the officers to engage them in relevant dialogs that could help the officers to understand the strategy in-depth from the perspective and experiences of the local farmers.

The farmers interpret the offers' avoidance of dialog around the local strategies to mean the officers are not interested in the locals' practice-informed adaptation strategies. This makes the officer's quest to avoid demonstrating disregard for the farmers' ideas or strategies counterproductive, as, per the farmers, the officers' approach does not encourage them to share their ideas because they feel the officers are not interested in knowing about their LEK-based adaptation strategies. Farmers who were not enthused about the officers' practice of "canning and shelving local ideas" instead of discussing the farmers' adaptation strategies stated that:

> When the officers ask me how I cultivate and manage my tomatoes and other vegetables to flourish, I tell them, and they say they have noted it. And that's all. I believe they come across more ideas from other farmers, too. They can share some of those. But when they come to the farm, it is only what they have learned from books that they talk about, telling me 'This is the way to do this; this is the way to do that' [Interviewee LM6].

> The way they have treated our ideas. … Maybe I have some things to share with them, too. I have a lot of experience from how I have been managing my farm to keep me going. I can share those experiences. But I prefer to keep them to myself. I don't think they value it [Interviewee LF3].

However, the officers' approach is partly informed by their negative experience with overtly acknowledging the relevance of the farmer's ideas. Interviewee LGOF1 recalled:

> There was a town somewhere where a farmer called a senior agriculture officer and told the agriculture officer that 'those officers who have been coming to him are daft; they do not know anything. I am the one who teaches them when they come.' And when you are an agent and this is what is happening, what are you going to do?

"Not in a Hurry to Document" LEK. The local farmers and fishers are generally not educated to the level where they can document their LEK and how they work. The officers whose work involves helping farmers with innovative ideas for solving their problems also tend not to document the LEK-based adaptation strategies that they come across, which they could make available to other farmers to solve their problems in similar contexts. Also, from the interviews, the officials orally inform their superiors about the effective local adaptation strategies they come across. Interviewee LGOF2 described how the municipal agriculture officers inform their bosses at the regional level about their observed effective local adaptation strategies for further investigation thus:

> When we are having our annual planning sessions, the regional officers come. We *tell* them we have observed some indigenous adaptation strategies in the field that we believe are working, so the research people should take them up. Sometimes when we meet again, we ask for an update on the strategies we mentioned to them, but often nothing would have become of it [Interviewee LGOF2].

This practice of using undocumented approaches to communicate with their superiors about effective local adaptation strategies for further investigations could be interpreted as an indication of how much the officers value LEK and their commitment to ensuring that such local adaptation options are investigated and possibly mainstreamed. The officers acknowledged their efforts to get local adaptation strategies and local knowledge into the mainstream for more people to know and apply them have not been sufficient, as seen in the following interview extract:

> The farmers know a lot of things, and we pick those things. ... Only that sometimes we are not in a hurry to document them because if we had taken photos and written something about it, it would have been a document for people to use [Interviewee LGOF3].

This attitude of not documenting LEK could well be the result of institutional constraints on the propagation of LEK. On the contrary, some of the local people, who are largely less literate, exhibited a considerable commitment to documenting their LEK to guide their work. The extracted quote from Interviewee LM8 expresses the will and ability of even the uneducated farmers to build and preserve their knowledge about farming through observation and mental record keeping. He said:

> See my friend over there [pointing to a group member standing by]; he's quite educated, so he documents his farming activities and his observations. The rest of us, who are not able to write, ask our educated children to do the writing for us. I have a good memory, so I keep a lot of my records in my mind to guide me in what I do to be able to provide the food we need. That's how we do things. Because of that, I have received two or three farmers' awards for my work [Interviewee LM8].

Despite the little commitment demonstrated in documenting the farmer's experiences and LEK-based climate change adaptation strategies, the officials seemed to be more interested in the problems that the farmers shared with them. Thus, when the farmers talk about their problems, the officials do well to document them to guide their work and decision making. In the words of

Interviewee LGOF4, "…at that meeting, the farmers tell us what [the challenges] they are facing, and we put them on paper, and that is what we work with as a document." Invariably, these attitudes toward LEK and the non-documentation of LEK partly determine its chances in adaptation planning.

Summary

This chapter focused on addressing research question three. The findings reported help to understand how local and external actors' differential power and perceptions about local knowledge influence how LEK is leveraged in climate change adaptation planning in the Effutu Municipality. The analysis showed that multiple factors related to the local and external actors' differences in power and perceptions about LEK make the local people less confident in their LEK-based climate adaptation strategies. This situation moderates the locals' ability to contribute meaningfully to climate adaptation decision making, as they largely defer to external actors for ideas. The major themes discussed include the perceptions of the merits and demerits of LEK; bureaucratic division of climate change adaptation planning roles; institutional policy on the promotion of climate adaptation solutions; hegemonic views and valuation of LEK, compared to other sources of knowledge; and presentation and reception of local adaptation strategies.

CHAPTER VII

WOMEN'S INVOLVEMENT AND ROLES IN CLIMATE ADAPTATION PLANNING: CONSTRAINTS AND RESPONSE

> … when it comes to gathering to think about the community itself and how to bring progress to the community, we the women, are not included. When the fire service officers come to educate us about how to avoid widespread bushfires when we burn weeds on our farm, or when nurses come to educate us about health, then we are invited [Interviewee LF7].

This chapter focuses on women's involvement and roles in climate adaptation decision making and implementation in the Effutu Municipality. The analysis showed that women are involved in climate change projects, but women's involvement is inadequate and constrained by multiple interlinked sociocultural and other structural challenges in the practice of participatory adaptation. The chapter also presents the findings on how women respond to the constraints on the involvement and the minimization of their voices in adaptation decision making.

Women's Roles in Climate Change Adaptation Project Planning

Research question 4(a) asked: "How are rural women involved in the planning and implementation of climate change mitigation and adaptation projects in Ghanaian farming and fishing communities?" All the participants (including the 12 local women, 11 local men, and 11 government officials who participated in the study) indicated that local women are often involved in climate adaptation decision making and implementation. The analysis suggests that rural women's involvement in climate change mitigation and adaptation projects in rural communities takes various forms. They may participate in community forums organized by the

external actors to solicit community members' adaptation challenges, serve as project team members, and or disseminate project information. They also contribute by assisting in project site identification, determination of project beneficiaries, mobilizing their communities for project implementation, or learning and sharing acquired knowledge and skills with other community members. The next subsections present the roles women play in climate adaptation planning and implementation in the Effutu Municipality.

Participating in Community Forums

Community forums may be organized by various entities that are concerned about the impact of climate change on the social and economic lives of people in the Effutu Municipality. These include the traditional council, farmers' and fishers' groups, the municipal directorate of agriculture, and the municipal department of environmental health and sanitation. The traditional council plays a central role in such forums, which has implications for women's involvement. As discussed earlier in chapter four, generally, any external actor interested in working with the communities must first meet with the traditional leaders before they engage the community. At such initial meetings, fundamental decisions that influence subsequent major project decisions, like participants and beneficiaries selection and the siting of physical projects, could be initiated.

The implications of the palace-first community entry strategy for the dynamics of local involvement in climate adaptation initiatives were discussed earlier. The gender implications are elaborated on here. It is worth recalling that the councils' membership, leadership structure, and operating model are representative of the patriarchal order in the communities discussed in chapter four. With only one woman (the queen) in each of these councils, the aggregate effect is that women are generally not involved in the decisions made by the councils. Consequently, the

existing decision-making arrangement largely excludes women from decision-making on climate change in the municipality. Even though it emerged that the traditional council is in the practice of consulting community members (male or female) with expertise on technical issues when the need arises, this does not cure the gender imbalance because, in the words of a participant, "… it is usually the chief and his elders who sit to make decisions. They then inform the group about what they want the community to do so that we get involved in the execution" [Interviewee LF12].

The government agencies like the municipal directorate of agriculture and the municipal department of environmental health and sanitation seem more open to women's involvement in their activities, including climate change initiatives. These organizations recognize the need for special measures to ensure women are more involved. For instance, participants from the department for agriculture reported that they follow a 40:60 quota policy which ensures that women are adequately involved in their activities from decision making to implementation. Talking about the department's demonstrations exercises which form part of the climate-smart agriculture promotion, a participant noted that:

> For every program that we implement, we have a quota for women— at least 40% should be women. So when we are carrying out demonstrations, we make sure that women are included in those who host the demonstration. Where it is a limited demonstration, we prefer using the women [Interviewee LGOF3].

A participant from the department of environmental health and sanitation (Interviewee LGOF5) talked about how they ensure that women are involved in their public education on sanitation and the use of less smoke-emitting technologies for fish processing. The participant said: "If you come to our town hall meetings, the majority of the participants are women, and we

give them the opportunity to ask questions and bring in their suggestions which we incorporate into our planning." All 12 women participants corroborated this, as seen in this illustrative quote: "… it is mostly the women who engage in farming. The male farmers are not that many. So at gatherings for discussing how to improve farming, there are often more women. … men don't really show up at the meetings" [Interviewee LGOF4]. However, as will be seen later in the findings related to research questions 4(b) and 4(c), these approaches and policies of having women present at the forums do not necessarily imply the involvement of women in climate change adaptation projects is unhindered.

Mobilizing for Community Interest and Involvement in Project

Some of the local women are involved in climate adaptation decision making in various ways. The majority of the local women interviewed think participating in adaptation decision making enables them to understand the initiatives better and helped them play their roles. Hence, some women in the Effutu Municipality take or seek the opportunity to be part of the local project implementation teams, where they help mobilize their communities, especially their group members, to participate in ongoing projects. The women who become part of the local project implementation teams are usually the educated ones who play one role or the other as local project team members. Women without formal education stand a chance if they prove their leadership skills. All others tend to be *passengers* who tag along with little influence over the process. This observation is interesting, as the more educated women are less involved in fishing and farming—the occupations most impacted by climate change.

As project team members, women participate in deciding on suitable ways of executing the projects to benefit their communities. They advise on the selection of project beneficiaries—

individuals and communities. They also play the critical role of disseminating project information in the community, organizing their people (especially other women), and encouraging them to participate. A participant recounted her group's involvement in educating their community on sustainable fishing practices. She stated that her "group educates the fishers to stop practices that are not sustainable. … We do this through radio appearances and drama performances, among other public education mechanisms."

The women also work to ensure that the interests of their communities are upheld in the deliberations around climate adaptation. For example, according to the local women, SFMP followed the top-down logic in planning and executing one of its projects to improve public and environmental health through improved fish processing and reduced CO_2 emission from fish smoking. Given the observed deficiencies, the women beneficiaries pointed out their dissatisfaction with SFMP's approach and how the project would not yield the planned outcomes. One of the women [Interviewee LF2] from a fishers' group recounted:

> The USAID/Ghana Sustainable Fisheries Management Program proposed to put up a building for our group. ... The building had this Chorkor oven [Ahotor stove]. They made it such that we would have to use charcoal for the fish smoking. Do we use charcoal for smoking fish? Who uses charcoal for smoking fish?

Learning and Sharing Acquired Adaptation Knowledge and Skills

Women in the Effutu Municipality, especially the leaders, serve as critical persons for spreading knowledge and skills from project managers to community members. Such women attend workshops where they receive training on various subjects to improve their resilience against climate change impacts. The training may cover issues like better farming practices, new and improved seeds, sustainable fishing practices, environmentally sustainable fish processing,

fish farming, craft making, and bookkeeping. It may also be skill-based training on various vocations for alternative income generation like those provided by Challenging Heights or the Rural Enterprise Program to improve women's resilience against climate change impact. Women who have proven to be reliable are selected and trained at the municipal level. They then pass on the acquired knowledge and skills to the larger community. The local women who stand out in performing these tasks get the chance to operate at the municipal level. An agricultural extension officer interviewed said:

> … just recently, we invited one or two farmers from the communities for a ToT [training of trainers] workshop. One woman's responses to the regional director of records made him appreciate her, and he asked me to invite her to our next regional meeting [Interviewee LGOF1].

The performance of the women in this regard is key to the success and sustainability of adaptation projects, as they help their communities continue to benefit from the projects even after the project initiators have exited. Some of the women leaders in the farmers' and fishers' groups have integrated the dissemination of the knowledge and skills they acquired through capacity-building workshops and other training sessions into the regular activities of their group for the benefit of group members.

Despite the importance of women's contributions to the success of adaptation initiatives, their involvement in participatory adaptation can be shaped by several sociocultural factors. Existing social roles and structures shape the extent to which women are involved in adaptation planning and implementation. The rest of this chapter presents the findings about how social systems and structures shape women's involvement and how women respond to the social systems and practices that inform the assignment of roles. It starts with the presentation of

findings from the survey about the relationship between cultural openness and gender inclusion in climate change adaptation planning. The findings from the qualitative data are then presented to provide detailed contextual explanations regarding how cultural systems and structures shape women's involvement in climate adaptation decision making.

Cultural Openness and Gender Inclusion

The findings from the analyses of the survey data indicate that cultural openness—general communities' support for gender inclusion in activities and decision making—in communities in which farmers' and fishers' groups are located shapes the groups' gender inclusivity (inclusion of women's views in climate adaptation decision making). The results of the regression analysis on the link between cultural openness and gender inclusivity are reported in Table 9. Participants from culturally open communities reported gender inclusiveness levels that are 0.497 higher than their counterparts residing in communities that are not culturally open. Overall, gender inclusivity in fisher and farmer groups' adaptation discourse and planning in groups' cultural openness at the one percent alpha level, adjusting for other relevant variables like years of membership, gender, educational status, and age ($R^2 = 0.109$). Thus, the model explains about 11% of the variation in gender inclusivity. The association between cultural openness and gender inclusivity holds whether participants identify as male or female.

Table 9

Cultural Openness and Gender Inclusion

Variables	Gender Inclusivity
Cultural openness	0.497***
	(0.144)
Years of membership	0.080
	(0.044)
Female	0.018
	(0.128)
Educational status (Base=No education)	
Basic	0.035
	(0.122)
Secondary	0.201
	(0.190)
Tertiary	-0.064
	(0.262)
Age (0=young; 1=old)	0.184
	(0.179)
Constant	-0.779***
	(0.276)
Observations	224
R-squared	0.109

Robust standard errors in parentheses *** p<0.01

Social Roles and Structures, Constraints on Women's Involvement in Participatory Climate Adaptation Planning and Women's Response to the Constraints

This section addresses the last two research questions—RQ4 (b), which asked: "How do existing social roles and structures influence women's involvement and roles in participatory climate change adaptation project planning and implementation?" and RQ4 (c), which asked: "In which ways do women in the Effutu Municipality express their agency in response to the

expressions of power that shape their involvement in climate participatory change adaptation project planning?" The answers to the two questions are integrated to show how the existing social systems, roles, and structures in the Effutu Municipality shape the extent to which women are involved in adaptation planning and implementation and how women respond to the social systems and structures that influence their involvement. The analyses show that the traditional governance system and decision-making structures constrain women's participation in climate change discourse and adaptation decision making in many ways. The key findings are presented below.

Inequitable Stakeholder Selection Practices and Negative Experiences

Various forms of inequitable practices in the selection of project beneficiaries and unfair distribution of project benefits tend to constrict the space for women's involvement in climate adaptation decision making. These include the practice of constituting project teams through interest group representation, targeting the prominent and influential, discounting women's views, and women's negative experiences with repeated disappointment from previous projects.

Constituting Project Teams Based on Interest Group Representation. Project teams for SFMP's sustainable fishing and fish processing initiatives, the multi-sector tree planting initiatives (including the Green Ghana Project), the agriculture directorate's climate-smart training and demonstration sessions, and annual planning and appraisal meetings primarily comprise individuals identified from pre-existing interest groups. The practice of constituting project teams by drawing members from interest groups, invariably, perpetuates gender inequity in project teams. The relevant interest groups identified in the project area include fishers' groups, various farmers' groups (mostly organized around the crops they grow), women's

groups, and youth groups, among others. Apart from a few women's groups, the leaders of the other groups are mostly men. Hence, this approach to forming project teams by pulling members from existing groups inadvertently plays a role in minimizing women's involvement and contribution to the planning and implementation of climate change projects, thus keeping women's peculiar perspectives from shaping the decisions that are made and missing out on the outcomes.

Targeting the Prominent and Influential. In rare instances when climate adaptation plans begin with listening sessions to gather ideas to guide decision making, the invitation to the sessions is limited to prominent community members. For instance, when the officers visit the communities for their community engagement sessions to inform their annual plans, they invite "…the prominent farmers or those who are able to speak and people listen to them in the community," said Interviewee LGOF3, a senior agricultural officer. The officer rationalized this approach, saying: "Sometimes, because of budget constraints on the meetings, we cannot invite all the farmers. We pick the *leaders of the communities* or *very key farmers"* [Interviewee LGOF2]. This targeting is informed by the belief that "the prominent farmers" are the ones who have the relevant knowledge to contribute meaningfully, given their success in farming. Since most of the women are neither community leaders nor resourced enough to be prominent farmers, they do not qualify, per the officers' criteria, to participate in such major decision-making forums.

Discounting Women's Views. Generally, the women interviewed thought their experiences and perspectives received less consideration from the external project managers and the male leaders in their communities. Participants recalled dealing with repeated incidents of

project planning engagements with governmental agencies and nongovernmental organizations that did not yield the desired results, partly because their views did not receive the appropriate consideration. Some project sponsors never show up again for project execution, or they just execute it with the sponsors' own plans, setting aside the ideas from the community people. A women's group leader who had observed many of such instances recalled that: "…When the gathering is over, you would hear the women say the meeting is not even worth their while. They lament that the officials only come and listen to what people have to say. No action will follow" [Interviewee LF4]. An example is SFMP's installation of its well-intended fish-smoking ovens that the women deemed unfit for their purpose. The following excerpts from two women speak to how they feel about the valuation and treatment of their ideas in decision making:

> They built it [a fish processing facility] at Winneba. … *Even if you [the SFMP officials] have put the building at that place, you should create earthen ovens for us, so we can use firewood to smoke the fish. But they wanted us to use charcoal.* And the charcoal too, when you put it in the oven, you have to stay by it and work air into the oven all the while… We told them that the facility was a waste of resources [Interviewee LF1].

> … when it comes to gathering to think about the community itself and how to bring progress to the community, we the women, are not included. When the fire service officers come to educate us about how to avoid widespread bushfires when we burn weeds on our farm, or when nurses come to educate us about health, then we are invited [Interviewee LF7].

The first quote exemplifies how the exclusionary project-planning orientation denies the local people potential benefits when they are not involved in decision making. The last quote, in particular, demonstrates a pattern where the women are mostly invited to be "educated" but not to contribute to decision making. The underestimation of the women's views and contributions subtly expressed through treatments like this discourages some women from participating in

future projects. The next quote summarizes how women's frustration with such experiences makes them hold back from participating:

> "We told them if they wanted to give the women money for trading, they should let us repay monthly, not weekly. The bank representatives said they would consider our proposal. But when they returned to disburse the funds, they insisted on weekly repayment. And that is a problem we have with decision making. … if repayment is weekly, we don't get to trade and gain any returns on the loan. … you just keep returning the principal money to the lender [with interest]" [Interviewee LF3].

Repeated Disappointment from Previous Projects. This factor is closely related to the previous one. The women recounted dealing with many disappointments and sidelining after participating in past project implementation. The disappointments constitute a significant disincentive for the women leaders and their group members. As noted earlier, women leaders are critical in mobilizing their communities, especially other women, to participate in projects like vocational skills training and less smoke fish smoking workshops offered by the Rural Enterprise Program and SFMP, respectively. The participants recounted many instances when project implementation did not continue to completion as they expected, thus failing to yield the desired benefits for the participants. In other cases, project materials and other benefits were distributed through established local channels that were controlled by men, mostly from the chief's palace. The men could discard any distribution plans and make their own decisions regarding who benefits. One woman explained:

> … when we make requests for things to be brought to us, the men get to control the things, as they are delivered to the men instead of the women. This discourages our women. When you invite them to attend programs, you often hear them say they don't want to be part of it because when they go and sit down and make decisions, the benefits from their meetings are delivered rather to the men [Interviewee LF8].

The associated disappointment creates inertia among women, especially those with low self-motivation and those who place their faith in the projects to help them deal with their challenges. When women experience this repeatedly, it becomes difficult to mobilize them to participate in future projects. This makes the mobilizer role of the women leaders more demanding, as one leader conveyed:

> People come here and ask us what our problems are, and we tell them. They often do not fulfill what they promise to do about our problems. When that happens for some time, and you go back to trying to organize our people to do things, they refuse because of the negative past experiences… It makes it difficult to mobilize women. They are always referring us to the disappointments. They even insult us sometimes [Interviewee LF4].

Insistence on Fair Contributions and Benefits Distribution. Although, in many instances, the women are not able to do much about such experiences, this is not always the case. Sometimes the women overtly resist unfairness and call for different mechanisms that suit their interests. For instance, the norm of deferring to men does not apply to all women. From Interviewee LGOF1's observation, "… a few of the women are outspoken. They really don't mind whether their husbands are there or not. Whatever they think they are not happy with, they let you know." The officer explained further that, in instances where they feel something really matters to them, such outspoken women do not hesitate to counter the views of the men and even the external actors' views. Interviewee LGOF4 also recounted his experience in this regard, as seen in this quote:

> When we were discussing the selection of peanut varieties for cultivation, one woman said, 'Officer, for the peanut, I like the red one; I don't like the white one.' The women told me, officer, *the white groundnuts do not yield much,* so *even if the men say it tastes better, we don't want it. The current conditions don't help if you grow the white variety*. We are the ones who cultivate the peanuts, and the red type is what we want.

Also, some women who lost out after some material benefits they requested from external partners had been delivered to the local male leaders for distribution called for a more transparent distribution of future benefits. The women concerned reported that they requested sewing machines and salon hairdryers to help their daughters learn a trade, so they did not have to depend solely on farming or fishmongering, but the benefits went to other people. To avoid a recurrence, these women participants proposed the public distribution of the benefits. They said they complained to the external partners and asked them to hand future consignments of the benefits directly to the individual beneficiaries. Below are two quotes from some of the women recounting their experiences and reactions:

> And the next time they wanted to distribute the sewing machines and hair dryers, some of us insisted they place the things into our children's hands before leaving. The community leaders' reaction and our response created so much chaos that the NGO officials could not distribute the equipment. *They had to go and return to do that at a later time. They shared it the way we wanted it.* But, hmm... If you are a woman and you speak the truth and insist on equity, people begin to dislike you. It's so stressful [Interviewee LF4].

> "A few years ago, there was similar assistance from an NGO, and I insisted on being involved in the distribution of the machines they brought to help our people. You cannot believe the attacks that came upon me for asking to partake in distributing the items. But I don't care what they say. They have to be fair [Interviewee LF6].

The extracts above demonstrate how some women can resist the patriarchal system and elite domination that denies women what they deserve from participating in adaptation initiatives. It also points to how women can leverage their agency to protect their interests when it matters to them.

Marital Insecurity, Role Extension, and Spousal Restrictions

Another theme that emerged as part of the constraints to women's involvement in adaptation planning is related to how existing social roles in marriages could be extended into

climate adaptation decision-making and implementation space. The factors include spousal insecurity and spousal restrictions; extension of spousal roles into adaptation initiatives; and the implications of "my husband trusts me" for dis(approval) of women's participation.

Spousal Insecurity and Restrictions. Several incidents recounted by the various participants indicated that some of the men in the communities become concerned when they see their wives (or women, generally) getting close to the agricultural extension officers. Such men are suspicious of amorous relationships developing between the mostly male officers (except one female officer in charge of the Women in Agriculture program) and the local women. The agricultural extension officers indicated that they try to get women to feel comfortable and encouraged to contribute more by having separate meetings with women. But some men became concerned and resisted the idea. As Interviewee LGOF3 stated, "In some communities, when you go and say you want to meet the women, then some men take offense. They don't understand why we are coming for only the women. I believe they will be cool with women-to-women engagements." Interviewee LGOF1 also shared his experience with this phenomenon: "If you deal with the women exclusively in a cropping group, the men say you have relegated them to the background and are dealing with women only. So sometimes, we include a few men in the women's groups. …"

This kind of suspicion also plays out in another instance—where the officers' efforts to incentivize the local women to participate in their activities get interpreted differently. Two senior male agriculture officers recounted incidents where women farmers requested the officers to bring them bread when visiting the next time. When the requests persisted, the officers bought the bread, which they considered an incentive for getting the women to participate in their

meetings, as precedence had shown. As this "demand and supply" continued, the women's husbands became suspicious of the male officers working with their wives. Interviewee LGOF2 explained that:

> … especially when we get to the very poor communities, sometimes they say, 'Oh, buy *bread*[20] for us when you're coming here next time.' These people, they are always asking. We tell ourselves, 'Well, let us buy bread and go along with it.' When we go with the bread, you hear, 'Eii. He has brought the bread.' Next time, they will come to the meeting in their numbers. So sometimes you buy one, two, three times. … let me buy this woman [a loaf of] bread. So it's some kind of [incentive]… But you have to be very tactful to be able to, as it were, bring the women up in every community. Not everyone sees it positively, especially the men.

Because of these experiences, the officers believe they need the permission of the opinion leaders—who tend to be men—to be able to work with the women in the communities. Interviewee LGOF3 tells his officers: "… When you are going to work with such [women's] groups, you have to make the opinion leaders aware, very much aware of what exactly you are going to do with the women so that they will appreciate it, or you have to let a female officer go." However, because the agricultural extension officers in the municipality are mostly men, this option of having women-only meetings is largely ruled out. The officers agreed that navigating the situation needs considerable tact and limits women's free perpetuation and contributions to decision making.

Extension of Spousal Roles into Adaptation Initiatives. The data analysis showed that the women's roles in climate adaptation initiatives, in some ways, aligned with the roles women

[20] It is a common practice among Ghana's countryside dwellers to expect (or request and receive) "bread" from family and friends who visit them from the towns or cities. Bread may refer to actual bread or a symbolic item or gift, usually food or basic household items. The request and delivery of bread may symbolize the cordiality of the relationship between the parties involved. It may also express the giver's sense of care about the countryside dwellers who have limited access to the life's little luxuries.

are expected to play in their homes in the municipality. Many participants talked about how women involved in climate adaptation initiatives tend to take (or were expected to take) roles similar to women's traditional roles (like food preparation) in their respective homes as family people. Just as women form the majority of participants in farming (all participants agreed on this), women also constitute the majority in the taungya groups, according to the forestry officers interviewed. However, no taungya group head (leader) is a woman. The forestry officers outlined the key criteria taungya groups used in selecting heads in the following extract:

> "The taungya *headmen* are selected by the taungya group members themselves. From my experience, they select people they respect—people who command respect, people who are honest, hardworking, and ready to fight for the group's interest. So from experience, these are the kinds of people you'd mostly come across as taungya headmen" [Interviewee LGOF8].

Considering the criteria above, not having a single woman as a taungya head is instructive. It is indicative of the limited space for women to lead in the taungya groups. In the interview extracts below, two forestry officers explain the women's and men's typical roles in the taungya groups' activities and deliberations on important community issues at the chief's palaces:

> So when you come to our taungya plantations, you will see *women participating fully* in the activities. *And when you go to the nurseries, the women work there.* For a woman taungya head, *I don't think I have ever seen a woman being a taungya head [Interviewee LF8]*.
>
> Mostly when the men meet in the palace, they don't involve the women unless the matter involves *food preparation or when they think they need the insights of a particular woman who has more knowledge* on an issue they are discussing [Interviewee LF3].

What could account for women's "home-type" roles in climate adaptation initiatives? In Interviewee LGOF8's opinion:

> *"They [women] always feel that the men should lead them. … And at times, they may not get the time to be moving from the village to the offices and running other errands on behalf of the group.* So they always prefer the men to be the heads. That is the problem. It's not that the men are discriminating against them, but *the women rather don't want to be the heads. They rather prefer the men to lead them*."

The quote above represents a male interviewee's understanding of why women are not group leaders. With this perception, this external actor oversees the work of the taungya groups. The social barriers that perpetuate the suppression of women's voices and control in climate adaptation decision making remain in place, and these social arrangements limit rural women's involvement. Having women play roles that reflect their roles in their families or roles women are "naturally" called upon to play in society (like running errands for the group) keeps women out of leadership roles.

Exclusionary Partisan Politics and Women's Involvement

The blurring of the line between politics and climate adaptation initiatives (which shapes the participation of local people, generally) is another principal determiner of women's involvement and roles in climate adaptation processes. Political leaders' practices of *drawing in* people with shared political persuasions while *pushing out* those with opposing political views and local women's own political orientations combine to shape women's involvement in adaptation decision making. The key findings that emerged here fall under two themes, namely (a) conflation of politics and climate adaptation activities and (b) political orientation and self-exclusion.

Conflation of Politics and Climate Adaptation. Due to blurred lines between politics and local climate adaptation actors' roles, adaptation initiatives get entangled with politics, with

implications for local participation—including women's roles in the adaptation processes. Politicians' attempts to favor their loyalists (as discussed in previous chapters) result in the marginalization of women since they also have less space in the political arena and are less actively involved in leadership roles than men. Some women participants complained about how politics minimizes their roles in climate adaptation projects. They also indicated how they neglect adaptation projects when they observe any form of politically-motivated inclusion and exclusion. Some of them blamed their member of parliament in particular for what they described as his divisive political approach in selecting which local people to involve in adaptation initiatives, as captured in a quote extracted from a women's group leader's interview:

> Our problem here is that the person [MP for the Effutu Constituency] who is in power today doesn't try to involve us, and even after helping him to get to where he is today, he has ignored us. I will not make any overtures to be involved in any adaptation project when they have sidelined me. I'm minding my own business [Interviewee LF5].

Interestingly, the speaker in the quote above did not name the referent in her responses until the interviewer probed further. Local people with this mindset resist control and exclusion by the powerful. These are cases of power-versus-agency in which local women silently shun the member of parliament's expressions of power. Women, like the speakers in the extracts above, would keep their dignity and pride by keeping at bay. The participant quoted above seemed peeved when she made those comments. In effect, the women leaders have also chosen not to help the community even where the community members believe such women's leadership could make a difference.

Political Orientation and Self-Exclusion. Similar to the findings about the general local population, some women's political orientation causes them to exclude themselves from

participating in climate adaptation projects. This could be because such women do not believe they would be welcomed by project leaders who the women perceive or know to belong to opposing political persuasions. For instance, an official from the EMA stated, "I had to visit communities and tell those women the government had used their tax money to produce the coconut seedlings. I told them it was in their interests to participate, plant the coconuts and benefit from it" [Interviewee LGOF6]. This indicates how some women may deny themselves opportunities because of politics. In other instances, some of the women abandoned adaptation projects they were involved in because they thought political interference was thwarting their efforts and making them work in vain. A fishers' group leader expressed her frustration with local women's roles in educating the local people about illegal fishing, which was not getting anywhere because of political interference in the enforcement of fishing rules. She recalled turning down the fisheries officers' invitation to go on radio to educate the fisherfolk:

> …they [the fisheries officers] have made us wage a long campaign against the use of illegal fishing gear… as I sit here, I have been to Radio Peace, I have been to Radio Windy Bay many, many times to make announcements and participate in discussions. … my leaders take me to the stations. … I have spoken so much that… When the fishers who work for politicians get arrested for breaching the rules, they just release them. Is that fair? Now I feel tired. And for what? Even the other day, when they [the fisheries officers] came to invite me, I told them I had spoken too much, so I won't go on radio again.

Patriarchal Decision-Making Arrangements and Patriarchal Reinforcement

The analyses indicate that patriarchy is a critical determiner of how women are involved in the planning and implementation of climate change adaptation projects in the Effutu Municipality. The patriarchal practices, attitudes, and behaviors that influence women's participation manifest in two forms: family representation by male elders, reinforcement of

patriarchy—active reinforcement and passive psychic acceptance of male domination—and deferring to husbands/men.

Representation by Male Elders. As discussed earlier in chapter four, the local people tend to allow their family members to represent them during public forums and discussions. This default social arrangement has implications for gender dynamics in local participation in climate adaptation planning and implementation. The arrangement is relevant in terms of community members' presence at the forums and who contributes to discussions during public discussions. The family representatives at the public forums tend to be the heads of families—usually elderly men, due to the patriarchal (and other) existing social systems and structures. This means young people and women have fewer chances of contributing to discussions even when they are present at public forums. The family head is usually an elderly male leader of multiple nuclear families or the husband or father in a nuclear family. How this representative arrangement constricts the space available for women to contribute adequately to decision making can be seen in the extract from Interviewee LGOF4: **"**So if the head of the family is part of the public gathering, the rest of the family members can just go and listen and hear the instructions that are given on what needs to be done." Interviewee LF7 reiterates this observation and explains how it influences women's willingness to participate in public forums:

> Most of the time, when we are invited to programs (by the municipal agriculture office, for example) where decisions are made, most of the women do not show up. I am often the only woman from the community who shows up. There is a neighbor that I sometimes *force* to go with me.

Thus, even though women may show up (and constitute the majority, as nearly all the participants indicated) at some of the community meetings organized to discuss climate

adaptation, most of the women are not likely to speak or make direct contributions to deliberations because their husbands and or male family heads are present and are expected to speak on behalf of the families. Perhaps this observation of the norm could also explain Interviewee LF12's conviction in stating that: "Right now, when you invite the women, they will come and sit down, but they will not talk. If their husbands are there, most of the women will not talk. If you like, we can try it." It might also account for Interviewee LF9's frustration: "Some of the women show up to the meetings, but they will never speak. I just don't know why."

Active Reinforcement of Patriarchy. This category of attitudes to male domination manifests in expressions in words or actions that serve to perpetuate the system that subjugates females to the patriarchal order. These expressions may come not only from males but some females as well. Discussing why women are less involved in climate change projects, many of the women participants—nine out of 12 (75%)—repeatedly gave reasons like: "When we want to talk, they say we should keep quiet because we are women;" "If you are a woman and you speak the truth, you easily become the subject of attacks and people come to dislike you;" "When it comes to decision-making, most of the time, the women are [quiet] … when something is going on, and I open my mouth to speak, people ask why I am talking when there are men who should speak;" and "When men are talking, you are also talking?" Sometimes, the prompts to discourage a woman from contributing to public discussions are nonverbal. The message could be delivered through a *threatening* or *questioning gaze* at the woman or other nonword means of communicating, like making indistinct vocal sounds of disapproval while a woman makes a contribution or asks a question, and the targeted woman gets the message; the women understand such reactions.

Passive Psychic Acceptance of Patriarchy. This refers to some women's tacit acceptance or approval of the patriarchal order. Such women conform to the existing order without much resistance. An excerpt from a female leader illustrates how this category of male domination acceptance manifests: "We cannot be involved in every decision making. Every community has its *owners who decide* for the community, and then they inform the community" [Interviewee LF2]. With this attitude toward the patriarchal social order, such women are less likely to participate meaningfully in public activities or discussions. And, in her capacity as a leader, one can reasonably surmise how she may also discourage other women from participating and expressing themselves in public. In another instance, a female farmer decried some women's suppressed desire to participate in public discussions: "When the women come to the meetings too, they will not speak... But when we return, they come praising me for what I said" [Interviewee LF4]. Passive psychic acceptance is also demonstrated in an extracted quote from an agricultural extension officer involved in distributing coconut seedlings and helping farmers to plant them:

> "We helped one woman to plant about four acres of coconut at Nsuekyir. The coconut farm has been destroyed by sand winners. When we asked her what happened, she said the land belonged to the chief, and because she is a woman, she could not say anything. The men here have veto power over the women" [Interviewee LGOF1].

The thin line between the transition from passive psychic acceptance to active reinforcement of gender suppression is seen in Interviewee LF1's words: "Women are very often suppressed… You know, sometimes this is because we women are not able to keep things to ourselves, unlike men. We easily divulge any information." Interviewee LF1 is a local woman

participant who had earlier stated a strong stance against the exclusion of women from planning processes when she said:

> All of us are not the same. Even though I am not formally educated, if you attempt to stop me from making my views known, I will not agree. People are treated based on their knowledge, exposure, and socioeconomic standing. But that *should not* be the case.

These two contrasting stands from a female leader indicate how a woman who has relatively overcome the patriarchal barrier (and occasionally participates in the deliberations of the essentially all-male traditional council) can remain subject to and reinforce the patriarchal system that operates all around her. It suggests that such a woman has unconsciously internalized into her psyche the ubiquitous patriarchal norms that are embedded in her lived experience.

Deferring to Husbands/Men. As a consequence of the reinforcement of the patriarchal order discussed under the previous theme, the women generally defer to the men during climate adaptation decision making. Per the participants' observations, in many instances, many of the women choose not to talk. They allow the men to take control of deliberations and make decisions for their communities. Interviewee LF4 (an outspoken woman) lamented, "I wonder if they [the women] fear they might *die when they speak in public discussions*." Interviewee LGOF1 shared his experience with situations in which women defer to their husbands:

> Several times I've gone to talk to one woman farmer or another, and they say to me, 'My husband is there, so you should deal with him.' Once the husband is around, the woman defers to him. When the man is around, the woman feels that everything is taken care of, so the men should be the ones talking to me [Interviewee LGOF1].

Interviewee LGOF4 recounted his observation of how women generally defer to men when all farmers are invited to participate in climate adaptation planning:

> So on that day of the meeting, there is a laid-down procedure. The men will come. Most of the women and men. ... They come to form something like a family. So the women

> now become sort of laid back during the meetings. You hear them saying "our *mpanyinfo* [leaders], our *mpanyinfo…"* in reference to the men… [Interviewee LGOF4].

Some participants believe that women's tendency to defer to men is partly the result of the longstanding and ongoing socialization that encourages men to subjugate women while encouraging women to accept the subordination. Interviewees LGOF2 and LF10 explained that per the social order,

> If a man makes a pronouncement and his wife even feels she has a counter idea, she dares not speak. The man will feel disgraced and react by asking the woman why she countered what he said. This norm applies to man-and-wife situations and generally between men and women. That social system. … the socialization we have here does not allow the woman to speak. If a woman goes out to speak against a man's opinion in public or if a woman is perceived to be vocal, people say she is too loud. This has been happening in our meetings with the communities [Interviewee LGOF 2].

> The men always suppress the women's views, especially in gatherings. The man should dominate. That is the norm, and men are not ready to let go. I think women have accepted the view that men are the head, and what they say is final. That makes many women, as it were, sit back a little [Interviewee LF10].

Even though the men and some women interviewed from the communities said women have equal opportunities to contribute to deliberations during decision making, this did not seem to be the case, as the extracts from the interviews so far indicate. One external actor recounted their experiences with some traditional male leaders in the communities who prefer to maintain the patriarchal status quo. Such leaders resist the officers' attempt to create situations that enable the women to feel more comfortable in making their views known by creating women-only forums. The officer recalled some interactions with a community chief:

> We went to a community and wanted to meet the women, but the community chief told us, 'Keep them (men and women) together. *That is how God has created it to be. The men must dominate. You can't change anything.*' Then we said, 'Oh, let us have the women at on side so that we get their ideas.' He said, 'Bring both the males and females

> together. Let them meet together.' So as for the social constraints. … it's difficult, and I don't see these things changing unless something drastic happens because men have always been at the forefront and want to remain there. They make the decisions. They own the assets and other things. They control the resources.

The workings of the social system described in the quote above have resulted in a systematic muting of the women's voice in climate adaptation decision making. Hence, the women are more involved in the farm work but less active in meetings, as they defer to their husbands (and men) as their leaders in decision-making settings. Interviewee LGOF4's words in the final quote illustrate the general mix of numbness and concern about the systematic minimization of women's voices in climate adaptation discourse: "We see gender disparities here and there during meetings, but when we are talking about real work on the farms, only a few men are part of the family on the field; it's mostly women who are there." And, with this outlook, the situation persists.

Summary

This seventh chapter has presented the key findings about women's roles in climate adaptation planning and implementation. The findings indicate that women play important roles in ensuring the success of climate adaptation projects and the sustainability of the project outcomes for the long-term benefit of their communities. However, several sociocultural realities constrain the degree of women's involvement in climate adaptation process and influence the roles women play in those initiatives. The rest of the chapter presents the factors that constrain women's participation and how women respond to the social norms and practices that impact their involvement. In the next chapter, the findings are discussed in the context of the existing literature.

CHAPTER VIII

DUSCUSSION AND CONCLUSION

The conduct of this study was inspired by the rising incidence and severity of environmental disasters associated with climate change and its impacts on human safety and the livelihoods of low-income communities, particularly among already vulnerable groups, and the propensity of empirical evidence in the literature about how climate adaptation projects often replicate social domination and marginalization, leading to the failure of adaptation projects to attain outcomes that serve the priorities needs of the most marginalized. This study aimed to examine how diverse local people are involved in climate adaptation planning and how power differential among local actors and between local and external actors shapes local involvement and the use of LEK as adaptation measures in the Effutu Municipality of Ghana. It also examined how sociocultural systems and structures shape diverse local people's participation and roles.

This chapter presents a discussion of the main research findings in light of the theoretical framework for the study—Foucault's theory of knowledge and power, participatory development communication, and the conceptual framework for participatory development. The discussion also relates the findings to the extant literature on the ongoing multidisciplinary discourse on participatory climate adaptation decision making, environmental justice, stakeholder engagement, gender equity, and participatory development. The chapter discusses the dissertation's contributions to the literature on the fields of interest, the theoretical and practical implications of the findings, the limitations of the study, and suggested areas for future investigation and closes with concluding comments.

Discussion of Key Findings

The discussions here revolve around the findings related to the research question as presented in chapters four to seven. Since the responses for RQ1 and RQ2 are related, the key findings related to the two questions are discussed together to reflect the relationship between power considerations and expressions on the one hand and how they shape actors' roles and power as well as the diverse dynamics of local actors' participation in climate change adaptation planning.

Traditional Power Structures and Local Agency in Adaptation Planning

Traditional Governance System and Adaptation Decision Making. It was found that the traditional governance system in the Effutu Municipality and the chiefs' power over their subjects as well as the people's perceptions about their chiefs' power constitute a major factor that weakens some local peoples' motivation to undertake civic actions to protect their environments as a way of mitigating climate change and improving the resilience of their communities. The analysis showed that even though the people are concerned about environmental degradation from sand-winning activities, they think they cannot do much to stop it, as they would come up against greater powers in the communities. Thus, the instrumental motive behind the people's desire to address environmental degradation (Mansuri & Rao, 2013) is suppressed by their knowledge of the sociopolitical order and the superior power of the chiefs (Foucault, 1980), leading to inaction. For example, the people think their chiefs and elders would perceive civic actions against sand winning as a form of opposition to the will of their chiefs, whom the people think are not acting to stop the menace because the chiefs are complicit. The people are largely aloof for fear of incurring the wrath of the chiefs who could punish their subjects for insubordination with their enormous royal powers, including spiritual powers—a part of the discursive practices employed to discipline and whip dissenting voices into line

(Foucault, 1995). Though the spiritual dimension of the chiefs' power was barely well articulated, that notion forms part of the people's established norms and schema for thinking about the power structures within the society and what the people could do, as other scholars have noted (Davidson, 2016; Foucault, 1980). In this regard, people consider the potential social and psychic costs of their actions to outweigh the potential gains (Mansuri & Rao, 2013). Again, the people think reporting their chiefs' complicity to government institutions like the police service for redress would not yield any results but rather amount to humiliating the reputable office of the chief—something they would rather not do, considering their ideological motive to adhere to the shared beliefs and values of their community (Mansuri & Rao, 2013). With these conceptions, most local people do not want to take the risk of "acting against the chiefs." Hence, the indiscriminate sand winning persists, despite the people's faith in the ability of their chiefs to use their *divine rights* and *powers* to promote the communities' interests and foster development.

Landownership and Land Tenure System. The landownership and land tenure system also play critical roles in the local people's access to safe land for farming ventures, similar to what Alhassan et al. (2019) have reported. The chiefs as custodians of community lands, family heads who oversee family lands, and private landowners could be arbitrary in reallocating lands as well as determining land use. For local people who have experienced or observed the patterns of land allocation and decisions about land use, which could, sometimes, be arbitrary as the analysis of the interview data showed—sale or allocation of farmlands even with farmers' crops for sand winning or construction of buildings—are cautious of getting involved in tree crop cultivation as an adaptation measure. Even farmers who are interested in agroforestry initiatives (promoted by the FSD) or tree crop farming (a focus of the agriculture department) as adaptation

measures are cautious, as those ventures require more extensive tracts of land for long-term cultivation.

Since many of the local people are not landowners, their considerations regarding the possibility of accessing and securing safe lands have implications for the local peoples' decision to participate in such climate adaptation initiatives. While some of those who wish to participate in the programs are faced with the difficulty of securing safe parcels of land to start their ventures, others would rather concentrate on annual crop farming. The continued unregulated competition for land use between agriculture and other ventures (especially for residential building) and the arbitrariness in allocating lands is displacing farmers from their hitherto ideal places to farm to distant places without the right conditions like nearby water bodies to support farming at a time when farmers need such conditions the most.

***Palace-First* Community Entry as Moderator of Local Participation.** It was found that this standard palace-first community entry approach tends to privilege the local elite to influence the consequential adaptation decisions at the inception stage. Thus, the use of this approach replicates the top-down decision-making approach in climate adaptation projects at the community level. S*uggestions* from local elites (chiefs and their elders) at this stage carry weight and often become recommendations. The suggestions could range from what should be done, the approach to use, where to site physical projects, who to invite as participants, and who could be considered as beneficiaries. While project initiators may not be obliged to follow the suggestions or recommendations, they may pander to, at least, some of the suggestions, given the clout of chiefs in their communities. Thus, the suggestions often become substantive initial local-level input that shapes the framework for project implementation. Given the elite male-dominant composition and deliberative approaches of the councils, marginalized groups like women are

mostly left out of this consequential stage in adaptation decision making. The literature so far seems to be silent on this aspect of local elite domination.

Internalized Ways of Thinking and Expressions of Power

Both local and external actors have some conceptions about their knowledge, capacity, and place in the adaptation initiatives viz-à-viz those of the other actors. Those conceptions inform how the actors express their power in their engagement with each other, mostly toward attaining their desired ends. As expected, the local people generally consider the local government officials as the more powerful actors who are placed at the local level by the government to help meet the needs of the local people. With the view of government as a powerful entity that can do "almost anything," the people defer to its agents at the local level and expect the officers to be able to help them, even beyond their mandates. This gives the officers relative leverage over the local people. At the same time, the local people also do not accept it when the officials are not able to satisfy their needs. While the local government officers know the mandate of their institutions and the roles they are required to play in the municipality, and how to work with the local people, the local people also have their own expectations of the institutions' mandate and how they are supposed to work with the communities, including the range of services the officers should be able to provide for the fishers and farmers. Some of the local people's ideas of the institutions' mandate do not align with the actual mandates of the institutions. Yet, the locals expect the officers to be able to fulfill them. For instance, while the agriculture directorate is tasked to mainly serve the information needs of the farmers and guide them in their farming work, the farmers prefer more material support by way of agro-inputs and equipment.

The local people's persistent request for such support and their inclination to pay less attention to the officers without material support causes the officers to make false promises to the farmers because they think the people just like to hear promises. Failure to fulfill the promises becomes an additional reason for the local people to disengage the officers, as many of them have memories of unfulfilled promises that discourage them from participating in future adaptation initiatives. In these negotiations around the mandate of the institutions, the local people sometimes challenge the external actors to the point where the officers begin to make concessions about the inadequacies of their institutions and sometimes wish they had the resources to do more for the local people than the predominant provision of information. One of the officials' rationales for making the concessions is to align themselves with the local people in order to preserve their integrity and retain the locals' attention and trust. Yet, for many of the farmers, the concessions make them lose confidence in the officials who they believe should be able to meet their needs as government representatives. This finding aligns with Arko's (2019) conclusion that local actors' agency and power expression can disable the power of external actors.

Nominal Subscription to Bottom-up Planning

Even though the local government officials expressed keenness about the bottom-up planning approach and its relevance in making climate adaptation and development decisions that ensure successful project implementation with local people's buy-in and support, their understanding and operationalization of the bottom-up approach reinforces the top-down approach. The officials essentially do the planning and "finish it off" with the municipal legislature as a representation of the local people, or the officials present their finished plans to the communities for endorsement. Obviously, these approaches do not start with the solicitation

of their communities' priority needs, as Melkote and Steeves (2015) call for. With this orientation, the officials' professed subscription to the bottom-up planning approach is nominal at best or outrightly inaccurate. Consequently, the officials hardly recognize and utilize the experiences and LEK of the local people in their adaptation decision making and planning at all stages, as Dutta (2012) recommends.

Institutional Norms, Discourses, and Adaptation Pathways

Similar to the findings by other researchers, it was found that the institutional norms and discourses of the local government agencies involved in climate adaptation initiatives in the Effutu Municipality limit the variety of adaptation pathways by emphasizing some rationalities while excluding others (see e.g., Davidson, 2016; Klepp & Fünfgeld, 2022). The officials hold the view that local fishers' and farmers' general low level of formal education renders them incapable of having the relevant knowledge to help adapt their occupations to climate change despite the officials' acknowledgment that the local people's many years of experience in fishing and farming have endowed them with useful knowledge for doing their work.

Consistent with the officials' view that the local people have relevant experience from their occupations, the local people expressed a strong belief in themselves as having a high capacity to contribute meaningfully to climate adaptation planning. Yet, the officials think the local people's experiential knowledge does not make them capable contributors when formulating plans for adaptation, given that climate change issues "confound even the brilliant and educated" and is therefore beyond the appreciation of the local people. In other words, the officers consider the local fishers and farmers not to be brilliant and educated enough to qualify them as planning partners in the high-stakes task of adaptation decision making. Further analysis indicated that this view of the officers is mostly informed by officers' conception of climate

change solutions like sophisticated civil engineering works against rising sea levels and high-end and scientific or technological solutions like developing improved and resistant crop varieties rather than day-to-day changes in the approaches to fishing and farming that the local fishers and farmers have long been involved in as they observe and try to address the impacts of the ongoing climatic changes on their occupation as Fung (2006) noted. This finding also supports Klepp and Fünfgeld's (2022) argument that adaptation actors' power/knowledge practices privilege Western post-enlightenment ontologies and their associated types of knowledge over other forms of knowledge like LEK.

Non-Transparent Involvement and Benefit Distribution

It was also found that the adaptation processes in the Effutu Municipality reflect several forms of selective and non-transparent involvement and distribution of project benefits, which have implications for local participation. When the officers involve the local people in their data collection and planning processes, they invite the few prominent and knowledgeable—similar to what other studies (e.g., Chu, 2018; Jost et al., 2016) have found about adaptation initiators' preference for established local structures and knowledge sources. The officials prefer to "target the prominent" members of the fishing and farming fraternity who they believe have more knowledge to contribute to deliberations as well as the clouts to influence others to adopt the adaptation measures introduced by the officials. Similarly, officials also tend to select participants from existing local structures—usually leaders of fishers' and farmer's groups or other local elites. Apart from this practice contributing to the replication and reinforcement of social inequalities by sidelining radically transformative agenda toward inclusiveness and equity (see Carr, 2008; Chu, 2018; Eriksen et al., 2015; Takao, 2012), it is also counterproductive in another sense. The officials' focus on the prominent makes some of the sidelined local people

who observe these practices feel less valued and uninvolved even while they are part of the process and thus become less likely to give off their best or participate in future projects. This evokes the notion of involvement, which presents a bidirectional perspective on participation (P. Koomson, Forthcoming).

The use of selective and non-transparent approaches by the officials and local elites does not only determine who is invited to part of the projects, it also creates room for local elites (including politicians and traditional elders) to capture projects and their potential benefits for themselves and their social networks as shown in previous studies (see Buggy & McNamara, 2016; Lund & Saito-Jensen, 2013; Mansuri & Rao, 2013; Rao & Ibáñez, 2005). When the distribution of project benefits is restricted to local elites and their networks, other local people take notice of the unfairness and refuse to participate meaningfully or abandon the process altogether. As the analysis of the interview data shows, people with such experiences become unwilling to make an effort to get involved. Some even reject future invitations based on their observations and experiences, which makes it more difficult to mobilize such people for adaptation projects. This dimension of the analysis extends the existing understanding of how selective and non-transparent involvement practices shape local participation.

Apart from the adaptation practices that make the initiatives dependent on local elites as leading local partners by default, the local elites also play their roles in ways that help them to maintain their privileged status in the adaptation projects by prioritizing their need to please the officials. This orientation tends to make the local leaders of fishers' and farmers' groups pliant and moderate their groups' ability to promote their interest in their engagements with the external actors. For instance, local leaders also endeavor to forestall any form of conflict between the local people and the external, including benign conflicts that could help them wrestle some

power from the external actors and help local people attain their ends as some scholars have proposed (see e.g., Carpentier et al., 2019; Mansuri & Rao, 2013). Yet, local leaders' desire for tranquility in support of the status quo influences them to provide local leadership that suppresses local agency, which enables the external actors to maintain control over decision making, as they perceive the external actors as powerful representatives of the government who the local people should have on their side. Thus, such local leaders tend not only to be uncritical of the external actors but are also less committed to pushing the locals' adaptation ideas for consideration during project planning.

Such leadership tendencies are not always ideal for local people's interests, as confrontations with power can create accountable and responsive policies (Mansuri & Rao, 2013). The findings from this study indicate that even though conflict between local and external actors in the climate adaptation contexts could be problematic, they could also produce more even settings for engagements that have better outcomes for local people. For example, agricultural extension officers reported being cautious about forcing their ideas unto the farmers because of previous outcomes and local people's reactions; local people's expression of their experiential knowledge makes extension officers engage in continuous learning to update their knowledge to stay on top as the "teachers;" and officers listen more to the local people to better understand their needs and help them.

Resisting Imposition and Adapting by Choice

Similar to the findings in other studies, it was found that the external actors in the municipality tend to align themselves with high-level universal views and solutions to climate change (e.g., Gordon & Krech, 2012; Klepp & Fünfgeld, 2022) and use those in communicating their adaptation options to the local people instead of an understanding of the local situation to

guide climate change adaptation. For instance, the officers use ideas like the need to prioritize food security and increase farmers' incomes by introducing improved crop varieties that are early maturing and high yielding to encourage farmers to adapt their farming to climate change. However, because the local farmers are rational adopters of adaptation measures (Davidson, 2016), those utility maximization appeals did not seem to persuade many of them. The farmers leverage their autonomy in adopting measures when they find the adaptation options presented to them unsuitable to their peculiar circumstances. The farmers, for example are more interested in their ability to store the produce, as they neither have access to ready markets for large volume produce nor the means to store the produce from the improved crop varieties the farmers had observed to be delicate and needed special storage facilities. This priority of the farmers makes some of them stick to their existing variety or strategically combine the two options, with the understanding that they bear sole responsibility for the ramifications of any failures on their farms.

Also, farmers often consider their interests when they participate in the implementation of initiatives that have been planned by external actors. In instances where the local people find adaptation measures introduced by the external actors to be unfavorable, they adopt various strategies to resist the measures and protect their interests. This could take the form of boycotting adaptation activities either overtly—by letting the external partners know about their discontinuation—or by quietly withdrawing from the project and refusing to play their roles toward the success of the projects. Silent boycott is often the preferred approach when the locals want to continue sticking around for potential material benefits from the projects. As the various scenarios in the FSD's taungya system demonstrate, the local people can successfully employ strategies to resist the imposition of adaptation measures from the external actors by compelling

the external actors to compromise on their policies and renegotiate the conditions under which the local people participate in adaptation initiatives or quite despite their potential losses when the locals' strategies fail. Otherwise, the people can circumvent the policies with counter strategies to achieve their desired ends. Consistent with Foucault's (1980) idea of diffused power and Klepp and Fünfgeld's (2022) argument about how local adaptation actors enact their power, the local people's rejection of the external actors' adaptation ideas constitutes an expression of their agency. This finding diverts from the general characterization of local people as passive actors who are dominated by external actors.

Recognition of Locals Actors' Power and Agency

The local government officials recognize the authority of the chiefs and politicians in the area and manage their relationship with them to promote collaboration and thus leverage the local elites' influence to regulate the activities of the local people that impact the environment. Their strategies include accommodating politicians' and traditional leaders' attempts to meddle in the enforcement of the laws against offenders of environmental laws. They also delegate disciplinary actions to traditional leaders to avoid direct confrontations with the local people—a practice that helps to reproduce and maintain the hierarchical and stable social order in the context of participatory adaptation initiatives, as Lund and Saito-Jense (2013) put it. The practice also reminisces Foucault's (1995) observation that existing sociocultural or political arrangements are employed to regulate individuals' experiences and what they can do. Similarly, the officers also use various strategies to navigate the locals' resistance to their adaptation measures. For instance, the external actors endeavor to maintain close relationships with the local people by treating them with dignity, avoiding arguments and confrontations with them, allowing them to have a say and explaining uncertainties about proposed adaptations measures

upfront, and using repeated explanation to insist on the officers' ideas, The officials also use various mechanisms to encourage the local people to take up the adaptation measures the officers introduce to them, including inspiring the locals to emulate award winners who the officers sometimes deliberately select from among farmers who have adopted their strategies and are doing well, exposing farmers to the results of successful adaptation exhibitions to neutralize the local people's resistance to their adaptation ideas, adopting of macro-level local buy-in strategies to win the local people over en masse rather than using communication strategies that serve the ideals of development for social justice and empowerment (Melkote & Steeves, 2015). While these may seem to be good stakeholder engagement strategies, some of them are not necessarily borne out of genuine involvement in decision making (Melkote & Steeves, 2015). With these strategies, the officials are able to get the local people to do as the officials want them to do—as Nagel defines power (Nagel, 1975) posits—without the exercise of overt power, thus masking the external actors' control over adaptation decision making for which reason the locals generally believe they have equal control despite the many indications of external control shared by both local and external participants (see Foucault, 1980).

Regarding individual local people's participation in their groups' adaptation decision making, it was found that group inclusiveness is a statistically significant predictor of all three dimensions of participation—*reported actual number of times participated, willingness to make an effort to participate,* and *feel encouraged to participate*—at the 1% alpha level when the potential personal attributes that can influence participation are controlled for. This is consistent with the outcomes of previous works that suggest that inclusiveness is an essential driver of individuals' participation in a group's activities (DeWall et al., 2011; Jansen et al., 2014, 2020). The finding here supports Mansuri and Rao's (2013) proposition that individuals are more likely

to participate when they believe their group can work together to realize the group's shared objectives.

Power Perceptions/Expressions and the Place of LEK in Climate Adaptation

Research question three examined how local and external actors' differential power and perceptions about local knowledge influence the leveraging of LEK in climate change adaptation planning. It was found that local and external actors acknowledge the value of LEK for adapting fishing and farming to climate change. However, the local and external actors' varied perceptions and ability or willingness to push for the inclusion of LEK in adaptation planning are influenced by their perceptions of LEK. Despite the openness to the use of LEK due to its upsides, the considerations of its downsides make the adaptation actors think of LEK as a source of secondary adaptations options that are used as "first aid" or "last resort" to salvage farmers' investments when there is no scientifically proven solution. These perceived values of LEK also become its bane when considering LEK in adaptation planning.

The analysis shows that the generally unfavorable consideration of LEK in climate adaptation contexts is often informed by the actors' tendency to compare LEK solutions to scientifically proven solutions. The local people's perception of LEK, in particular, did not seem to be independently formed. This was partly due to the officers' projection of solutions generated through the scientific method as superior solutions for addressing the problems associated with climate change, as indicated in previous studies (e.g., Gordon & Krech, 2012; Klepp & Fünfgeld, 2022). The external actors' institutional prohibition of the propagation of LEK as adaptation measures and other decision-making practices unilaterally limit the local actors to talking about their challenges and providing data, while the officials make the decisions at the local and higher (regional and national) levels. These practices significantly hamper the chances of getting LEK

infused into adaptation plans. This finding and its associated empirical evidence add to previous findings about how the superior power of external actors enables them to control adaptation decision making in the context of multi-level decision making among actors (Bisaro et al., 2010; Chu, 2018; Takao, 2012) with polycentric interests (Huitema et al., 2009; Vedeld et al., 2016) and unequal power over the process (Eriksen et al., 2015, p. 531).

Also, consistent with Klepp and Fünfgeld's (2022) finding, the officials' hegemonic practices of rejecting LEK adaptation solutions as unproven while making no efforts effort to have them scientifically verified constricts the space for LEK in adaptation planning (2015, p. 531). Due to the institutional policy against LEK propagation, the local level officials have taken the cue and are in the habit of ambivalently receiving the local people's ideas for climate change adaptation, resulting in their avoidance of open dialog about LEK and relative unwillingness to document the effectiveness of the LEK they come across. Additionally, the "teacher-learner" relationship that has evolved between the external actors and the local people reflects the hierarchical relationship among the actors and has implications for how the actors communicate with each other. The local people's default is to defer to the external actors as the better-informed players whose ideas are sanctioned by the government. The locals, therefore, view the officials' ideas as superior even when they have their own ideas that they consider to be effective. While the more powerful officials believe in the ideas for adaptation and thus present them to the locals with confidence, the local people have little confidence in their LEK and "share" them with less confidence. This, in turn, weakens the likelihood of having those LEK considered for inclusion in adaptation plans.

Women's Involvement, Constraints, and Response to Exclusion in Adaptation Planning

Research questions 4(a) to (c) examined women's involvement in participatory adaptation, how existing social roles and sociocultural systems and structures influence women's involvement and roles, and how women respond to the expressions of power that shape their involvement in participatory climate change adaptation planning. The key findings are discussed below.

The findings indicate that women are involved in climate adaptation planning and implementation, and women play critical roles that promote the interests of women and their communities by ensuring that the benefits from such project outcomes are sustained. However, women's opportunity to contribute to the process is inadequate and constrained. Secondly, it was found that a combination of multiple sociocultural practices and structural challenges—like patriarchy, repeated disappointments from previous projects, the tendency to discount women's views, exclusion from project benefits distribution, targeting the prominent and influential, and the practice of constituting project teams by interest groups representation (which yields male-dominated teams due to the existing social structure)—explain the limited involvement of women in climate change projects. Because the constraints are deep-seated social realities embedded in the cultural and decision-making structures in rural communities, relying on the existing structures serves to deepen socioeconomic inequalities. This study demonstrates how the traditional governance system and decision-making structure in patriarchal societies can suppress women's voices in decision making and moderate their gains from climate adaptation projects, even when women participate in them. What is found here supports previous works' findings (see e.g., Akinsemolu & Olukoya, 2020; Alhassan et al., 2019;

Davidson, 2016; Garutsa et al., 2018; Jost et al., 2016; Nyahunda et al., 2021).

Despite the differences in the analytical frameworks applied, the finding here, like other studies (e.g., Alhassan et al., 2019; Jost et al., 2016), indicates that the patriarchal norms embedded in sociocultural structures and systems can be reflected in participatory climate adaptation processes. This study extends the analysis of how patriarchal norms shape women's participation in adaptation decision making. It shows that patriarchy can manifest in two forms—active reinforcement and passive psychic acceptance of male domination. Actively enforcing patriarchal norms through verbal and nonverbal communicative practices of overt or covert public rebuke (like threatening or questioning gaze) of women for expressing their views during public discussions appeared to have been a common practice in the municipality's past, per participants' accounts. Although this situation seemed to be changing with modern trends, remnants of the practice and its effects linger today.

After many years of living in communities with patriarchal norms, some women have cultivated a passive psychic acceptance of the patriarchal order and "internalized discriminatory ideologies" (Mansuri & Rao, 2013, p. 61), which make them stay away from public discussions even when invited to participate. This makes it challenging to mobilize such women for civic activities. In rural communities where "… people ask why I am talking when there are men who should speak" and remind women who speak in public to "allow the men to talk," it is apparent why women will be marginalized in other important situations. Disrupting the norm comes with social costs like public rebuke, which may be prohibitively high for many women to want to violate the norm. Thus, many of the women are less willing to participate in the public discourse on climate

adaptation to share their experiences and proffer solutions informed by their unique experiences and perspectives even when they are invited to express them, as noted in other studies (see Davidson, 2016; Garutsa et al., 2018; Nyahunda et al., 2021).

Theoretical and Methodological Contributions

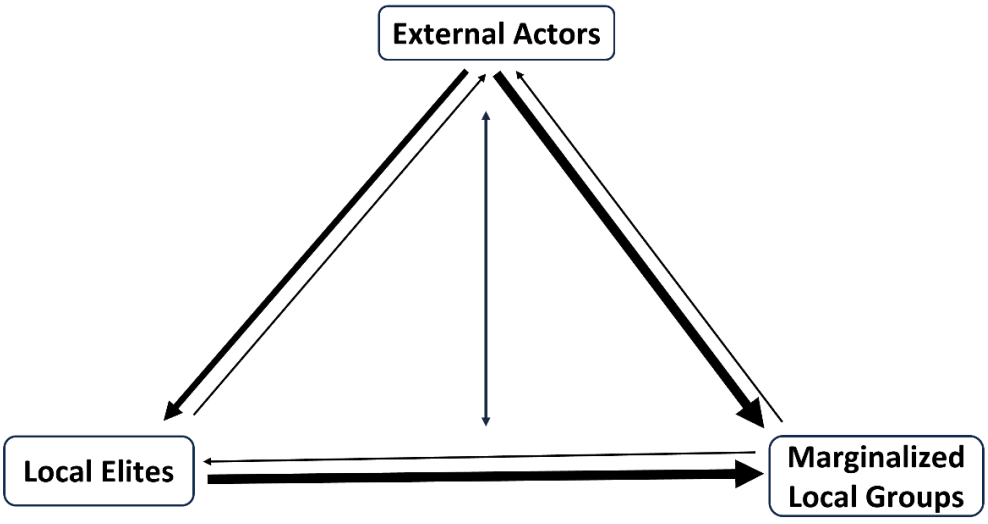
To the best of the researcher's knowledge, this study is the first to focus on how local people and marginalized groups express their agency in the context of participatory climate adaptation processes. Aside from that, this study contributes to the literature on the power and interest negotiations and contestations in participatory processes with several findings and empirical evidence. The findings indicate that even though the external actors and their views generally hold sway over the local people's ability to get their ideas across for adoption as adaptation measures, the local people are able to leverage their agency to express themselves and push for their ideas to be considered for inclusion and for their interests to be factored adaptation initiatives, especially where it is critical and mattered to them. Local people can express their power in ways that can moderate the power of the more powerful external actors and how they see themselves and their relationship with the local people, making the former more willing to listen to the local people and becoming more inclined to bend to the local people's wishes when deciding on what adaptation measures, they prefer to employ.

These findings extend the current understanding of how power shapes negotiations and contestations in participatory adaptation or development contexts in general. It builds on Lund and Saito-Jensen's (2013) finding about marginalized local groups' ability to overturn elite capture and Arko's (2019) work that showed how local actors' power expressions could enable or disable external actors' power. This work's evidence of instances in which local actors contest and disable external actors' power, particularly how marginalized local groups disable local

elites' and external actors' power, provide considerable evidence for viewing power flow in participatory climate adaptation planning as multidirectional (mix of top-down, bottom-up, and lateral) rather than unidirectional, top-down as often depicted in the literature (e.g., Akinsemolu & Olukoya, 2020; Alston, 2015; Garutsa et al., 2018; Jost et al., 2016; Klepp & Fünfgeld, 2022). Hence, it is imperative for development scholars and practitioners interested in understanding how and why participatory climate adaptation or development projects succeed or fail to recognize and include local power considerations and expressions in their analysis and project designs. A multidirectional power flow perspective on participatory adaptation and development allows for a more comprehensive analysis of participatory initiatives than the usual unidirectional power flow conception of participatory adaptation analysis, which overlooks the power and agency of local (and marginalized) people. Figure 6 below is a model depicting the directions of power flow among participatory adaptation actors.

Figure 6

Multidirectional Power Flow Model



Note: The arrowheads indicate the direction of power flow, while the thickness of the arrows illustrates the extent of power exertion.

As the direction of the arrowheads and the arrow thickness suggest, external actors, local elites, and marginalized local groups all possess and exert power on one another, but not equally. The thickest flows of power (as the two thickest arrows show) are directed (i) from external actors toward marginalized local groups on one side of the triad and (ii) from local elites to local marginalized groups (and may be impacted by the flow of power from external actors to local elites) on the opposite side. Overall, the most substantial flow of power is upon the local marginalized groups at the receiving end of considerable power from the external actors and local elites, directly or indirectly. The double-headed arrow in the middle indicates that the overall impact of external actors' power on local actors and how local actors' power impacts the external actors depends on the nature of the relationship among local actors and between local and external actors. How local people (elites and marginalized groups) cooperate has implications for their ability to influence the negotiations and contestations in the participatory climate adaptation decision-making process. It also has implications for external actors' ability to control and influence adaptation decision making. Local elites' agency in promoting the interests of local people generally (rather than their own limited personal needs) helps to strengthen the local front in negotiating for the prioritization of the most pressing local needs.

This study responds to the enduring call to address the practical challenges around how to sustainably take local participation in climate adaptation decision making from "community" participation to diverse community participation (See Buggy & McNamara, 2016; Chu, 2018; Eriksen et al., 2015; Lioubimtseva, 2022; Munaretto et al., 2014; Sprain, 2017). The result of the survey demonstrates that including socially marginalized groups like women and less wealthy people makes them more likely to participate in climate adaptation decision making. The regression analysis in chapter five indicates that group inclusiveness is a critical, independent

driver of local individuals' participation in climate adaptation decision making. Group inclusiveness is a statistically significant predictor of all three dimensions of participation—*reported actual number of times participated*, *willingness to make an effort to participate* and *feel encouraged to participate*—at the 1% alpha level when the potential personal attributes that can influence participation are controlled for. All three dimensions of participation increased with increased group inclusiveness. This finding is consistent with the outcomes of previous works that suggest that inclusiveness is an important driver of participation in a group (DeWall et al., 2011; Jansen et al., 2014, 2020).

The analyses show how an inclusive culture that allows for effective two-way communication (feedback provision and solicitation of members' input) and actions like involving members in activities that matter can enhance the overall group inclusiveness. This reinforces the need for local groups involved in climate adaptation decision making to embrace inclusiveness through inclusive communicative practices to improve the inclusionary cues they send to members to enhance members' sense of belonging, especially for marginalized social groups like women that communities can reap the benefits of diversity in the views and perspectives that inform adaptation decision making. Thus, the pursuit of group inclusiveness to promote inclusive participation aligns well with the United Nations' sustainable development goal (SDG) 17—forming partnerships for the goals. Group inclusiveness can help in removing or navigating traditional social barriers around gender, patriarchy, and hierarchy and, thus, facilitate the attainment of multiple Sustainable Development Goals beyond climate change.

In addition, the ICM developed in this study to harmonize the existing typologies of participation (P. Koomson, forthcoming) serves as a model for scholars and practitioners interested in the holistic examination of participatory initiatives. To that end, the key

observations about the major constitutive elements of participation, as outlined in Table 10 below, can be used to conduct an integrated evaluation of the indices of participation and how they have been employed to achieve the dual goals of participation (as a means and as an end) in development and social change initiatives. Doing so effectively requires scholars and practitioners interested in the participatory approach to dedicate more attention to the nuances of the impacts of structural elements like culture, gender, patriarchy, and other locational factors—on local community participation. Potential barriers to diverse local groups' need to address their priority interests through participatory initiatives as well as questions about how to navigate the socio-political barriers that determine which segments of local populations participate and the roles they play, must also be addressed and highlighted.

Methodologically, the communicative practices-based inclusiveness scale (CoP-BIS) proved to be a robust, objective measure of group inclusiveness. Its five indicators of inclusiveness—frequency of feedback from leaders, satisfaction with the use of members' views in decisions, frequency of soliciting members' ideas, frequency of including members in external meetings, and the likelihood of getting views considered—demonstrated internal consistency. With 0.789 Cronbach's alpha for the five indicators, the scale has internal reliability and is relevant for measuring group inclusiveness. Because the scale is based on items that capture respondents' lived or observed experience of how social groups engage their members, the CoP-BIS provides an objective measure of a group's inclusive communicative practices, compared to other scales that are based on group members' emotive and subjective perceptions of group inclusiveness.

Also, an understanding of the features of participation under the types of participation in the ICM developed in this study (see Table 10 below) could guide the holistic development and

Table 10

Key Observations about the Types of Participation in the ICM

Type of Participation	Key Observations about Local Participation						
	Nature of Local Participation	**Project Design**	**Local Knowledge/ Expertise**	**Project Implementation**	**Communication and Engagement**	**Project Outcomes**	**Monitoring and Evaluation**
Involvement	Spontaneous/ organic local participation Self-motivated local participants work together toward community improvement Diverse local participants	Local and external actors involved in problem identification Local participants involved in solution formulation Implementation strategies and plans jointly drawn	Valued, sought and leveraged Factored into project design from inception	External experts and local participants (including interest group representatives) coordinate labor and other resources All stakeholders follow joint-drawn strategies and plans External and local participants identify and address implementation challenges	Consistent, high-level engagement among local and external stakeholders From beginning to end (between locals and externals and among locals) Open, two-way dialogical (with feedback and symmetrical) Can be initiated by either external or local actors Fosters partnership toward generating solutions to pressing local challenges	Sustainable solutions to pressing community needs Targeted toward outcomes that serve the needs of the most vulnerable Benefits fairly distributed to community members, including marginalized groups/individuals	External and local actors monitor project execution to identify challenges and devise mitigatory measures External and internal actors co-design and undertake evaluation to measure project outcomes Emphasizes local perspectives on outcome indicators

Type of Participation	Key Observations about Local Participation						
	Nature of Local Participation	**Project Design**	**Local Knowledge/ Expertise**	**Project Implementation**	**Communication and Engagement**	**Project Outcomes**	**Monitoring and Evaluation**
Partial Involvement	Local participants mostly co-opted and elitist General population mobilized for local labor and resource provision Low enthusiasm among local participants in the process but focused on personal material and socio-political gains	External experts design projects (with some local elite's input in problem identification) External experts formulate solutions for identified problems	Mostly discounted, partially explored and underused Explored/shopped as (afterthought) mitigatory measures for challenges during implementation. Tokenistic utilization (to back up external expertise)	Largely controlled by externals participants Local elite mostly serve as coordinators/or mobilizers of local labor and resources General local population provides labor and resources	Occasional mid-level engagement between external and local stakeholders Mix of one-way and 2-way communication (often asymmetrical) Mostly initiated by external actors and occasionally by concerned locals seeking to address concerns Focused on discussing predesigned details of projects Aimed at gaining local and donor support for projects	Yields outcomes that serve sectional needs Outcomes often inaccessible to marginalized and disadvantaged groups/individuals Benefits largely captured by the local elite and their networks	External actors monitor project execution to identify challenges and present mitigatory measures Local actors may put forward observed challenges and propose mitigatory measures Project evaluation emphasizes external actors' determined indicators
Non-involvement	Invitational and limited to local elite General population mobilized for local labor and resources Local participants passive and unenthusiastic Individuals participate disjointly toward personal material gains	External experts identify problems per their own observations External experts formulate solutions (with pseudo-local consultation External experts formulate implementation strategies and plans	Largely overlooked, unexplored, and not utilized	External experts provide resources and encourage mobilization of local labor and resources Local elite mostly serve as coordinators/or mobilizers of local labor and resources General local population provides labor and mobilizes resources	Rare, low-level engagement between external and elite local participants Mostly one-way (and asymmetrical when two-way) After project design Mostly initiated by external actors to inform/educate local communities Aimed at gaining local and donor support for projects	Outcomes often unaligned with local priorities Outcomes mostly serve privileged sectional needs Outcomes often inaccessible to the general population Benefits captured by local elite (and their networks)	External experts monitor implementation, identify problems and formulate remedial measures External actors design and conduct project evaluation (sometimes with local labor in data collection) External actors analyze and report findings to local participants.

evaluation of participatory initiatives by highlighting questions about the stages at which locals participate. In this regard, the observations about the various indices of participation—local people's roles in project design and implementation, the nature of local participation, the place of local knowledge and insights, the nature and goal of communication, project orientation, and outcomes as well as the project monitoring and evaluation approaches—as discussed in the ICM model and depicted in Table 2 below provide a tool for scholars and practitioners interested in examining participatory initiatives. It could be a resource for development practitioners to plan and execute initiatives that prioritize the interests of local communities.

Implications for Policy and Practice

The findings about limited local control over adaptation planning in the Effutu Municipality indicate policy implementers need to create more room for significant local-level adaptation planning to give life to the first of 14 guiding principles outlined in Ghana's 2013 national climate change policy, which states: "The principle of subsidiarity in order to ensure participatory decision-making at the lowest appropriate level in society" (MESTI, 2013, secs. 1–10). While this is an indication of the recognition of the need for inclusive participatory adaptation decision making, the empirical findings from this study indicate that guiding principle one is not being practiced in its true sense in the Effutu Municipality, partly because adaptation decisions are largely centralized, with decisions made outside the municipality. Initiators of climate adaptation projects in local communities should recognize the scientific complexity and uncertainties about climate change as well as the localness of the phenomenon and operationalize the decentralization of climate adaptation decision making as indicated in Ghana's climate change policy to encourage more local participation and incorporation of LEK and other local experiences toward effective and sustainable adaptation (e.g., Buggy & McNamara, 2016; Fung,

2006; IPCC, 2018; Munaretto et al., 2014) in the Effutu Municipality and other local areas.

Participatory climate change adaptation and development practitioners should recognize that local actors also have power which they bring into participatory adaptation processes even though officials wield more power to control the process as amply captured in the literature (e.g., Arko, 2019; Chu, 2018; Eriksen et al., 2015; Klepp & Fünfgeld, 2022; Mansuri & Rao, 2013; Melkote & Steeves, 2015). The way the officials consider and express their control over the adaptation decision-making process often weakens the ability of their local counterparts to feel they have adequate control over the processes, as they are made to see themselves as subordinates to the "more powerful" local government officials who see themselves as those in charge and have the responsibility to see to it that adaptation works (Arko, 2019).

Additionally, the local marginalized groups who are often dominated by other local elite and external actors (see e.g., Buggy & McNamara, 2016; Mansuri & Rao, 2013) also have times when they resist the domination and take charge of the adaptation processes to prioritize their critical interests akin to what Lund and Saito-Jensen (2013) found. In such situations, local people, generally, and marginalized groups' resistance to control and their efforts to take control of the process can cause policy changes in ways that shape the trajectory and outcomes of participatory adaptation initiatives. Such instances can lead to concessions and compromises on the part of the external actors. Hence, these insights should be considered when designing adaptation projects that involve local people.

Local government officials and environmental NGOs working on climate change adaptation and other development workers also need to realize that the standard palace-first community entry approach could have significant implications for inclusive local participation and equity in benefit distribution, as the approach can contribute to elite capture. The palaces'

and traditional councils' elite male-dominant composition and their deliberative approaches often result in the exclusion of marginalization social groups like women from this consequential stage in adaptation planning, where such groups need to participate and promote their interests (see Dutta, 2012; Melkote & Steeves, 2015). Even though it may be impractical to jettison the palace-first approach due to the nature of Ghana's rural communities' set up, project initiators have a higher responsibility to develop mechanisms for addressing and navigating the potential exclusion of marginalized and vulnerable groups when the approach is used.

Contrary to Mansuri and Rao' (2013) preference for direct confrontation with power in ways that overlook the role of communication, the findings from this study, show that local people's capacity and efforts to confront power is systematically constrained by sociocultural and political systems as Foucault (1980) theorizes. This brings up the need for more situational communication strategies that recognize the barriers to local participation and aim at (i) building local capacity to take up adequate space and control (ii) employing dialogue with the dominant forces within sociopolitical systems and structures that limit local capacity and participation to yield space for diverse local groups to participate meaningfully at all stages of adaptation planning and implementation. This approach aligns with argument that participation requires both access and interaction to redistribute power (Carpentier et al., 2019).

While policymakers, project initiators, and development communication specialists make efforts to navigate the sociocultural barriers to women's participation in decision making, it will be critical to address the exclusion of marginalized groups from its source with a dual empowerment approach. More impetus should be given to the advocacy efforts to bring about changes in traditional systems and practices that disempower women (see Arko, 2019; Carpentier et al., 2019). At the same time, the capacity of rural women should be built through

education for younger females and training for women to build their confidence and leadership capacity to overcome passive psychic acceptance of male domination. For example, practitioners need practical cultural insights and negotiation skills to navigate the barriers associated with the palace-first community entry practice and other social practices that exclude women from decision making. A necessary paradigm shift would serve the field of development communication well, as it will make the practice more potent in promoting inclusive participation by addressing sociocultural challenges with stakeholder participation at their source. Development communication practitioners have an even more critical role in ensuring the overall success of participatory climate adaptation initiatives beyond the accomplishment of project tasks. The practitioners should work toward including diverse local people right from the project design stage to ensure the project's goals and objectives align with the priority needs of the local communities (Melkote & Steeves, 2015), especially those of the marginalized and most vulnerable (Buggy & McNamara, 2016; Lioubimtseva, 2022; Munaretto et al., 2014).

Additionally, local government officials in the Effutu Municipality need to reorient their appreciation and application of the bottom-up decision-making approach to ensure they apply it in ways that ensure that diverse local community members' needs are taken into account when planning climate adaptation and development initiatives. Where the officials choose to work with the municipal legislators as representatives of the local people, the officials should first ensure that the assembly members solicit their constituents' ideas as input to inform what ends up becoming the plans for the local communities. This way, the official will be giving true meaning to the touted devolution of power and the inclusion of local people in decision making. Perhaps some refresher courses on the application of the bottom-up planning approach will be helpful to

the local government officials, and this recommendation may go for other municipalities in Ghana as well.

Limitations of the Study

The researcher acknowledges that this study has some limitations. Being a qualitative case study of a municipality in Ghana, this study has the limitations of the qualitative approach in general and case studies in particular. The interviews that formed the primary source of data for the study involved 34 participants, which some may consider inadequate for the study. As an exploratory study, this work focused on the nuances of the peculiar experiences and observations of relevant participants in relation to the research questions (see Englander, 2012). Whereas the findings could apply to other places and situations, this study did not focus on the general (see Englander, 2012; Golafshani, 2015); it aimed toward a deeper understanding of the phenomenon of interest, as scientific progress is cumulative and advances through insights from individual scientific studies in the human and natural sciences (Flyvbjerg, 2006). Also, detailed information has been provided about the choices made and the processes followed in the study to guide readers' judgment of the study's outcomes (see Crowe et al., 2011; Yin, 2014).

While the survey sample of 225 was deemed sufficient for the study, the researcher acknowledges that a larger sample could improve the generalizability of the findings, as a larger sample is likely to improve the overall power of the survey and inject more confidence into the interpretation of its findings. A larger sample could also enhance the validity of the items that constitute the CoP-BIS. Although the items in the CoP-BIS and gender inclusivity index were pretested and assessed for the first time in this study, they proved to be robust measures of their respective variables. Yet, the scales would benefit from further testing. Hence, future studies interested in employing the CoP-BIS should consider using larger samples in different contexts

and locations to further test the applicability of the CoP-BIS and gender inclusivity index.

Third, the participation variables were measured with participants' reported participation or their desire to participate in their groups' activities. This works well for willingness and feeling of encouragement to participate but not so well for actual participation. A more objective measure of actual participation could be based on records of attendance and contributions to deliberations from minutes of meetings, but these options were not available for this study, as such records were largely non-existent for the groups studied. Future studies should also consider measuring the participation variables and cultural openness variable with multiple items.

The conduct of the interviews in the local language and the unavailability of documented communications between the external and local actors took much away from the researchers' original intention to conduct a detailed discourse analysis of documents generated by the actors to communicate with their partners. Such documents could have enhanced the data analysis by allowing the researcher to examine how the actors think of and address each other in their ongoing engagements. This would have provided valuable insights into the real-world negotiations and contestations of proposed adaptative measures among the local and external actors. Even though some discourse analysis was done on the few documents accessed and the interview data, a deeper discourse analysis of interviewees' language use in talking about other actors could have been done in lieu of documents. However, since all the interviews with the local participants were conducted in their local language and translated into English by the researcher, the researcher was cautious about conducting a detailed discourse analysis that would invariably touch on participants' choice of words and expressions which have been translated into another language.

The researcher also acknowledges that this study could have benefited from the inclusion

of participants from the National Disaster Management Organization (NADMO) and the Department of Social Welfare and Community Development, given that the phenomenon of climate change and the diversity of local participation were the subjects of interest in the study. The researchers did everything he could to include participants from these agencies in the study, but that did not materialize, as the relevant informants from these agencies were either unavailable or unwilling to participate in the study.

Given that climate change adaptation planning often involves multi-level actors, some of who operate beyond the local level—regional and national levels in the case of Ghana—it would be interesting to investigate the impact of their roles and decisions on decision making at the local level. As this study demonstrates, the decisions made at those levels impact local-level actors' roles and the power dynamics in adaptation decision making. Hence, it would be worthwhile for future studies to include the actors at those levels to gain a deeper understanding of what informs the power dynamics at the local level.

Concluding Comments

This study makes several contributions to the literature on the involvement of local people in participatory climate adaptation and how local actors generally and marginalized groups' participation, in particular, can be shaped by local and external actors' power considerations and expressions. Based on the findings, the following arguments can be made. Power flow in participatory climate adaptations is multidirectional, not unidirectional and only top-down as suggested in much of the extant literature. Local actors and marginalized local groups possess and express power in participatory processes, and their power expressions can enable or constrain the power of the dominant group and also shape the trajectory of the processes. However, dominant groups tend to possess more potential to disable local actors'

power in ways that render local people less able to pursue their priorities in participatory processes. It is, therefore, important for external project initiators to build the capacity of local people to realize their power and yield space for local people to play meaningful roles in project planning right from the inception. Local and external actors' power and their power expressions could be overt but often covert. How local and external actors consider and express their power in the participatory process can turn actors' power considerations and expressions into invisible filters that determine which local people participate and shape how local actors participate in such initiatives. Building inclusiveness into groups is critical for ensuring the inclusive participation of diverse local actors, including marginalized groups, in participatory climate adaptation decision making. Thus, group inclusiveness should be prioritized in local groups.

The findings regarding the constraints on women's involvement in climate change projects indicate that development communication specialists must appreciate the potential barriers to their target groups' opportunities and inclination to participate in participatory projects. Practitioners must go beyond creating avenues for stakeholder engagement and design situational communication strategies that recognize and help to lower and navigate the sociocultural barriers to diverse local stakeholders' involvement. More effective and gender-sensitive strategies are needed to mobilize women and other marginalized groups to participate in climate change mitigation and adaptation project planning and implementation in rural communities, as these groups are the most impacted by climate change. Given that the local government officials claimed to subscribe to the bottom-up planning but demonstrated a misunderstanding of its operationalization, the EMA should consider holding workshops to strengthen its officers' appreciation and use of the bottom-up decision-making approach for the benefit of the EMA and the local communities.

APPENDICES

APPENDIX A

IRB PROTOCOL APPROVAL LETTER

UNIVERSITY OF OREGON

DATE: November 18, 2020 **IRB Protocol Number: 10202020.018**

TO: Paul Koomson, Principal Investigator
School of Journalism and Communication

RE: Protocol entitled, "Assessing Local Participation in Climate Change Adaptation Project Planning and Implementation in Rural Ghana: The Case of Effutu Municipality"

Notice of Review and Exempt Determination

The above protocol has been reviewed and determined to qualify for exemption. The research is approved to be conducted as described in the attached materials. Any change to this research will need to be assessed to ensure the study continues to qualify for exemption, therefore an amendment will need to be submitted for verification prior to initiating proposed changes.

For this research, the following determinations have been made:

- **This study has been reviewed under the 2018 Common Rule and determined to qualify for exemption under Title 45 CFR 46.104(d)(2).**

Contingencies:

- Fante-language informed consent materials must be submitted to RCS before they are used in research.
- Face-to-face interactions conducted for human subjects research (HSR) are limited to those permitted under the current OVPRI COVID-19 Research Recovery Stage. Those interactions that can be facilitated remotely may continue without restriction. The investigator is responsible for monitoring for any changes to the current Recovery Stage information and requirements. The investigator is responsible for securing any other institutional approvals required before conducting this research including an approved Recovery Plan through Research IMT.

Approval period: November 18, 2020 - June 30, 2022

If you anticipate the research will continue beyond the approval period, you must submit a Progress Report at least 45-days in advance of the study expiration. **Without continued approval, the protocol will expire on June 30, 2022 and human subject research activities must cease.** A closure report must be submitted once human subject research activities are complete. Failure to maintain current approval or properly close the protocol constitutes non-compliance.

You are responsible for the conduct of this research and adhering to the Investigator Agreement as reiterated below. You must maintain oversight of all research personnel to ensure compliance with the approved protocol.

The University of Oregon and Research Compliance Services appreciate your commitment to the ethical and responsible conduct of research with human subjects.

Sincerely,

COMMITTEE FOR THE PROTECTION OF HUMAN SUBJECTS • RESEARCH COMPLIANCE SERVICES
677 E. 12th Ave., Suite 500, 5237 University of Oregon, Eugene OR 97401-5237
T 541-346-2510 F 541-346-5138 http://rcs.uoregon.edu

UNIVERSITY OF OREGON

Russell Melia
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CC: S. Senyo Ofori-Parku

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APPENDIX B

INFORMED CONSENT

For Local Participants

You are being asked to participate in this research about local people's involvement in participatory climate change adaptation planning in the Effutu Municipality. We imagine that you have some thoughts to share on this subject.

The purpose of this research is to appreciate the involvement of local people in climate change adaptation project planning in the Effutu Municipality of Ghana. It also seeks to understand how power relations among local and external actors in adaptation initiatives shape the participatory decision making in such adaptation projects.

It is expected that your participation will last between 40 minutes and one hour.

You will be asked to share your experiences, observations, and opinions about the roles of local people in climate change adaptation project planning and implementation in the Effutu Municipality. You will be required to share some information on how climate change is impacting your involvement in farming or fishing and how you are adapting to it. You will be asked about what you think about the extent to which various groups of people in your community are involved in these processes and if groups like women, the less educated, and other disadvantaged people are adequality involved or if there are some more important roles that such people can play. You will also be asked you share your views on how the existing traditional governance systems and decision-making structures within your community and the social relations (among local and external actors) involved in participatory adaptation projects potentially constrain local participants' involvement in these projects and how this situation could be improved. This will take the form of a friendly interview which will be audio recorded. The data you provide will be securely stored without any information associating you with the data, which will also be protected with a password.

Some of the foreseeable risks or discomforts of your participation include your being asked to talk about the impact of climate change on your economic activities or sources of livelihood, which may potentially make you recall unpleasant experiences. Another potential source of discomfort may be in asking you to speak about the traditional governance system, which you may not want to talk about because it may not be encouraged in your community. The researcher is aware of this and encourages you to draw his attention to any source of discomfort that may arise from the interview so that the particular question can be skipped, or the entire interview can be discontinued.

There are no major direct benefits for participants. The researcher intends to provide participants with food and water for refreshment during the interview. Also, the findings from this study could serve as a catalyst for change and social justice that ensures the adequate inclusion of local people (including the disadvantaged who tend to be most impacted by climate change) in adaptation project planning in the Effutu Municipality and elsewhere. This may come with associated socio-economic benefits to the communities (including the marginalized) impacted by climate change.

Participation is voluntary, and the only alternative is to not participate. You could opt out even after agreeing to participate.

The researchers, Dr. S. Senyo Ofori-Parku and Mr. Paul Koomson, from the University of Oregon. If you have any questions about this study, please contact me at pkoomso3@uoregon.edu

Do you understand the information read out to you? If not, feel free to ask any questions you may have. Do you give consent to participate in this study, and do you consent to this interview being recorded electronically? Your participation in this study will be an indication of your consent.

For Participants from Local Government Agencies

You are being asked to participate in this research about local people's involvement in participatory climate change adaptation planning in the Effutu Municipality. We imagine that you have some thoughts to share on this subject.

The purpose of this research is to appreciate the involvement of local people in climate change adaptation project planning in the Effutu Municipality of Ghana. It also seeks to understand how power relations among local and external actors in adaptation initiatives shape the participatory decision making in such adaptation projects.

It is expected that your participation will last between 40 minutes and one hour.

You will be asked to share your experiences, observations, and opinions about the roles of local people in climate change adaptation project planning and implementation in the Effutu Municipality. You will be required to share some information on how climate change is impacting your work with the fishers and farmers in the municipality and how you are adapting to it. You will be asked about what you think about the extent to which various local people in your municipality are involved in these processes and if groups like women, the less educated, and other disadvantaged people are adequality involved or if there are some more important roles that such people can play. You will also be asked you share your views on how the existing traditional governance systems and decision-making structures within your community and the social relations (among local and external actors) involved in participatory adaptation projects potentially constrain local participants' involvement in these projects and how you work to navigate those constraints. This will be a friendly interview which will be audio recorded. The data you provide will be securely stored without any information associating you with the data, which will also be protected with a password.

Some of the foreseeable risks or discomforts of your participation include your being asked to talk about the impact of climate change on your economic activities or sources of livelihood, which may potentially make you recall unpleasant experiences. Another potential source of discomfort may be in asking you to speak about the traditional governance system, which you may not want to talk about because it may not be encouraged in your community. The researcher is aware of this and encourages you to draw his attention to any source of discomfort that may arise from the interview so that the particular question can be skipped, or the entire interview can be discontinued.

There are no major direct benefits for participants. The researcher intends to provide participants with food and water for refreshment during the interview. Also, the findings from this study could serve as a catalyst for change and social justice that ensures the adequate inclusion of local people (including the disadvantaged who tend to be most impacted by climate

change) in adaptation project planning in the Effutu Municipality and elsewhere. This may come with associated socio-economic benefits to the communities (including the marginalized) impacted by climate change.

Participation is voluntary, and the only alternative is to not participate. You could opt out even after agreeing to participate.

The researcher, Dr. S. Senyo Ofori-Parku and Mr. Paul Koomson, from the University of Oregon. If you have any questions about this study, please contact me at pkoomso3@uoregon.edu

Do you understand the information read out to you? If not, feel free to ask any questions you may have. Do you give consent to participate in this study, and do you consent to this interview being recorded electronically? Your participation in this study will be an indication of your consent.

APPENDIX C

INTERVIEW GUIDE

Interview Guide for Local Actors

I appreciate your decision to participate in my research. I am Paul Koomson, a Ghanaian doctoral student at the University of Oregon. In this interview, I seek your views on local people's access to participate in climate change adaptation project planning. Specifically, I would like you to share your observations and opinions about the attitudes of local and external players involved in participatory climate adaptation projects and how the power dynamics shape local participation. Please be assured that your responses will be handled confidentially and used only for academic purposes.

1. Please tell me a bit about yourself. I would like to know your occupation and what your work involves. Please exclude your name and all personal information.
2. What are your roles and responsibilities in your farmers/fishers' group or community?
3. In what ways have the recent erratic weather conditions and rainfall patterns affected your involvement in farming (or fishing), your income, and the livelihood of your family? How concerned are you about this problem, and what are you and your community doing about it?
4. Let's talk about climate change adaptation projects initiated by local government agencies and environmental NGOs in your community. To what extent have you been involved in the planning of climate change adaptation projects initiated by external local government agencies and environmental NGOs? Could you tell me about any specific roles you have played?
5. In what ways have your relationship with officials of local government agencies and environmental NGOs shaped your contribution to the planning of climate change projects in your community? Follow up: What about marginalized people and women and their roles?
6. From your observation, in what ways have the power differences among community members and officers of local government and NGOs driven the climate adaptation decision making? In a situation where you think the adaptation option/activity planned for your community is not the best, what do you do? Any specific experiences to share?
7. What would you do when you think things should be done differently in the adaptation projects in your community? Do you recall any such incidents and how you expressed your thoughts? What was the other partners' (from officers of local government agencies) response to you and your thoughts?

8. Could you share any ideas that you and other community members have for addressing the problem of climate and its impact on your livelihood? Can you talk about any specific examples?
9. From your observation, how much of local people's ideas for climate change adaptation have been incorporated into the adaptation projects planned for your community when officials of local government agencies and NGOs are involved? Follow up: Why do you think this is the case?
10. What role do the processes for decision making and gender expectations in your community shape the involvement of women in climate change adaptation project planning for your community?
11. How do you respond to such a situation when you think or observe that external partners or men in your group or community make most of the major decisions in climate adaptation planning projects? Do you think your reaction changes anything?
12. Is there anything else you want me to know about what we have been discussing? Thank you for sharing your time and insights with me.

Interview Guide for External Actors

I appreciate your decision to participate in my research. I am Paul Koomson, a Ghanaian doctoral student at the University of Oregon. In this interview, I seek your views on local people's access to participate in climate change adaptation project planning. Specifically, I would like you to share with me your observations and opinions about the attitudes of local and external players involved in participatory climate adaptation projects and how the power dynamics in the process shape local participation. Please be assured that your responses will be handled confidentially and used only for academic purposes.

1. Please tell me a bit about yourself. I would like to know about your position in your organization and what your work involves. Please exclude your name if you do not want it on record.
2. Could you tell me a bit about your organization and what it does, as well as the roles and responsibilities of your department?
3. In what ways have the erratic weather conditions and rainfall patterns affected the farming, income, and livelihood of the farmers/and or fishers you work with?
4. Let's talk about climate change adaptation projects initiated by your department in the communities. Could you run me through your organization's process for designing your adaptation plans for implementation in the communities?
5. How are the local people in this area involved in the planning of climate change adaptation projects initiated by your organization? Please share your experiences with me.
6. In what ways have your relationship with local community leaders shaped your ability to contribute to the planning of climate change projects in the communities you work with? First, talk a bit about your relationship with the community leaders.

Follow up: How does this relationship influence local people's contribution to adaptation planning? How about marginalized people and women and their roles?

7. From your observation, in what ways have the differences in your abilities and knowledge and those of the community leaders you work with driven the climate adaptation decision making?
8. What happens when there are differences in opinion about the best adaptation measures to apply in leading your group in decision making? Do you recall any such incidents and how you expressed your thoughts? What was the local community's response to you and your thoughts?
9. How much do you know about the local communities' ideas for addressing the problem of climate change and its impact on the local people's livelihoods?
10. How much of local people's ideas for climate change adaptation have been incorporated into the adaptation projects planned for the communities your work with? Follow up: Why do you think this is the case?
11. From your experience, what role do the social arrangements and expectations in the communities shape the involvement of women's climate change adaptation project planning for your community?
12. Now let's talk about situations when women think your organization or the men in their community groups make the major decisions in climate adaptation planning. How have the women responded to such decisions? How often do you come across such a situation, and how do the women respond to those situations? Did the women's reaction change anything?
13. Is there anything else you want me to know about what we have been discussing? Thank you for sharing your time and insights with me.

APPENDIX D

SURVEY INSTRUMENT

Dear participant,

I am Paul Koomson, a doctoral student at the School of Journalism and Communication, University of Oregon. I am interested in learning about community people's involvement in climate change adaptation project planning. I will appreciate your time spent responding to this short survey on this subject. It takes about 40 minutes to complete. Your valuable responses will contribute to a better understanding of the dynamics of community members' participation in climate adaptation projects. Please be assured that while your responses are completely anonymous, they will also be handled confidentially. I will use the data for academic purposes only and destroy it after the analyses. Please indicate your agreement to participate in the study by indicating "yes" [ ] or "No" [ ].

Meaning of climate change

Climate change refers to the ongoing **changes** in the observed average weather conditions — such as temperature and rainfall — in a region over a long period. Over the last few decades, climate change has led to recent erratic weather conditions and rainfall patterns. Climate change results mainly from rising temperatures. It has many effects on the natural environment, crops, and animals, as well as people and their livelihoods.

1. What is the name of the farmer/fisher group(s) you belong to?

   …….

2. How long have you been a member of this group?
   [ ] Less than one year
   [ ] 1 to 2 years
   [ ] 3 to 4 years
   [ ] 5 years or more

3. Are you a leader in this group?
   [ ] Yes [ ] No

4. How concerned are you about climate change?

   Very concerned [ ] Somewhat concerned [ ] Neutral [ ] Somewhat unconcerned [ ] Very unconcerned [ ]

5. How concerned are you about the impact of climate change on your economic livelihood (fishing or farming activities)?
   Very concerned [ ] Somewhat concerned [ ] Neutral [ ] Somewhat unconcerned [ ] Very unconcerned [ ]

6. If your group has been working with local government agencies and/or NGOs to address the impact of climate change on your economic livelihood, please list the local government agencies and/or NGOs. Please list those that you readily remember.
   ……
   ……
   ……
   ……
   ……

7. Based on your experience, how often do the leaders of your group provide the group with feedback from their meetings with government and NGO officials?
   [ ] Always [ ] Most of the times [ ] Sometimes [ ] Rarely [ ] Never

8. What is your organization's leaders' level of involvement in the planning of climate change adaptation projects initiated by local government agencies and environmental NGOs?
   [ ] Very high [ ] High [ ] Neutral [ ] Low [ ] Very low

9. What is the level of effort you are willing to make to ensure that your leaders receive and consider your views when designing climate change adaptation plans?
   [ ] Very high [ ] High [ ] Neutral [ ] Low [ ] Very low

10. What is the possibility that officials of local government agencies and NGOs will modify adaptation plans to incorporate the views of community leaders if they request modifications to make the plans reflect local experiences and interests?
    [ ] Very high [ ] High [ ] Neutral [ ] Low [ ] Very low

11. Overall, how satisfied are you with your group's inclusion of non-leading members' views in climate adaptation decision making?
   [ ] Very dissatisfied [ ] Dissatisfied [ ] Neutral [ ] Satisfied [ ] Very Satisfied

12. How often do your group leaders seek your group's views before engaging external partners in climate adaptation decisions?
    [ ] Always [ ] Most of the times [ ] Sometimes [ ] Rarely [ ] Never

13. How often do your group leaders include you in meetings with government and NGO officials?
    [ ] Always[ ] Most of the times [ ] Sometimes [ ] Rarely [ ] Never

14. How often do you feel encouraged to contribute your ideas during group meeting meetings to decide on climate change adaptation?
    [ ] Always[ ] Most of the times [ ] Sometimes [ ] Rarely [ ] Never

15. What is the likelihood that you will succeed in getting your group leaders to consider your views when designing climate change adaptation plans?
[ ] Very high [ ] High [ ] Neutral [ ] Low [ ] Very low

16. What is the level of control your group has in shaping climate change adaptation decisions on projects that involve officials of local government agencies and NGOs?
[ ] Very high [ ] High [ ] Neutral [ ] Low [ ] Very low

17. Do you think the leaders of your group have equal control as the officials of local government agencies and NGOs when making decisions on climate change adaptation projects?
Yes [ ] No [ ]

18. How do you view your ability to make meaningful contributions to climate change adaptation plans?
[ ] Very high [ ] High [ ] Neutral [ ] Low [ ] Very low

19. How do you think officials of local government agencies and NGOs view your community members' ability to make meaningful contributions to climate change adaptation plans?
[ ] Very high [ ] High [ ] Neutral [ ] Low [ ] Very low

20. In your view, what is the level of capability of the local government agencies and NGOs officials to make meaningful contributions to climate change adaptation plans for your community?
[ ] Very high [ ] High [ ] Neutral [ ] Low [ ] Very low

21. From your observation, to what extent do you think local government agencies and NGOs incorporate your group's ideas into climate change adaptation projects planned for your community?
[ ] Always[ ] most of the time [ ] Sometimes [ ] Rarely [ ] Never

22. In your view, how often are women adequately involved in the planning of the climate change adaptation initiatives you have been involved in?
[ ] Always[ ] Most of the times [ ] Sometimes [ ] Rarely [ ] Never

23. There are aspects of our culture that do not encourage women to be involved in the planning of climate change adaptation initiatives as women would desire. To what extent do you agree or disagree
[ ] Strongly agree [ ] agree [ ] Neutral [ ] disagree [ ] Strongly disagree

24. In a situation where officials of local government agencies and NGOs that work with your group make most of the major decisions in climate adaptation planning, how likely are your community members to request that their views are factored into the design of the adaptation plan?

[ ] Very likely [ ] Likely [ ] Don't know [ ] Unlikely [ ] Very unlikely

25. In a situation where male leaders make most of the significant decisions in climate adaptation planning, how likely are you to request the inclusion of women in climate adaptation planning?
[ ] Very likely [ ] Likely [ ] Don't know [ ] Unlikely [ ] Very unlikely

26. From your experience, how likely are the officials of local government agencies and NGOs that work with your group to revise a climate adaptation plan to reflect the views of your community if your group makes such a request?
[ ] Very likely [ ] Likely [ ] Don't know [ ] Unlikely [ ] Very unlikely

27. In your opinion, how likely are the leaders of your group to modify adaptation plans to incorporate the views of women if women think the plans do not reflect their interests?
[ ] Very likely [ ] Likely [ ] don't know [ ] Unlikely [ ] Very unlikely

28. In your opinion, how likely are the male leaders in your group to modify adaptation plans to incorporate the views of women if women think the plans do not reflect their interests?
[ ] Very likely [ ] Likely [ ] don't know [ ] Unlikely [ ] Very unlikely

29. Based on your estimation of the chances of getting leaders to modify adaptation plans to incorporate the views and interests of women, how likely are you to request a modification of adaptation plans to reflect women's interests?
[ ] Very likely [ ] Likely [ ] don't know [ ] Unlikely [ ] Very unlikely

30. Overall, how satisfied are you with your group's inclusion of women's views in climate adaptation plans?
[ ] Very dissatisfied [ ] Dissatisfied [ ] Neutral [ ] Satisfied [ ] Very Satisfied

31. What is your occupation?
[ ] Fishing
[ ] Farming
[ ] Other (Please specify) …….

32. Which of these age groups do you belong to?
[ ] Under 20
[ ] 20 – 30
[ ] 31 – 40
[ ] 41 – 50
[ ] 51 – 60
[ ] Over 60

33. Sex: [ ] Male [ ] Female

34. My highest level of education attained is:
[ ] Some primary school (not completed)
[ ] Primary school (completed)

[ ] Some JSS/JHS/Middle school (not competed)
[ ] JSS/JHS/Middle school (competed)
[ ] Some SSS/SHS/Secondary school (not completed)
[ ] SSS/SHS/Secondary school (completed)
[ ] Some tertiary (not completed)
[ ] Tertiary (completed)

35. Are you a native of the Effutu Municipality? Yes [ ] No [ ]

36. Approximately how many times did you participate in activities (including meetings) organized by your group in the last year?"
[ ] 1
[ ] 2 – 5
[ ] 6 – 8
[ ] 9 – 11

37. Respondent code on paper questionnaire (please enter code) ……..

This is the end of this survey. Please click the forward arrow ► to submit your responses.

APPENDIX E

LIST OF ABBREVIATIONS

ADRA …… Adventist Development and Relief Agency

CoP-BIS …..…….…. Communicative Practices-Based Inclusiveness Scale

CSA ….…… Climate-Smart Agriculture

EMA …..…….…… Effutu Municipal Assembly

FSD ……...……...……. Forestry Services Division

ICM ..... Involvement Continuum Model

IPCC …… Intergovernmental Panel on Climate Change

LEK …..……...…… Local Ecological Knowledge

MESTI …..……. Ministry of Environment, Science, Technology and Innovation

NADMO ……..…….…..…. National Disaster Management Organization

NGO ……..…… Nongovernmental Organization

PAMSCAD ……. Program of Action to Mitigate the Social Costs of Adjustment

SFMP ……...…… Sustainable Fisheries Management Project

TEK ……..……. Traditional Ecological Knowledge

UNFCC ……...……. United Nations Framework Convention on Climate Change

USAID ……...……..… United States Agency for International Development

WD …… Wildlife Division

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