

# Action Research on Local Adaptive Capacity in ALP Communities in Northern Ghana

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# 1. EXECUTIVE SUMMARY

This report sets out the findings of a study which aims to understand how community members in two rural communities in northern Ghana are currently responding to climate change, how those responses have changed over time, to what people attribute those changes, and finally, what drivers and barriers exist which prevent or enable people to strengthen their adaptive capacity. The two communities, Farfar in Ghana's Upper East Region, and Kanyini, in Ghana's Upper West Region, have both been targeted by the Adaptation Learning Programme (ALP), although ALP was implemented in Farfar in 2010, and in Kanyini in 2015. In each community, distinctions were made according to gender and age, as well as intersectional contours, such as between members of asset-rich households and those from asset-poor households. As an analytical framework, the study employs the Local Adaptive Capacity Framework developed by the Africa Climate Change Resilience Alliance (ACCRA-LAC). The ACCRA-LAC Framework stresses that adaptive capacity is determined not only by what people have (asset base), but how people are able to use what they have. *The ACCRA-LAC Framework therefore defines adaptive capacity as a function of the asset base, access to knowledge and information, institutions and entitlements, capacity to innovate and finally, flexible and forward-thinking decision-making and governance.* Not only does the study use this framework to make sense of how people are responding to climatic change and variation (and how this is changing), but the study also reflects on the ACCRA-LAC Framework itself.

ALP, in line with the ACCRA-LAC Framework, emphasises participation in, and access to, information and institutions as important drivers of local adaptation capacity. The most important mechanisms of ALP are; the development of a Community Adaptation Action Plan (CAAP) in a participatory manner, in order to set out adaptation priorities; Climate Vulnerability and Capacity Assessments (CVCAs), which combine local knowledge with scientific climate data in order to build people's understanding about climate risks and appropriate adaptation strategies; Participatory Scenario Planning (PSPs), which uses participatory methods to combine local knowledge with scientific climate data in order to arrive at seasonal weather scenarios, as well as what the scenarios mean for the selection of crop and/or seed varieties and; Village Savings and Loans Associations (VSLAs), a community-based microfinance system which allows group members to take loans in order to finance appropriate adaptation measures, including livelihood and crop/seed diversification. As noted, both communities selected for this study are ALP target communities, although in Farfar, in the Upper East Region, ALP was implemented in 2010, whilst in Kanyini, in the Upper West Region, ALP was only implemented in 2015. The length of time of implementation is one of the variables influencing differences in uptake of ALP activities and processes. Two further distinctions between Farfar and Kanyini are relevant; firstly, whilst in Farfar community members have exploited a nearby river to initiate a highly lucrative, commercialised, dry-season watermelon farming sector, injecting significant amounts of money into the local economy. Kanyini, in contrast, has little natural potential for dry-season farming, and youth are largely engaged in (dry) seasonal out-migration to offer labour services in priority sectors in the south (gold mining, and cocoa farming). Secondly, Farfar has a long history of interventions prior to ALP, whilst in Kanyini ALP serves as the first serious developmental intervention.

Despite the uptake of lucrative dry-season watermelon farming in Farfar, in both Farfar and Kanyini, rainy-season continues to be regarded as the basis of livelihoods. Institutions which support rainy-season farming are generally strong and inclusive, although land tenure, and roles and responsibilities are highly gendered. Despite this, for significant strides to be made in making communities more resilient, future adaptation programming should focus its support on rainy-season farming. Even those projects and/or programmes that aim to support other livelihood areas, such as dry-season farming, would do well to measure their overall impact in terms of the impact upon improving rainy-season farming.

In ALP programming, VSLAs are intended to provide start-up capital for small-business enterprises such as pito-brewing, shea butter and rice processing, for retailing goods at local markets and to stock small stores. Diversification of livelihoods in this way hedges risks across income streams. Women who are members of VSLA groups employ VSLAs to access loans for diversifying livelihoods. This is true especially of women who possess an existing income stream and/or are members of asset-rich households. Women from asset-poor households tend to lack the (financial) confidence to take loans for fear of not being able to make payments. This limitation is exacerbated by the fact that women from asset-poor households value loans from VSLAs for the purposes of buffering against unexpected shocks, such as medical costs or covering food shortages should they arise. They fear that not being able to make loan repayments as a result of a 'lack of market', might result in expulsion from the group, and in turn, losing access to VSLAs as buffer against potential shocks. Thus, whilst VSLAs serve as an important driver of strengthened local adaptive capacity, support for members from asset-poor households is required if VSLAs are to reach the most vulnerable members of the community.

For many women in Farfar, VSLAs provide a series of additional benefits beyond access to finance. For instance, VSLA groups (who meet on a regular basis, and members are fined for non-attendance), serve as a platform for innovation. More entrepreneurial members and/or those who are positioned to take greater risks, use loans for innovative ventures. Other group members, who are either less inclined to take risks, see what works, and what does not work (and why). They are then better positioned to emulate those ventures with proven success. VSLAs also provide an important mechanism for structuring collective action. Some groups work (as a group) as labourers on local farms, and wages earned are committed to the VSLA box. The study also finds that there are successful examples of VSLA groups lobbying local government for the provision of (community-wide) services. The experience of VSLAs in Kanyini is somewhat less inspiring. Women indicate with uniformity that VSLAs are intended to provide loans in the event of shocks, rather than as start-up capital for diversifying livelihoods through micro-enterprises. Not only does this reduce the impact of VSLAs on adaptive capacity, VSLAs lose much of the potential to demonstrate new innovations. Since there is no real exploited potential for dry-season farming in Kanyini, as opposed to Farfar, where a nearby plain has given rise to a watermelon boom, this finding is in line with a more general observation that women from asset-poor households are less likely to take loans to diversify income, regarding it instead as an important buffer in the event of shocks, climate-related or otherwise.

The majority of VSLA group members are women, although it appears that there is an increasing trend towards male membership. This is true of both Farfar and Kanyini, although male membership rates are clearly higher in Farfar than in Kanyini. This is in part explained by the fact that VSLAs have previously been implemented in Kanyini by a local NGO geared towards women's empowerment, and VSLAs were therefore seen as a women's resource, and in part, due to high levels of seasonal out-migration, young men are absent from the community for large parts of the year. Seasonal out-migration rates of young men in Farfar is lower since many chose to engage in watermelon farming during the dry-season, rather than migrate south during this period. Whilst male members in Farfar appear to use VSLAs to buy inputs for watermelon inputs, they do not (widely) appear to use loans from VSLAs to invest in climate-smart seed and/or crop varieties for rainy-season farming, and fertilizer which the new varieties invariably require. They indicate that the money required to support climate-smart methods is much more than can be accessed through a VSLA loan.

For both Farfar and Kanyini, many of the priorities set out in the CAAP, the first step in the 'ALP system', rested on increased local capacities for lobby and advocacy. Each CAAP identifies the building of roads and bridges, a healthcare facility and dams or dugouts for dry-season farming as a priority. These community-wide initiatives appear to have been largely unsuccessful with no evidence of a dam or dug-out or indeed, improved roads and/or bridges. Despite the apparent lack of success in accessing new infrastructure (through local government), there are several examples of sub-community structures, such as VSLA groups, community sections and smaller sub-communities, successfully lobbying local government for services. These sub-community structures appear more effective mechanisms for collective action than larger, community-wide structures.

Unsustainable natural resource management is a key barrier to long-term improvements in adaptive capacity. It appears that a number of the strategies to adapt to climatic changes carry an ecological cost which is not internalised. For example, watermelon farmers have felled trees to reduce shade under which watermelon cannot grow, leading to a rapid reduction in soil moisture; farming is practiced to the riverbank with no buffer zone, resulting in the riverbank continuously collapsing, eroding farms, and dumping sand in the river, reducing the water flow; weedicides are excessively used to clear grass which, results in the river flowing 'any which way', and washing away nutrient rich top soil. Similarly, as noted, many women repay VSLA loans by felling trees and producing (and selling) charcoal. This results in a drying of the soil and declining soil fertility, a burden which (in the first instance), is carried largely by men. The impact of adaptation activities on local ecosystems is so fundamentally important in contexts where livelihoods depend so squarely on the natural resource base, that it might be considered to separate natural assets from the asset base. Making the natural asset a stand-alone pillar in the ACCRA-LAC Framework would emphasise the fact that any adaptation strategies which undermine the natural resource base are in fact not adaptation strategies at all. With reference to the paragraph above, such an amendment should take heed of the fact that different groups might have different definitions of sustainability in terms of how natural resources are exploited. A stand-alone pillar for natural assets in the ACCRA-LAC Framework would encourage future adaptation programming to commit resources to monitoring the ecological impacts of adaptation strategies, which is currently lacking. There appears to be no guarantee that knowledge of climatic change, sustainable practices coupled with new technologies for farmers (e.g. dry-season farming and/or new seed and crop varieties) will generate sustainable outcomes, and better organisation of farmers i.e. by-laws for use of natural resources and sanctions for non-compliance.

Mobility of community members (for instance seasonal migration) is not well captured in current CBA programming. Since migration rates are likely to increase, future adaptation programming must find ways of internalising some of the benefits provided by mobile groups (such as, as a source of innovation and/or remittances), and embedding migration patterns in localised adaptation programming by harnessing its potential, and limiting its downsides.

ALP has established several structures through which climate information is established and disseminated. Whilst in Farfar access to climate information and weather forecasts are regarded as valuable, and determine largely which crops and seed varieties farmers will use (rainy-season), in Kanyini, whilst people appear to have some (albeit limited and differentiated) access to climate information and seasonal forecasts and appropriate responses, very little is done in the way of action. In both Kanyini and Farfar, VSLAs loans do not appear to be widely used to incorporate climate-smart crops (including fertilizer) into rainy-season farming portfolios. The lack of money in circulation in Kanyini (in contrast to Farfar, as a result of dry-season farming) makes it difficult for people to purchase new seed and crop varieties, and importantly, fertilizer which those crops invariably require. This serves as a barrier to the use of climate-smart agriculture, which in turn, undermines the relevance of seasonal forecasts. In this regard, the findings indicate that the pillars of the ACCRA-LAC are not only inter-connected, they are dependent on one another, and activities which, for instance, improve access to knowledge and information may not be effective if not coupled with improvements in the other pillars.

In principle, the structure of adaptive capacity is able to capture spill-overs and trade-offs, especially true in reference to one group. For instance, women who are members of VSLAs are afforded access to finance (asset base) but, as the study demonstrates, VSLAs also provide platforms to disseminate innovations (capacity to innovate), disseminate and discuss implications for seasonal forecasts (access to knowledge and information) and is used a vehicle for lobbying local government for services (institutions and entitlements). Whilst each of these functions of VSLAs clearly drives adaptive capacity, narrower frameworks of adaptive capacity which are biased towards the asset base, do not capture these dynamics. Where the ACCRA-LAC framework is weaker is in capturing spill-overs and trade-offs between groups. Thus, for instance, many watermelon farmers have diversified into transportation, purchasing three-wheeled motorbikes to transport goods and people. Women especially use these services to be transported to local markets to sell their produce (beans, groundnuts, cloth, shea butter etc.). This in turn drives new possibilities, especially for women, since those markets might have been difficult to access previously since they were either too far to walk, or a much larger truck would come, and they would need to wait until it was full, which often takes several hours. The result of men diversifying their livelihoods in this way clearly has positive implications for the adaptive capacity of women. Similarly, the use of pesticide by men to combat new pests impacts the adaptive capacity of women, since children are more often ill as a result of the pesticide. The ACCRA-LAC might be amended to better capture linkages between the adaptive capacity of different groups (both positive and negative)





## 2. INTRODUCTION

Focussing on two communities targeted by the Adaptation Learning Programme (ALP) implemented by CARE International in northern Ghana, namely, Farfar in Ghana's Upper East Region (UER) and Kanyini in the Upper West Region (UWR), the study aims to generate evidence of the nature, source and importance of adaptive capacity among vulnerable men and women towards their long-term climate resilient development. Whilst ALP was implemented in Farfar in 2010, it was only implemented in Kanyini in 2015. Furthermore, whilst Farfar has a long history of development interventions, Kanyini has not been the target of many interventions. Finally, whilst Farfar has seen the emergence of a highly lucrative dry-season watermelon farming sector, the immediate potential for dry-season farming in Kanyini is significantly less. The basis for comparison between Farfar and Kanyini is set out in section 3.

Northern Ghana is ecologically, economically and certainly, developmentally, distinct from its southern counterpart. Priority industries such as gold, cocoa, oil and tourism are southern-based, and many of the promising national level indicators for poverty and development disguise a large north-south development gap, and wide-spread poverty in northern Ghana. Furthermore, climatic changes in northern Ghana are acute, with increasing fluctuations in rainfall. As the overwhelming majority of northern Ghana's population depends on rain-fed agriculture, communities are highly exposed to climatic change. Coupled with high poverty rates, it is clear that communities are not well equipped to effectively adapt to climatic changes. Ongoing climate change policy and programming is fundamental to improving levels of well-being in northern Ghana, and closing the gaping development gap between Ghana's north and south.

Broadly speaking, in this context, the study generates an understanding of what changes in knowledge, capacity and practice have been realised by community members in Farfar and Kanyini, which mechanism have triggered those changes, how community members (by group – younger women, older women, younger men and older men)

employ mechanisms for adaptation (in terms of new innovations, collective action, access to information, access to finance etc.), and to what they themselves attribute the changes in how they respond to climatic change and variation. In other words, for men and women, old and young, in each of the communities, what for them are the most important triggers in their decision making for livelihood, risk management and lobbying actions? As an analytical framework to order findings, the paper focusses upon the Local Adaptive Capacity Framework established by the African Climate Change Resilience Alliance (ACCRA-LAC Framework), which has also underscored much of the ideology, design and implementation of ALP in Ghana and elsewhere. The framework attempts to broaden understandings of adaptive capacity, including, alongside asset bases, access to knowledge and information, flexible and forward thinking decision-making and governance, institutions and entitlements and capacities for innovation. The ACCRA-LAC is discussed in more detail in section 4.

As a second objective, the study aims to identify drivers and barriers experienced by different groups in strengthening adaptive capacity. What factors drive increases in capacities to innovate, access to information, improved planning, collective action, as well as other pillars of the ACCRA-LAC, and which factors act as barriers to such developments? These may include Village Savings and Loans Association (VSLAs), Participatory Scenario Planning (PSPs), Climate Vulnerability and Capacity Analysis (CVCAs), Community Adaptation Action Plan (CAAP) and other ALP mechanisms, but are not limited to them. The study makes every effort to identify spill overs across pillars of the ACCRA-LAC Framework (i.e. how innovations may increase access to information, increase income, but as a result of unsustainable methods, reduce natural assets) as well as across groups (diversification of livelihoods amongst men may impact upon the adaptive capacity of women). Such spill-over may also have negative consequences, where the adaptive strategies of one group might negatively impact the adaptive capacity of another. In each instance, an analysis of change is provided, and to what changes are attributed (again, these may be components of ALP, but not limited to those components).

In short, the study aims to better understand, from the community perspective:

- a) Which adaptation processes and strategies have influenced and strengthened useful adaptive capacity, how, to what extent, and why?**
- b) What is the relationship between them – how does the combination of process (ie CAAPs, PSP) and strategy (dry season gardening/farming, VSLA, agro-ecology practices, cassava bulking, advocating for dams and health clinics etc.) impact on changes in adaptive capacity or are there stand-alone activities which are most important triggers?**
- c) Which aspects of adaptive capacity are most valued and why?**
- d) What are the drivers and barriers which enable or prevent people from developing or using their adaptive capacity and why?**

The study differs from many different studies in two primary ways. Firstly, whilst ‘software’ components are regarded as important drivers of strengthening adaptive capacity, little (holistic) empirical research has been done to understand how such components drive adaptation or indeed, define adaptation trajectories. Secondly, the assignment was not to go and find out if an intervention works, but to find out how people both value and operationalise software components of adaptation, with what types of outcomes (in terms local adaptive capacity), and finally, what is driving those changes (and what is holding them back). Findings of the report are intended to inform future adaptation programming.

The Adaptation Learning Programme (ALP) is discussed at length in section 4, whilst the basis of comparison between Farfar and Kanyini is set out in section 3. Section 5 unpacks the methodology. Section 6, 7 and 8 form the empirical basis of the report and focus upon the responses to climatic change, how those responses have changed, and to what those changes (in responses) are attributed. Section 9, on the basis of individual examples, illustrates success stories in terms of adaptation. Finally, section 10 structures the observed changes in adaptation within the ACCRA-LAC Framework, and discusses the strengths and weaknesses of the framework. Section 11 sets out a number of recommendations in line with the structure of the report.





# 3. DESCRIPTION OF RESEARCH SITES AND BASIS FOR COMPARISON

Northern Ghana consists of three regions, the Northern Region (NR), the Upper-West Region (UWR) and the Upper East Region (UER). Kanyini is located in the Kaleo-Nadowli district in the UWR, about 20 kilometres from the Regional Capital, Wa. Farfar is located in the Garu-Tempane district in UER, about 15 kilometres from the district capital, Garu. The three northern regions return significantly lower development levels than their southern counterparts. The UER has a poverty rate of above 88% and the UWR 70% compared with a national average of 28.5% (GLSS 2006). The UER has a high population density of 112 persons per km<sup>2</sup> compared to a national average of 105 persons per km<sup>2</sup> (which includes 1205 persons per km<sup>2</sup> for Accra), and land is clearly scarce (GSS 2010). The UWR is less densely populated, with a 37 person per km<sup>2</sup>, and land is significantly less scarce than in UER. This was reflected also by participants to this study in UER and UWR respectively. Populations in both regions rely heavily on rain-fed agricultural activity as the main source of subsistence and income (Care, 2013; Wossen and Berger, 2013), and are, as a result, highly exposed to climatic change and variation.

UER and UWR have similar average annual precipitation levels, with the UER has an average rainfall of 921mm (MoFA, 2010), and UWR between 900mm in the north (Tumu) to 1111mm in the south (around the regional capital, Wa). Intra-annual rainfall patterns in both regions are likely to become increasingly erratic (EPA, 2011). Furthermore, communities in northern Ghana are set to experience longer dry-seasons (shorter rainy seasons) as well as an increase in the intensity of rainfall, also during the dry season (Bawakyillenuo et al., 2014; Rademacher-Schulz et al., 2014). Future projections suggest that the speed of temperature rise will accelerate in Ghana, rising by 2.1 to 2.4°C by 2050 (ibid; World Bank, 2010). Rising temperatures are predicted to increase desertification in northern Ghana at a rate of 20,000 ha per annum in Ghana (MoFA, 2010; Assante and Amuakwa-Mensah, 2015).

The combination of poverty, high levels of exposure and rapidly changing average annual precipitation and temperatures points to low levels of adaptive capacity across the regions, including Farfar and Kanyini, the study sites located in the UER and the UWR respectively.

### 3.1 FARFAR

Farfar is located in Ghana's Sudan Savannah zone, characterised by the coexistence of trees and grasses. The Farfar community aggregates 6 distinct communities which make up the Farfar-Bantafarigu electoral area. The total population of the Farfar-Bantafarigu electoral area, is 3,636, approximately 46% of those are male and 54% female. With an average household size of 8, there are 439 households. The 8 percent gender difference is the result of seasonal north-to-south migration amongst men, and the gap may be bigger (dry-season) or smaller (rainy-season) depending on the time of the year in which the census was conducted. Many in Farfar identify as Christians, despite an apparent high incidence of polygamy. There is also a Muslim community, with a new Mosque having been built close to the market square in the past 3 or 4 years. Livelihoods in Farfar are heavily gendered, but not atypical of rural communities in the UER. Reliance on farming is high; in ALP communities in UER, 97% of households' cite crop production as their primary source of livelihood and income (CARE, 2013). The major crops include millet, maize, sorghum, soy and Bambara beans. Aside from agriculture, other sources of income include; amongst men, small transportation businesses (using three-wheeled motor-tricycle called 'motokings'), working as carpenters, masons, electricians, bar owners or owning small shops stocking provisions, and amongst women, owning or running small provision stores, (including selling cloth), soap making, pottery, craft work, pito brewing, rice processing, selling, (processed) shea butter, petty trading and charcoal production (CARE, 2014). A small number of people are formally employed in Garu or Tempene (mostly as teachers or nurses). Most households rear animals (goats, sheep, pigs, poultry and cattle/bullocks (CARE 2014). Many women follow the market daily, which rotates between neighbouring communities, and is held in Farfar every third day. Farfar is set apart from other communities (including Kanyini in UWR), by (the quite recent emergence of) a dry-season watermelon farming boom. Approximately 6km south from Farfar's market square is a river locally known as River Morkri. Running along the base of the Gambaga Escarpment, a low-lying plain which floods during the rainy-season, serves as an ideal landscape for dry-season watermelon farming. Although seasonal migration, to do illegal gold-mining ('galamsey'), head porterage in southern markets ('Kayaye'i') or to 'farming-for-money' on farms in the south (for instance, cocoa farms), is traditionally also a component of northern livelihoods, dry-season watermelon farming has greatly changed migration patterns in Farfar, with most (young) men and women who have access to land now choosing to remain during the dry-season to farm watermelon.

### 3.2 KANYINI

Kanyini is much smaller than Farfar. It has a population of 541, of which 249 (46%) are men and 292 (54%) are women. It has 112 households, reflecting an average household size of 4.8, much smaller than Farfar. Much of this is explained by the fact that missionaries have a long history in the region and most people identify as Christians. As a result, many do not practice polygamy, in comparison to Farfar, where polygamy (even amongst Christians), is much more common. The Kanyini ALP community clusters 3 distinct communities; Kanyini, Kakyinguabe and Kagdinga. Each of these communities further breaks down into several sections or wards. Sections are quite prominent, as much of the (collective) action for community development occurs within community sections. Rainy-season farming is the most important source of food and income. Maize has a much longer history in Kanyini than in Farfar, and serves as the main staple. Other crops include yams, groundnuts, Bambara beans, sorghum and guinea corn. As in Farfar, crops (as well as livelihoods) are strongly gendered. However, in contrast to Farfar, Kanyini does not host a market. On a central square, a few women sell pito, processed shea butter and/or some fruit, although this is on an extremely small scale. There are one or two bars in the community, and one 'restaurant'. A few shops are located in the community, retailing basic provisions. Most households rear animals, particularly pigs, goats and chickens. Bullocks are absent from the community. This is explained by fact that the Fulani who used to live in Kanyini stole all the bullocks, before being expelled from the community between 3 and 5 years ago. As a result, ploughing is done using tractor services offered by private individuals or by the Local Government. There appears to be no incentive to invest in cattle since people feel that the risk of them being stolen again by Fulani is high. Whilst men offer labour services locally (for instance, helping build a house), the potential for this is not high. Most young men, and many women, travel south during the dry-season to work either in goldmining, as porters or on farms, in return for money or a percentage of the harvest. Whilst this also happens in Farfar, the scale in Kanyini is much greater, with a notable absence of young people present in the community during the dry-season (at the time the data for this study was collected).

### 3.3 BASIS FOR COMPARISON

A number of broad distinctions set Farfar apart from Kanyini. These relate to general differences, and for this study, also to differences in the implementation of the Adaptation Learning Programme for Africa (ALP) implemented by CARE International in the two communities. Whilst ALP was implemented in Farfar in 2010, it was only implemented in Kanyini in 2015. This has implications for, for instance, the legitimacy and experience of Community Monitors (CM)<sup>1</sup>, as well as the embeddedness of various structures and flows of information, including approaches introduced by ALP such as Village Savings and Loans Associations (VSLAs) and Participatory Scenario Planning (PSP). Only one PSP meeting has been held in Kanyini to date, and many participants claimed not to have received the seasonal scenarios and advisories which PSP produces, whereas in Farfar the dissemination of the PSP advisories serves as an important community occasion. In how far this is a result of the fact that ALP is new in Kanyini (compared to Farfar) is unclear, but that it plays some role in explaining different levels of uptake between the two communities, goes without question. By implication, it may be expected that in time, more adaptations will be taken up in Kanyini (climate smart crops and Disaster Risk Reduction (DRR), such as housing for animals and vaccinations). Differences in uptake may also be exacerbated by the fact that whilst Farfar has been the target of a number of projects prior to ALP (including from other NGOs), Kanyini has hardly been targeted at all prior to ALP - (MissionAid, which is spoken about in the development community with some derision), and WIDO (Women Integrated Development Organization), a local NGO which partnered with CARE Ghana to set up VSLAs prior to the implementation of ALP. A culture of (external) 'development', which appears prominent in Farfar, is clearly undeveloped in Kanyini, and may also contribute the differences in, for instance, the capacity to organise and advocate, as well as forging channels for more inclusive dissemination of information, such as daily climate information and PSPs.

A second important distinction is that many of Farfar's farmers engage in lucrative, commercialised watermelon farming, which vastly increases the money in circulation locally. This provides the financial capacity for the broad implementation of adaptation strategies, such as new, climate smart crop and seed varieties, as well as fertilizer required. Watermelon farming existed prior to ALP, but much of the subsequent commercialisation has occurred during the lifespan of ALP (since 2010). That being said, it is unclear how much ALP has contributed to this boom. Participants accredited ALP with watermelon farming, but struggled to pinpoint exactly how ALP had contributed to watermelon farming. Generators and water pumps have been given to the community to assist with watering watermelon farms, and some farmers note that they have taken loans from VSLAs in order to finance inputs for watermelon farming. Despite this, many farmers noted that they did not use the water pumps (having a dugout instead) and the sums of money earned are so significant, that it's unclear how much sums borrowed from VSLAs have contributed to this in facilitating the commercialisation of watermelon farming. Much of the watermelon farming (including the unsustainable practices – see Section 8.4), are a result of local entrepreneurial endeavour, rather than external intervention. Regardless, whilst certainly the wealth created through watermelon farming has implications for decision-making in other (adaptation) areas (rainy-season farming, small-business enterprises), it is not only through wealth creation that a clear adaptation uptake distinction with Kanyini is made. Seasonal (dry-season) migration, a traditional strategy amongst northern Ghanaian households for distributing risk across space, has been greatly reduced in Farfar, with young men choosing instead to engage in dry-season watermelon farming. In contrast, in Kanyini, because the potential for dry-season gardening is significantly less as a result of the absence of appropriate water sources, young men are largely absent from the community during large parts of the year (the dry-season in particular). They are, as a result, rarely members of VSLAs, not engaged in PSP meetings and/or other information or training. Indeed, young men in Kanyini, due to their absence, barely participate in ALP, whilst in Farfar, much of the impetus for taking up adaptation strategies (risk taking, innovation etc.), comes precisely from this group. The importance of gender, age and wealth dimensions in determining uptake of different adaptation strategies, as well as drivers and barriers to strengthening adaptive capacity, are discussed throughout the report.

<sup>1</sup> Community Monitors (CM), are members of the community who volunteer to act as a linkage between the communities and the service providers (District Assembly, NGOs); they facilitate the mobilisation of the community members and the sharing of information. The aim of establishing the CMs is to provide households with a local resource to which they can turn when in need of advice about improving their resilience to climate hazards, innovative farming practices, seasonal weather forecast and recovery after extreme weather events. Moreover, they participate in CARE and local partners meetings and periodically receive trainings from CARE and other NGOs on issues regarding community adaptation and development practices, including VSLAs, seasonal weather forecasts, the introduction of new crop varieties, techniques for Community-Based Adaptation and gender equality. After receiving the trainings, they disseminate the information in their community.



A more conceptual way of making sense of the distinction between Farfar and Kanyini, is that whilst (adaptation) change in Kanyini is incremental, in Farfar those changes have been transformational. There is quite some debate on how to distinguish ‘transformational’ adaptation (where a system is transformed) from ‘incremental’ adaptation. Looking at the Community Adaptation Action Plan (CAAP) of both Kanyini and Farfar, developed with facilitation of ALP, both set out, in principle, a transformational agenda, with dry-season farming especially, fundamentally altering livelihood patterns (amongst other things, by reducing out-migration). The differences between the two communities is not a question of strategy or structure, but rather of implementation (linked to the two points above – that ALP was implemented several years earlier in Farfar, and that much of the success of ALP in Farfar seems to be facilitated by the income generated from dry-season watermelon, which is the result of learning how to better exploit a natural resource, but not as a result of successful lobbying of local government for the construction of a dam around which to do dry-season farming, as was set out in the Community Adaptation Action Plan (CAAP) of both Farfar and Kanyini.

There are other important distinctions between the communities which are likely to impact adaptation pathways, regardless of the differences in the timing of the implementation of ALP and/or the presence of dry-season farming. A number of important distinctions set Kanyini and Farfar apart. Some are clear facts; Kanyini, and the UWR more generally, has a much longer and more embedded history of missionaries. In principle, this means that people in Kanyini identify more strongly with principles of Christianity, and most men only have one wife, whilst polygamy is widely practiced in Farfar (despite the fact that many also identify with Christianity, but are ‘looser’ with Christian principles). Whilst the origins are not clear, Kanyini appears socially more fragmented than Farfar. One possible contributing factor is the high levels of seasonal out-migration in Kanyini, which as a result of dry-season watermelon farming, is clearly less of an issue in Farfar. Whilst the watermelon boom has come with its own problems of mistrust and unsustainable farming practices, generational divisions in Kanyini are much stronger. Furthermore, whilst there is a clear sense of cohesion amongst members of Farfar, divisions amongst social groups (men, women, young men and young women) as well as between sub-communities and wards or sections, appears to order collective action.

Understanding how the distinctions between Farfar and Kanyini impact the types of responses (to climate change) people undertake, how those responses have changed, and to what people attribute those changes, is broadly speaking, the aim of this study. With reference to the Africa Climate Change Resilience Alliance (ACCRA) - Local Adaptive Capacity (LAC) Framework (ACCRA-LAC Framework), the study seeks to answer these questions (the types of responses to climate change, how the responses have changed, and to what people attribute those changes), taking note of the aforementioned distinctions. Furthermore, the differences between Kanyini and Farfar (the length of time of project implementation, the injection of large financial resources into the local system and, transformational change versus incremental change), may also have implications for drivers and barriers to adaptation, especially when comparing different social groups. Whilst watermelon farming may serve as a driver for adaptation amongst young men, family labour which the watermelon farming requires may be a barrier to adaptation amongst women in the same community. Alternatively, the absence of dry-season farming, as in Kanyini, may be regarded as barrier to adaptation, a barrier shared by women who are forced to find other means to earn income in order to close food gaps. Clearly, the outcomes of different local characteristics have real implications for local adaptive capacity, and it is the aim of this study to, as far as possible, elaborate and make sense of those implications and the issues raised.



# 4. DESCRIPTION OF ANALYTICAL CONCEPTS

The following section serves as a conceptual and contextual backdrop for better understanding the empirical findings of this report. Sub-section 4.1 defines a series of relevant concepts. Sub-section 4.2 explains in more detail the ACCRA-LAC Framework. Sub-section 4.3 presents classes of adaptation strategies. This provides a framework for identifying and ordering different adaptation strategies in terms of actions employed by community members in order to distribute risk. The final subsection (sub-section 4.4) discusses the ALP programme in more detail, with specific reference to Farfar and Kanyini.

## 4.1 DEFINITIONS OF CONCEPTS

Adaptation within the climate change context is defined as the “process of adjustment to actual or expected climate and its effects” (IPCC, 2014, pp 118) and aims to “moderate or avoid harm or exploit beneficial opportunities” which arise from increased climate variability and/or climate change (ibid.). This includes adjustments by individuals, households, groups, or institutions in order to reduce vulnerability to climatic changes and variation (Smit and Wandel, 2006). In short adaptation seeks to strengthen the adaptive capacity and reduce vulnerability of individuals, households or groups. The IPCC defines adaptive capacity as the “ability of systems, institutions, humans and other organisms to adjust to potential damage, to take advantage of opportunities, or to respond to consequences” (IPCC, 2014, pp118). ‘Vulnerability’ in the context of climate change is described by the IPCC as the “propensity or predisposition to be adversely affected” (IPCC, 2014, pp 128). Vulnerability aligns the more socially determined concept of adaptive capacity with the physical exposure and sensitivity to climate risk. Exposure and sensitivity are almost inseparable concepts and reflect the physical distribution, frequency and magnitude of hazards experienced (Agrawal, Kononen and Perrin, 2009).

Based on these definitions we can deduce that the extent to which individuals, households and groups are vulnerable to climatic stress is “context-specific and varies from country to country, from community to community, among social groups and individuals, and over time” (Smit and Wandel, 2006, pp287). At the community level, the ability to undertake adaptations can be influenced by a number of factors, including infrastructure, the institutional environment, political influence or capacity to advocate, networks and access to financial, technological and information resources (Agrawal and Perrin, 2008; Smit and Wandel, 2006). Whilst some of these dynamics are largely local, there are others which may be determined elsewhere (e.g. national climate change policies).

Adaptation can be anticipatory or reactive. Reactive or erosive adaptation strategies, often equivalent to coping, are characterised by the diminishing effect they have on the asset base of a household, often increasing future insecurity of food and livelihoods (Warner and Afifi, 2014). In northern Ghana, an example of this type of behaviour is migration by household members during the rainy season, which reduces the harvest due to loss of labour. In contrast, anticipatory adaptation provides greater food security as well as an increase in the household development base and adaptive capacity in the long term. For example, diversification into off-farm livelihoods or changing to climate-smart crop and/or seed varieties. In short, anticipatory adaptation implies conscious choices are being made to deal with future climatic changes.

Adaptation may be planned or autonomous. Often, autonomous strategies are long entrenched cultural adaptations that have become a significant part of life. They often involve little use of technology, finance or infrastructure and can be a

slight or significant change in behaviour to make a household less dependent on vulnerable systems (Adger et al., 2003). Planned or externally driven adaptations typically involve the use or mobilisation of sources of technology, information and finance traditionally unavailable to those in a vulnerable area in order to enhance adaptive capacity (ibid.). Historically, external interventions have focussed more on the technology driven, infrastructure side of adaptation but in more recent years, more emphasis has been placed on important socio-political aspects such as capacity building, advocacy and institutional development which heavily influence adaptive capacities (Agrawal and Perrin, 2008).

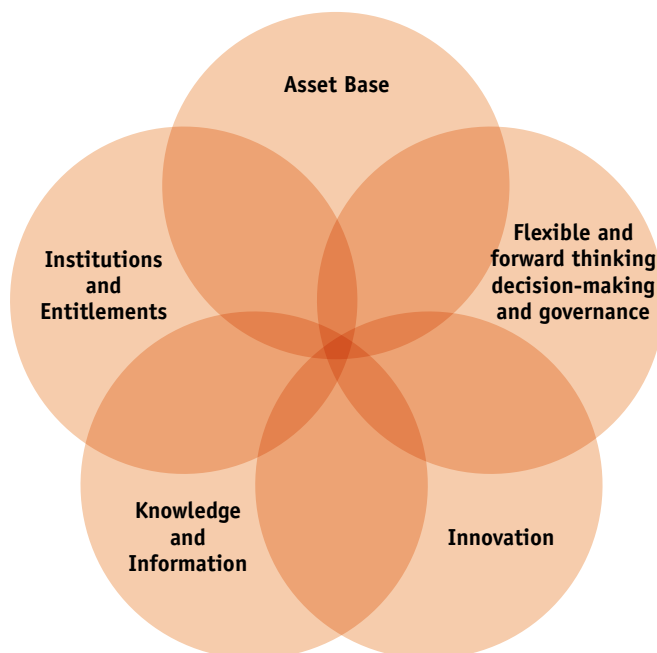
Adaptation may be transformational or incremental. The growing use of ‘transformation’ terminology within adaptation discourses reflects a recognition that incremental, ‘business-as-usual’ approaches will not be enough. Transformational adaptation is defined as “adaptation that changes the fundamental attributes of a system in response to climate and its effects” (IPCC, 2014, pp 128). This could include adaptation at greater scale or magnitude, the introduction of new technologies or practices, the formation of new structures or systems of governance, or shifts in the location of activities (WRI, 2014). In contrast, incremental adaptation accounts for actions where the central aim is to maintain the essence and integrity of a system or process at a given scale (ibid 2014).

An increasing amount of attention has been paid to barriers, limits and forces that influence vulnerability and capacities to adapt to climate change (Antwi-Agyei et al., 2014). This has manifested itself in part in a shift from technological, top-down approaches to more emphasis towards the role of institutions (in the formal sense of governance, as well as in the sociological sense, as sets of norms). In this regard, Agrawal, Kononen and Perrin (2009) emphasise that “adaptation never occurs in an institutional vacuum”. Whilst distinctions are made between, public, private and civic institutions (Agrawal and Perrin, 2008), the role of informal institutions is stressed by Rodima-Taylor et al. (2012) as the most important to engage in order to enable effective adaptation to climate change. This is primarily due to the natural gravitation towards informal institutions in the face of unknowns, distrust or perceived high costs of ‘new’ externally created institutions. It is this type of thinking from which the ACCRA-LAC Framework emerged.

## 4.2 THE ACCRA LOCAL ADAPTIVE CAPACITY FRAMEWORK

The ACCRA - Local Adaptive Capacity framework (LAC) Framework developed as part of the Africa Climate Change Resilience Alliance (ACCRA). It serves as one way of measuring and understanding relationships between responses to climatic change and adaptive capacity. It is ultimately an attempt to incorporate the dynamic and often intangible dimensions of adaptive capacity with capital/resource endowments into one model to analyse adaptive capacity at the community level (ACCRA, 2012). It sets out five distinct yet interrelated elements of adaptive capacity, namely, asset base; flexible and forward thinking decision-making and governance; innovation, knowledge and information and institutions and entitlements.

**Figure 4.1.** *The Accra Local Adaptive Capacity (LAC) Framework*





The asset base is characterised by the sustainable livelihood components of financial, physical, human, social, natural and political capitals necessary to adapt to a changing climate. Whilst this incorporates traditional forms of wealth in physical assets and money, it also includes important informal elements (e.g. social networks), as well as control over, protection and accumulation of assets. Institutions and entitlements refers to equitable access to assets (defined broadly, as above) required for adaptation amongst different social groups. An institutional environment that enables equal opportunities (particularly for the most climate vulnerable) as well as representation and participation in decision making are central to this. Successful adaptation also requires knowledge and information of future climate changes and adaptation options. Systems to distribute relevant information at national and local levels, access to climate information services and open forums for dialogue and discussion to incorporate local knowledge are key enabling features. Innovation is a key component of adaptive capacity. Within the LAC model presented in Figure 1, innovation can be planned, technical and aimed at large-scale interventions; or it can be local-level autonomous initiatives. Importantly, the system must promote experimentation in order to continually adapt to new conditions and at the same time, protect against the inevitable risks that are intertwined with innovative behaviour. The final characteristic in the model is flexible and forward thinking decision-making and governance. This incorporates transparency and prioritisation enabling local groups to anticipate and be well informed about future climate change events to ensure they can take adaptive measures. Similarly, the flexibility to allow systems – and the institutions that direct them – to evolve and adapt in a changing environment is a vital component of adaptive capacity. (ACCRA, 2012)

One assumption of the ACCRA-LAC Framework is that a change in any one of its five components will have an impact on adaptive capacity itself, but is also likely to compound the effect by influencing one or more of the other elements of the framework. The ACCRA-LAC Framework does not however suggest that all of the five characteristics of the framework are weighted equally.

### 4.3 CLASSES OF ADAPTATION

Agrawal and Perrin identify five classes of adaptation through which more specific adaptation actions may be classified; storage; diversification (livelihood diversification, but also diversification into new crop varieties; communal pooling; mobility and market exchange (Agrawal and Perrin, 2008). Each of the classes, spreads climatic risks in different ways; improved storage (of harvests and/or in transportation) spreads risk over time; diversification spreads risks across assets; communal pooling is completely dependent on high levels of trust and coordination and spreads risks across households. Mobility or migration, spreads risks across space. Finally, market exchange, where possible, may substitute for other classes of adaptation (Agrawal and Perrin, 2008). However, promoting exchange-based activities as an adaptation response must be approached with caution to ensure that the future development base is not eroded as with “erosive coping strategies” discussed earlier (Agrawal and Perrin, 2008; Warner and Afifi, 2014). Interestingly, environmental management is not mentioned as a stand-alone class of adaptation. Presumably this is an assumption embedded across the classes. However, in line with one of the main findings of this report, without explicit attention to sustainable natural resource management, there is a risk that apparent short term gains in adaptive capacity carry hefty ecological costs.

### 4.4 THE ADAPTATION LEARNING Programme (ALP) FOR AFRICA IN FARFAR AND KANYINI

The four countries of ALP implementation are Ghana, Kenya, Mozambique and Niger. ALP's implementation started in January 2010 and its end was initially set to 2015; however, several of ALP's funders were willing to extend the length of the programme, which will now run until mid-2017. From 2010 to 2015 ALP received USD \$13 million and about \$5 million will be added to extend the programme to mid-2017, raising the total budget to almost USD \$18 million for a seven and a half years programme (Percy, 2015). The main donor is the Department for International Development of the United Kingdom (DFID), contributing more than half of the total funds. Other donors are the Ministry of Foreign Affairs of Denmark, Denmark's Climate and Environment Fund, the Ministry of Foreign Affairs of Finland and the Austrian Development Cooperation.

ALP was designed to promote learning on community based adaptation (CBA) and this includes a major focus on the ACCRA-LAC Framework, and especially those pillars associated with software (all of them bar asset base). Thus, with a focus upon innovation, information, governance and flexible and forward-thinking decision making, it broadly aims to improve communities' adaptive capacity and therefore, reduce vulnerability to climate change. It also

emphasis participatory processes at a village level as a means to strengthen adaptive capacity. Iterative learning and documentation are key features of ALP. Through these mechanisms, it aims to trigger collective adaptation decision-making and strengthening (in an inclusive manner) community resilience. The first essential step in a CBA adaptation planning process is to identify the climate challenges faced by the community. This, like all of the facets of ALP, has been done in a participatory manner, involving the vulnerable groups and their local government representatives. This process has been facilitated through workshops aimed at raising awareness on climate change trends, and at analysing the community's vulnerabilities and capacities. On the basis of the results obtained, communities are guided through collectively developing a village plan with the aim of selecting new livelihoods systems and risk reduction activities. These are gathered in the Community Adaptation Action Plan (CAAP), a document that each community in the programme independently develops and follows. It is elaborated while taking into account the needs and problems faced by three groups of the community: women, men and youth. CAAPs are periodically reviewed to include new strategies. In Ghana, each ALP community has six elected Community Monitors (CM) who volunteer to act as a linkage between the communities and the service providers (District Assembly, NGOs etc.). They therefore facilitate the mobilisation of the community members and the sharing of information. The aim of establishing this body is to provide households with a local resource to which they can turn when they require advice about improving their resilience to climate hazards, innovative farming practices, seasonal weather forecast and recovery after extreme weather events. Community members participate in meetings, and periodically receive trainings from CARE and other NGOs on issues regarding community adaptation and development practices, including VSLAs, seasonal weather forecasts, and introduction of new crop varieties, techniques for CBA and gender equality. After receiving the trainings, they disseminate the information in their community.

A few primary activities shape local trajectories of ALP. The (participatory) development of the Community Adaptation Action Plan (CAAP) has already been mentioned. A community wealth ranking index is also established. A Climate Vulnerability and Capacity Analysis (CVCA) fuses local knowledge with scientific data in order to build people's understanding about climate risks and adaptation strategies. The CVCA also 'provides a framework for dialogue within communities, as well as between communities and other stakeholders and the results provide a solid foundation for the identification of practical strategies to facilitate community-based adaptation to climate change' (CARE 2009). Village Savings and Loans Associations (VSLAs), community-based microfinance groups, form the operational bedrock of ALP. It provides members with a source of finance, which can be employed (in principle), to engage in adaptation activities, such as using more climate-smart crop and seed varieties. Participatory Scenario Planning (PSPs) brings together indigenous systems of forecasting with scientific methods, to create (in a participatory manner), seasonal climate scenarios. These are used to make decisions about which types of crops/seeds are most appropriate for the ensuing farming season. Scenarios and advisories from the PSPs are disseminated through community meetings. A host of other supportive mechanisms are also employed, including climate information (daily, by SMS and climate information centres), trainings (on how to run, for instance, small business enterprises, and how VSLAs can be used as start-up capital for such enterprises), demonstration plots and pumps and generators for dry-season farming (in Farfar).

Farfar is one of the original ALP communities, with the roll-out starting in 2010. ALP has been implemented in entirety; CVCA, CAAP and a Wealth Ranking Index has been established. Community Monitors have been elected. New seed and crop varieties have been demonstrated and introduced, and number of trainings have been facilitated (including a training on small business enterprises for women). A number of PSP meetings have been held, and results disseminated through community meetings. New VSLAs have been established, with training provided on group management, drawing up a constitution, functionality and rules for participation. An Advocacy Committee has been established and trained.

In Kanyini, on the other hand, ALP was only introduced in 2015. The VSLAs introduced by CARE are new, and the rules for participation not yet well embedded. A CAAP has been developed. ALP has supported 40 farmers with cassava products and 10 farmers with new maize varieties. Some farmers have been given soybean seeds. 5 new VSLAs have been established. A demonstration to show the impact upon yields of fertiliser use and training on animal rearing (building housing for animals and vaccination) has also been facilitated. Despite all the activities (and introductions through ALP of new seed and crop varieties), unlike in Farfar, it appears that ALP has not yet gathered much endogenous momentum in Kanyini (with people still stressing the things they received from ALP, rather than an increased capacity to act).





## 5. METHODOLOGY

As noted in the previous section, this study aims firstly to capture what people are (currently) doing to adapt to climate change (responses), how responses to climate change have changed, and to what people attribute the changes in responses. Secondly, the study aims to identify drivers and barriers to strengthening resilience to climate change. A potential threat with a study of this kind, is that because participants are eager to please, one may end up capturing what people think they should be doing, rather than what people are actually doing. With this in mind, a methodology has been employed expressly to capture what people are actually doing, how/if that has changed, to what people attribute those changes, and finally, what enables or inhibits long term adaptations to climate change. The aim, as previously stated, is to learn about adaptation processes by making meaningful comparisons between Farfar and Kanyini, and also between social groupings (young men, young women, older women, older men, as well as those from asset-rich households and from asset poor households) in each of the two communities.

For the purpose of this study, the researcher spent 8 days in each of the two communities. Separate Focussed Group Discussions were held with young men, young women, older women and older men. Four rounds of focus group discussions were held with each group (16 in total in each community), using the same participants in each round. This was in order to dive deeper, rather than glean survey-style data from Focussed Group Discussions. In the first round, participants were asked to identify all the changes which they associate with climate change (including any recent climate shocks), as well as the impacts (upon their own experiences) associated with each of the climatic changes identified. The results from the first round, apart from being revealing in and of itself, was also used as a basis for further discussions in subsequent rounds of Focussed Group Discussions. In the second round, (the same) participants were asked to identify how they were responding to those changes which they associate with climatic changes. In this round, more obvious responses were listed such as adoption of new climate smart crop varieties, planting trees around houses to protect them against windstorms, livelihood diversification, watermelon farming in the case of Farfar, etc. Because discussions potentially descended into fairly abstract terms of 'what people are doing' (which seems to result from a mixture of what participants think they should be doing in terms of expectations from NGOs and, things they might have heard that other people doing), participants were again asked to reflect on their own experiences, and give examples when necessary. Whilst this reduced the number of responses given,



those that were provided reflect more accurately what people are actually doing (the first step of the study). The climatic changes identified during the first round were used to prompt responses where necessary. The third round of Focussed Group Discussions aimed at identifying the less obvious types of adaptation (capacity for collective action, participatory processes, access to information, strengthened mechanisms for advocacy and improved linkages with local government). Focussed Group Discussions in this round were often the most difficult, with discussions not always forthcoming. Discussions were prompted through examples (for example, how did that new borehole/dugout come to be? How would you go about getting a new borehole? When last were you involved in an effort to secure government services?), and also through explicit reference to specific meetings (what did you learn from the CAAP development meeting? How did you use what you learnt? Did you do that alone, or as a group? Which group?). This round of Focussed Group Discussions aimed to understand how responses to climate change have changed, and to what those changes are attributed. Again, these were difficult discussions. Participants, it appeared, struggled to reflect on what capacities they have or how/if adaptive capacity has changed, and why. In Kanyini it was particularly difficult to get Focussed Group Discussions' participants to think beyond ALP/CARE to more endogenous drivers of change. This, it appears, was not an attempt to 'please' the researcher, but rather a genuine lack of reflection on dealing with climatic changes and the apparent absence of pre-existing local adaptation narratives (in Kanyini) prior to the implementation of ALP/CARE (although there certainly does appear to have been a local climate change narrative prior to the implementation of ALP). This may also have been the case in Farfar too during earlier stages of the ALP.

Following from the Focussed Group Discussions, individual discussions were held with selected informants. Using the Community Wealth Index, one older female member of an asset rich household, one older female member of an asset poor household was selected. The same was done with young women, young men and older men. In total 8 individual discussions per community were held, lasting about 2 hours each. These discussions were used primarily to identify drivers and barriers to adaptation. These discussions were private, since some of the information was potentially sensitive (for instance, a women may identify her husband as a barrier to her own adaptive capacity – although in the end discussions were rarely controversial). The discussions were also used to understand changes (trends) in responses to climate change. Discussants were asked, for instance, to describe their major livelihood activities, the kinds of impacts climate change was having on livelihoods, the kinds of changes they have undertaken, what enabled them to make those changes and, if there are other changes they would like to make (to strengthen adaptive capacity), and what prevents them from making those changes. An emphasis was placed on examples, which could then be unpacked and used as a basis for further questioning.

Aside from these informal discussions, attempts were made to reach out (even more informally to community members, especially during the evenings and on market days (in Farfar). Staying in the communities served as an attempt to build some trust, and to provoke honest reflection in line with the aims of the study set out above. It also served as an opportunity to observe people and participate more naturally in discussion than in ordinarily the case in this type of study. These discussions often proved informative, both in terms of new information, as well as in terms of validating discussions within Focussed Group Discussions, also from different points of view. They should, as a result, be regarded as an express component of the methodology.

Feedback sessions were held in each of the communities, as a way of disseminating findings, as well as a way of validating answers. This worked well in Farfar, with high attendance and engagement, it was less successful in Kanyini. Furthermore, after leaving each of the communities, validation sessions were held individually with CARE staff involved in ALP programming. Finally, results were presented at an ALP reflection meeting in Tamale at which, amongst others, Community Monitors representing each of the ALP communities were present. This again, served both as means for validating research with a broader set of perspectives, as well as a means for disseminating preliminary findings.

A photograph of a person, likely a woman, working in a field. She is bent over, tending to a large green watermelon that is resting on a bed of dry sticks and straw. The background shows more green plants and a hazy sky. The title '6. LIVELIHOOD PORTFOLIOS AND ADAPTIVE CAPACITY IN FARFAR AND KANYINI' is overlaid in large, white, semi-transparent capital letters across the middle of the image.

## 6. LIVELIHOOD PORTFOLIOS AND ADAPTIVE CAPACITY IN FARFAR AND KANYINI

Whilst there are stark differences in the livelihood portfolios between age and gender categories, and certainly also across the two communities, adaptation strategies in both Farfar and Kanyini occur in (and between) one of four broad livelihood categories; rainy-season subsistence farming; dry-season farming and gardening; seasonal migration to the 'southern sector', to find employment in small-scale, illegal gold mining ("Galamsey"), "farming-for-money" or portering ("Kayaye"); and finally, small business enterprises (including tailors/seamstresses, shea butter processing, rice processing, pito brewing, retailing of provisions, but also animal rearing and the production of charcoal and firewood for sale). The four livelihood categories (rainy-season subsistence farming, dry-season farming, migration and small business enterprises), whilst not the only components of livelihoods, serve as the main areas for changes in local adaptive capacity, and the study focuses on these areas, in order to make sense of the types of responses being undertaken to adapt to climatic change.

Whilst necessary to structure findings, these categories are not unproblematic. Within them, there are vast differences in scale and scope, with important implications for adaptive capacity of different (intersectional) groups. In terms of adaptive capacity, for instance, a three acre watermelon farm, which may produce a harvest worth several thousand dollars, is hardly comparable to a small "backyard" plot of okra or peppers, yet both are considered dry-season farming; working as a nurse, soldier or teacher on a permanent basis in the south has a considerably more substantial impact on household adaptive capacity (through remittances in the community of origin), than miners, who may earn a very lucrative income one year, and almost nothing the next, yet both are migration. Furthermore, the four categories of livelihood portfolios upon which this study focuses, are highly inter-linked to one another. Whilst many studies which seek to assess impacts of projects or programmes find, for instance, that yields have increased or livelihoods have diversified amongst target groups or communities, without due attention to the positive and/or negative spill overs created by those 'improvements', a broader picture of local impact cannot be fully ascertained. For instance, income generated through dry-season farming may be used to purchase climate-smart crop and seed varieties, and the fertilizer which these (rainy-season) crops require; seasonal migration, generally regarded as a 'coping strategy', may be a source of important innovations in dry-season or rainy season farming, or indeed small business enterprises. Thus, whilst each of elements of livelihood portfolios may stand alone as an arena for where adaptation decision making largely occurs, understanding the spill overs (positive and negative) is equally important if one is to get a fuller picture of local adaptive capacity, and ways in which peoples responses to climatic change and variation is changing. As a result, whilst we treat the livelihood arenas as distinct, where possible, the study attempts to highlight important linkages between them. Finally, elements of livelihood portfolios relate in different

ways to the ACCRA-LAC. There is a temptation to fix the adaptive strategies to one or more of the pillars or elements of the ACCRA-LAC, but such static assessments belie a more fluid, non-linear reality. For instance, small business enterprises, initiated through VSLA loans, owned by women, might increase the asset base of those women, which may, in turn, improve their capacity and willingness/confidence to innovate, as well as increase the desire to both access knowledge and information, as well as to lobby local government for services which are required. We reflect on the ACCRA-LAC as a framework for capturing adaptive capacity in section 10.

With this in mind, the following section provides a description of each of the areas of local livelihood portfolios in Farfar and Kanyini. Whilst it is intended to shed light upon the composition of livelihoods, it seeks also to lay the foundation and contextualise discussions about, what people in Kanyini and Farfar are doing to adapt to climate change (responses), how this is changing, and to what people attribute those changes (Section 7) and, what kinds of drivers and barriers people face in efforts to strengthen local adaptive capacity (Section 8).

## 6.1 RAINY-SEASON FARMING: 'WE MUST CHOP TOMORROW'

Rainy-season farming forms the heart of individual and household livelihoods in Farfar and Kanyini, as well as other communities in northern Ghana. As such, it serves as the focal point for strengthening adaptive capacity, and how other areas of livelihood portfolios (dry-season farming, migration, and small business enterprises) contribute to adaptive capacity, can only be fully understood in terms of how those other livelihood components drive adaptation strategies within rainy-season farming practices and outcomes. Northern Ghana has one rainy-season (April-October) and one dry-season (November-March). Harvests produced during the rainy-season are primarily used for subsistence consumption. By and large, only if harvests go beyond what is required for consumption, is produce sold. Across the communities, the major crops farmed are millet, maize, sorghum, yams, soya beans, Bambara beans, groundnuts and yams. Crop portfolios are highly gendered, with men farming maize, millet, sorghum and yams, although there are clear differences in emphasis, with millet being more prominent in Farfar, and yams more prominent in Kanyini. Ordinarily, the oldest son inherits family farmland, and household members (mothers, wives and children) help farm the family land. Within this institution, men and women distribute tasks; whilst women sow and weed, men do the spraying (pesticide), apply fertilizer, take responsibility for much of the harvesting, as well as monitoring progress (including guarding against the destruction of farms by cattle). Women farming (on smaller plots) farm soybeans, groundnuts and Bambara beans. How crops come to be gendered is contextual, and defined through a number of gender variables, although the advent of the use of fertilizer serves as an obvious contemporary distinction between 'male' and 'female' crops. In this regard, there appears to be some incremental change in Farfar (with some women having been provided with fertilizer); one woman in Farfar, the first wife of a successful farmer and entrepreneur, noted that only once she had a bag of fertilizer was her husband willing to 'cut' a piece of land for her. Despite this, there continue to be differences between men and women in the scale, scope and aim of farming. Women might be given a piece of land to farm, but this should not go at the expense of obligations for labour on the 'family' farm (including the time which she can use or rent family bullocks, which has important implications for the time of sowing, which in turn affects yields). In Kanyini, the distinction between male and female roles in farming is perhaps more pronounced, with little evidence of shifts towards greater equality. One interviewee in Kanyini, in explaining why he had to go and do *galamsey* noted that he could not farm, since he was not married, and his sister was schooling, and therefore had nobody to sow for him.

**'In the past, we didn't need fertilizer, but nowadays, without fertilizer we cannot farm. Some people, and women in particular, who cannot afford fertilizer, will farm millet, because millet doesn't like fertilizer. But I see most of the men buying fertilizer and farming the new varieties'**

YOUNG MALE FARMER IN FARFAR



In Farfar especially, most male farmers appear to have access to and make use of new climate-smart maize varieties. The use of new varieties in turn increases the relevance of the Participatory Scenario Planning (PSP) and (male) respondents noted that they made extensive use of the PSP and other sources of climate information. (SMS services). In Kanyini, the uptake of climate-smart crops appears significantly lower (and so too is the interest/perceived relevance in/of PSP and other sources of climate information). The participants of the Focussed Group Discussions in Kanyini who did use new varieties (only a small number), used only a small portion of their land for new-crop varieties. All expressed a willingness to allocate larger portions of land to the new, short yielding varieties, but indicated that they did not possess the financial capacity to expand the area under cultivation of short-yielding (maize) varieties. There appears to be a consensus in both Farfar and Kanyini that new, short-yielding crop varieties yield better than the old varieties. Whilst in Farfar 'millet' appears to be somewhat associated with poorer households (there are interesting exceptions, see Section 9), Kanyini's farmers rely on yams. Like millet, yam does not require fertilizer, and should be planted prior to the onset of rains (unlike, for instance, maize, which is sown once the rains set it in). Both are strongly considered to be 'male' crops.

Local norms, values, belief-systems, seasonal migration patterns and other institutionalised facets of socio-economic life appear to have been formed around rainy-season farming practices, shaping tradition and the legitimacies of customary governance institutions. Chiefs and '*Tindana*' (traditional landowners and custodians) play an important role in governing land tenure and managing conflicts over farmland when they arise. Social capital and control in the area of rainy season farming is strong. For the north more generally, much of the income generated through dry-season farming, remittances from seasonal migrants and profits from small business enterprises are used to purchase inputs for rainy-season farming. It is likely that the more money generated in those areas, the more likely farmers are to adopt climate-smart practices in rain-season farming (where the adoption of climate-smart practices is likely to incur financial costs – buying seed/crop varieties and/or fertilizer). As an indication of this, in Farfar, highly lucrative dry-season watermelon farming, is often referred to as 'complementing' rainy-season farming.<sup>2</sup> The financial capacity to purchase inputs for new crop-varieties is not the only barrier to more resilient pathways. In discussions for this study, people indicate that they are more risk averse (because survival depends largely on good yields) in rainy-season practices, than in other areas of their livelihood portfolios. In Farfar, there is, for instance, an apparent unwillingness (especially amongst older farmers, who 'own' the family land and make decisions regarding crop portfolios) to move away from traditional crops, such as millet, which holds traditional significance, being associated with funerals and other festivals and people continue to use large tracts of land for millet, despite acknowledging that yields are low, due to increasingly poor soil fertility and low quality seeds. This appears to be true across the wealth spectrum amongst older farmers (who complain that the younger farmers are abandoning traditions). Amongst other groups it appears that poorer households are more likely to grow millet since it does not require fertilizer, whilst wealthier households appear more likely to adopt climate-smart crops, since they are widely seen to produce higher yields. As a result, participants indicate that the propensity to innovate with new crops or practices is generally lower than in the case of dry-season farming and/or small business enterprises. New crops need to show a consistent improvement over old varieties in order to be taken up. In Farfar, a number of participants noted that they first experiment with new crops on 'backyard' plots, in order to 'see if it works', before scaling up new varieties on their farms. They may experiment for several seasons before fully trusting the new crop varieties. Young men, on the whole, appeared to be more willing to experiment with new crop varieties, and were more engaged with PSP as a means for deciding which varieties to plant than older men and women.

To conclude, rainy-season subsistence farming is the primary livelihood activity for households in Farfar and in Kanyini. It is regarded as the basis of survival and, since it is rain-fed, highly exposed to climatic changes, and increases or decreases in adaptive capacity in this area weighs more heavily than other activities in assessing overall changes in adaptive capacity. Rainy-season subsistence agriculture should be, without question, the focus of projects, programmes and/or policies which seek to strengthen local adaptive capacity. Other livelihood areas in which adaptive capacity changes may manifest (dry-season farming, migration and small business enterprises) appear to be regarded as relevant in how they are able to support rainy-season subsistence farming. That being

<sup>2</sup> Watermelon are sold in bundles of 65 watermelon. Prices fluctuate significantly. During 10 days in Farfar, the price of watermelon increased from Ghc400 per 65 watermelon, to Ghc450, and finally, there were rumours that one farmers had sold his harvest for Ghc500 per 65 watermelon. 2 acres of watermelon farming (a rough estimated of the average size per farmer), produces in an average year 30 bundles of 65. If this is sold for the lowest prices i.e. Ghc400 per bundle, a farmer earns Ghc12000 (approximately \$3000).

said, rainy-season farming is also the area which is relatively complex to manipulate towards more climate resilient pathways due to strong traditional emphases, as well as risk aversion resulting from the fact that rainy-season is (perceived) to be fundamental to survival, and therefore, should not be experimented with.

## 6.2 DRY-SEASON FARMING: 'WE WILL CHOP TODAY'

Whilst in Farfar the presence of a river 7 kilometres south of the settlement itself, has enabled the commercialisation of dry-season watermelon farming, in Kanyini, no such natural water resource exists. In Kanyini, in the past, small-scale dry-season farming existed around small ponds and dugouts, but these, it is noted, have all either collapsed or dried-up. Respondents noted that this had occurred as a result of shorter rainy-seasons and an increase in temperature, although a lack of maintenance has certainly also played a role. There were a number of ponds which still contained water, although large numbers of hoof prints suggest these are used by Fulani pastoralists to let their cattle drink, which would serve as a serious disincentive to do dry-season farming there. It is telling that in the Community Adaptation Action Plan (CAAP) of both Farfar and Kanyini, the construction of dams for dry-season farming features prominently on the agenda and that, despite this, as well as advocacy training and new mechanisms to advocate for action from local government (Advocacy Committees), neither communities have succeeded in having a dam constructed. This failure is discussed in more detail in Section 8.3. It will be interesting to see how communities engage with new 'One Community One Dam' initiative proposed by the new government, and this may provide a window through which to press for the provision of a dam.

Dry-season farming is regarded as an important adaptive strategy amongst practitioners working in semi-arid and sub-humid belts in Africa and elsewhere. It is less exposed to climatic changes than rain-fed agriculture, diversifies livelihoods, and generates income during the lean season. In northern Ghana, which experiences only one rainy-season farming season per calendar year, dry-season farming provides an important source of cash income, which may buffer food stock shortages occurring as a result of low yields or crop failures. Such buffers also increase the confidence required to take risks, which in turn is necessary for the adoption of innovations, including in other livelihood arenas, such as rainy-season farming. Perhaps more directly, dry-season farming enables the investments required for the uptake of new climate-smart crop and seed varieties, and the fertilizer which those varieties invariably entail, as well as facilitating diversification into off-farm livelihoods. A number of watermelon farmers in Farfar have used proceeds from watermelon farming to purchase three-wheeled motorcycles (referred to as 'motokings'). 'Motokings' (which are far more flexible and cheaper than larger market trucks, which preceded 'motokings'), in turn, are used to transport women to rotational markets in other communities, driving entrepreneurship and diversification amongst women. Dry-season farming therefore not only contributes to adaptive capacity through increasing asset bases, but also through a series of spill overs, such as increasing local capacities (and confidence) to innovate, as well as diversification into off-farm livelihoods amongst both men and women. Whilst this alone cannot fully account for differences in local adaptive capacity of Farfar and Kanyini, the natural assets with which Farfar is endowed, and the watermelon boom that has resulted (in the last 6 or 7 years), is certainly one of the primary drivers of this difference.

The premise that dry-season farming can serve as an important driver for strengthening local adaptive capacity assumes that dry-season farming is conducted in a sustainable manner, so that an ecological balance is maintained over long periods. In Farfar, where watermelon has come to be so central to the economic life of community members (and strengthening adaptive capacity), and in stark contrast to rainy-season farming, where a conservative, risk averse attitude guides decision making, dry-season farming is practiced as an immediate enterprise ('we will chop today'). This results, on the one hand, as noted, in a vastly increased capacity and willingness to innovate, but on the other, short-termism, and unsustainable farming practices, undermining the long-term potential of dry-season farming to strengthen adaptive capacity (see section 8.4 for more detail). This is not the result of a lack of know-how; farmers themselves acknowledge that the time of watermelon farming may well be coming to an end because the soils have become so depleted as a result of mono-cropping, and the mass destruction of vegetation, and consequently, rains washing away nutrient rich top soils. Participants unanimously agreed that yields were consistently lower in each passing year, since they started.

The contrast between rainy-season farming and dry-season farming in this regard relates to a number of reasons; the traditions and structures which appear to establish and govern ‘rules’ relating to rainy-season farming are absent; land is rented by many farmers, and user-rights are insecure; conflicts amongst farmers, surrounding communities and Fulani are frequent, vigilante and often violent; the support offered through projects and government agricultural extension to rainy-season is absent or weak in the watermelon sector, and perhaps most significantly, the sense that if watermelon farming ceases to be possible, another option exists, notably, migration to goldmines in the south, as had been customary during the dry-season prior to the watermelon boom (see section 8.3 for a detailed description of the ecological effects of watermelon farming, and what this means for local adaptive capacity). Indeed, this is one of the immediate differences between Farfar and Kanyini; whereas in Farfar young men are present in the community, engaged in watermelon farming, in Kanyini, where no such (natural) potential exists, young men travel south to work in the small-scale illegal gold-mining, and as a group, are barely present in Kanyini during the dry-season.

### 6.3 SEASONAL MIGRATION

Seasonal migration from northern Ghana to the southern parts of country has traditionally been a key part of livelihood strategies in both Farfar and Kanyini, as it is for much of the north, and continues to be used by northern political interests as evidence of developmental neglect (in comparison to the south). Whilst the focus on migration in discussions on the North-South development gap dates back at least to the beginning of the colonial period, it continues to reverberate through Ghanaian agricultural development efforts. National efforts to “develop” the north are often propagated as efforts to ‘reduce’ seasonal migration levels, through the creation of new employment opportunities, including dry-season farming. Young men and women traditionally leave northern communities during the dry-season in order to do “farming-for-money”, ‘Kayaye’ in urban centres (portage) or, most commonly, to do “galamsey” - working as labourers in the small-scale (and often illegal) goldmines around Obuasi, to the south of Kumasi. This provides a source of much needed finance through remittances and, due to the subsistence nature of the communities, also means less mouths to feed. Young boys who go to do galamsey (from as young as 12 years old) invariably work in the pits themselves. Deaths are not uncommon, as result of pits collapsing, and or, people falling into the pits, which may be 20 to 30 metres deep. Women refer to doing galamsey, although this refers to cooking for miners, or managing a food or drink outlet in areas where mining occurs. The environmental damage caused by Galamsey is significant, especially through deforestation and the pollution of waterbodies.

Migration is an equally contested dynamic within adaptation discourses, where one camp regards migration as evidence of a failure to adapt, whilst others rather hold migration up as an adaption strategy in and of itself, spreading household risks associated with climatic change across space, assets and livelihoods (Agrawal 2012). In discussions with development practitioners for this study, migration to goldmines was unanimously referred to as a ‘coping strategy’ (in contrast to an adaptation strategy – see table 6.1. below). Whilst this type of migration unquestionably carries many of the characteristics associated with a coping strategy (see Table 6.1), it is difficult to completely ignore the contributions which seasonal migration has made to local adaptive capacity. Not only are risks hedged, with remittances serving as an important source of cash, especially during years with poor harvests, it is also a proven source of innovation. The watermelon in Farfar, for example, was initiated by migrants returning from the south, who brought watermelon seed home with them, ‘to try to plant’. Without seasonal migration, there would be no commercialisation of dry-season watermelon farming. Equally, the owner of the local bar in Kanyini, one of Kanyini’s wealthier residents (as a result of the success of his bar), saw bars being successful in rural communities in the south, and opened a bar in Kanyini upon his return (having saved money during his time in the south). A women in Farfar, who is a member of the same VSLA group as the man in question, followed his example, and opened her own bar. In a particularly pertinent example, one migrant in Farfar brought oil palm trees from the south, and has ‘shown them to work’ in Farfar (they are currently fruiting). Other farmers have taken up this initiative, with one farmer planting them where his watermelon farm meets the river, to prevent the river bank from continuously collapsing and eroding watermelon farms (see section 9 – Adaptation Winners and Losers). The oil palm trees, he noted, provide income through fruiting, and importantly, do not give much shade, and so watermelon (which require a lot of sun), can be grown under them. Migration not only provides the inspiration of many of the innovations required for adaptation (and access to knowledge and information), it also finances many of these adaptations. The capacity of migration to prove a positive impetus in this regard depends of course on the (financial) success of the migrants.



Kanyini and Farfar emerge as polar opposites when viewed through a migration lens. Where the traditional migration patterns are central to understanding both the socio-economic fabric and capacity to adapt to climatic changes in Kanyini, the commercialisation of dry-season watermelon farming has enabled young men and women to remain in Farfar during the dry-season. In Kanyini, ‘almost every motorbike and ‘motoking’ bought or new house built involves galamsey money’, or indeed, the successful implementation of new climate-smart crop varieties (albeit limited). In Farfar, dry-season watermelon props up progress in these areas. In questions posed to watermelon farmers about how they will compensate if they can no longer farm watermelon, they noted, ‘then we will go back to doing galamsey’.

**Table 6.1.** *Adaptation Versus Coping*

ADAPTATION VERSUS COPING	
The terms ‘adaptation’ and ‘coping’ are sometimes used interchangeably, leading to confusion about the similarities and the differences between these two important concepts. The following lists of characteristics are a compilation of brainstorming sessions by groups of development practitioners in Ghana, Niger and Nepal.	
COPING	ADAPTATION
<ul style="list-style-type: none"> <li>• Short-term and immediate</li> <li>• Orientated towards survival</li> <li>• Not continuous</li> <li>• Motivated by crisis, reactive</li> <li>• Often degrades resource base</li> <li>• Prompted by a lack of alternatives</li> </ul>	<ul style="list-style-type: none"> <li>• Orientated towards longer term livelihoods security</li> <li>• A continuous process</li> <li>• Results are sustained</li> <li>• Uses resources efficiently and sustainably</li> <li>• Involves planning</li> <li>• Combines old and new strategies and knowledge</li> <li>• Focussed on finding alternatives</li> </ul>

Source: (Dazé et al., 2009). *Adaptation and Coping*, CARE

In short, where to fit migration into adaptation is complex, especially in northern Ghana, where widespread north-to-south migration is politicised. Taking a categorisation between coping and adaptation, developed by a previous study initiated by CARE (See figure 6.1), migration is quite clearly a coping strategy; it appears usually to be reactive, and is often motivated by a lack of alternatives. The potential for dry-season (watermelon) farming to strengthen adaptive capacity is certainly greater than the types of migration being discussed here. Having said that, dry-season watermelon farming in Farfar also falls short in a number of ways of being a means of strengthening adaptation. The current practice is highly unsustainable, not oriented towards long term livelihood security, natural resources are certainly not used efficiently or sustainably (see Section 8.4.). Furthermore, whilst galamsey involves risks to persons, the excessive use of chemicals in watermelon farming, with no protective clothes, equally poses a series of health risks to farmers themselves, as well as those helping on farms. Finally, whilst the average income generated by a watermelon farmer is higher than a galamsey mine, the most successful goldminers are likely to earn vastly more than successful watermelon farmers. By dismissing seasonal migration as a coping strategy, a number of important aspects of season migration (in terms of strengthening adaptive capacity), may be lost. How seasonal migration drives adaptation, and the kinds of barriers it imposes, are discussed in Section 8.5.

## 6.4 (SMALL) BUSINESS ENTERPRISES

Particularly in Farfar, many participants are engaged in a number of smaller business enterprises. This is especially true amongst women, where the variety of livelihood diversification appears greater than that of men (who focus largely on farming activities). Farfar holds a local market every three days, whilst Kanyini has no market at all (there is a 6 day-rotational market held in communities around Kanyini to which people from Kanyini will travel to trade goods, but Kanyini itself does not hold a market). The absence of a market, whilst largely taken for granted in Farfar, was cited as a major obstacle for women who wished to start businesses in Kanyini. Local businesses are generally small-scale, focussed upon pito-brewing, shea butter processing and rice processing. Roasted groundnuts and other processed foods are also traded in the market. A number of women also sell 'keta boys', a small river fish used in the preparation of many meals. The number of small enterprises owned by women appears to be far greater in Farfar than in Kanyini. This might have a number of explanations; it is clear that watermelon income props up confidence to take loans and do business (as well as fostering a culture of business). However, the fact that Farfar holds a local market every three days, pulling in people from surrounding communities, clearly also incentivises doing business. Whilst much of the small business enterprises and petty trading is done by women, it should be noted that in both Farfar and Kanyini, the bars are mostly owned by men. In both instances, the bar-owner was regarded as a successful business man, having multiple-income streams, and being well-placed to make the necessary acquisitions to introduce new varieties of crops (ploughing, either with own bullocks, or by renting a tractor, seeds and fertilizer). This was not the case with women, whose diversified livelihoods contributed to adaptive capacity (in terms of diversification), but who struggled to make significant inroads in improving agricultural practices (in terms of adopting climate-smart practices and increasing yields).

Livestock (chickens, goats, sheep and pigs) serve an important means of saving for disasters, as well as, it appears, an indicator of wealth. There is a strange paradox that, whilst many households own livestock, the trade in livestock is relatively small. This has been corroborated by both CMs in Farfar, as well as by CARE staff. Women note that they are unlikely to sell pigs during the farming season in order to buy fertilizer, new seed varieties and/or pay for ploughing services, instead keeping them for emergencies. Whilst small business enterprises, especially as a vehicle for diversifying livelihoods has positive connotations, not all small businesses enterprises are equal, especially in relation to adaptation. The making and selling of charcoal and firewood is considered by a large number of women as their business, and serves in many instances as, apart from subsistence farming, a primary livelihood activity. Importantly, whilst such activities are referred to as a coping strategy (which it undoubtedly is), women engaged in this activity frequently refer to it as a business. Whilst women are responsible for pigs, men are responsible for bullocks (traditionally used for ploughing). Goats, sheep and chickens appear somewhere in the middle, although it appears that women own animals that require feed, whilst men own those that roam and survive on pasture. The selling of goats, sheep, chickens and cattle, as is the case with pigs, is only done when necessary (to supplement food shortages), and is very rarely regarded as a business.



# 7. PERCEPTIONS OF CLIMATE CHANGE, IMPACTS, RESPONSES AND TRENDS

This subsection is divided into four interconnected parts. The first discusses the perceptions of climatic changes (the changes seen and experienced which people associate with changes in climate) and the impacts which those changes have upon different age and gender groups. The second part focuses on responses and trends. Here we assess how age and gender groups respond to those climatic changes, and emerging trends (how are the responses to climate change changing). The final part reflects on what people attribute those changes (in responses) to.

## 7.1. PERCEPTIONS OF CLIMATIC CHANGE AND ITS IMPACTS

Perceptions of climatic change may be different from actual climatic change, and perceptions rather than actual climate change inform adaptation decision-making. As a result, in order to understand in which ways people adapt to climate change, such perceptions serve as a good point of departure. Table 7.1 and 7.2 below present the climatic changes identified in Focussed Group Discussions in Farfar and Kanyini respectively, as well as the impacts that those climatic changes have on differentiated (by group) livelihoods.

Before zooming in on the contents of table 7.1. & 7.2, it is noteworthy that participants struggled to distinguish between climatic changes and changes resulting from ecological degradation as a result of, for instance, unsustainable practices, such as tree felling and/or bush burning. Whilst acknowledging that a reduction in tree coverage resulted from tree felling for producing charcoal, selling firewood and/or for use as building materials, it was also identified as a climatic change; bush burning was identified as increasing as a result of climatic change, whilst at the same time, participants noted that bush fires were rarely natural occurrences, and were instead the result of burning by hunters, Fulani for grass regrowth and/or by farmers to clear farms in preparation for the farming season; excessive use of herbicides (for clearing farms of grass), was noted as a climatic change. The grass, they noted, held river banks and other topographic features in place, and its absence (as a result of excessive use of herbicide) caused the river to 'flow any which way', and as a result, washed away nutrient rich, top-soil on watermelon farms. Young women spoke at length about poor sanitation as an impact of climate change and many of the groups also spoke at length



about population pressure, noting, for instance, that increasing population pressure resulted in more land under cultivation, and shorter fallow periods, which reduced yields. From this, it seems that for most community members, climate change is embedded in a host of changes affecting livelihoods, and is not regarded as a stand-alone threat. This has implications for how policies, programmes and projects address rural climate change issues (See section 11 “Recommendations”).

The outcomes presented in table 7.1 & 7.2 below are the result of individual Focussed Group Discussions with young men, young women, older women and older men in which participants were simply asked to note the kinds of changes they see or experience which they associate with climate change, and how those changes impact upon their livelihoods. Both tables reflect important, yet not altogether unexpected differences across age and gender categories. In both Farfar and Kanyini, all groups highlight changing rainfall patterns (or a shorter rainy season) as the most significant climatic change. Since livelihoods are defined significantly by gender and age (also a number of inter-sectional variables, such as household wealth/poverty), how climatic changes are experienced (impacts) varies significantly by age and gender. In Farfar (Table 7.1), whilst men, for instance, noted that a reduction in tree cover resulted in a drying of the soil, a reduction in soil fertility and a deterioration of yields, women noted of the same phenomenon that it made it difficult to find appropriate trees for making charcoal and/or cutting trees in order to sell firewood. This reflects the dependence of women upon charcoal production as a source of income, as opposed to men, whose livelihoods are primarily focussed upon farming. Similarly, young women were more likely to link perceived climatic changes with health issues, especially for children, as well as upon the availability of food (household food supplies), reflecting their role as carers and other domestic duties. Young men, in contrast, reflected that new parasitic grass varieties are emerging, which brought new pests, and thereby reduced yields, again reflecting the centrality of farming in male livelihoods. Taking all the results of each group, each shows a pronounced, and yet again not unexpected, emphasis; amongst older men, climate change was seen to be causing a loss of traditional crops (particularly millet) which, they noted, was necessary for funerals and other festivals, as well as welcoming strangers into one’s house. In Farfar, older men also complained that the youth were not employing the traditional practices, leading to a disappearance of such (important) traditional crops. Young women translated many of the impacts of climate change into health issues, particularly for their children. They noted, for instance, that heavy rains had destroyed poorly built latrines, spilling faecal sludge, and increasing illness amongst children and reared animals (pigs in particular, which is a female domain). Increased use of pesticides, they noted, also increased illness amongst children. Young men translate climatic changes into fairly sophisticated impacts on crops, from new parasitic grass varieties, new pests and weak bullocks, as a result of less ‘fodder useful’ grass cover. Older women tended to focus upon food shortages, as well as the impacts of climatic changes on the fruiting of economic trees, which in the case of shea butter, is strongly associated with women’s livelihoods.

Following on from the strong influence of (gendered and age-based) livelihood portfolios on perceptions of climatic changes and their impacts, what one group regarded as a response to climatic change, another may regard as an impact of climate change. For instance, young men noted that climatic change had brought new pests and weeds, lowering yields, and their response was to use new pesticides and weedicides. Women, in contrast, regarded pesticides and weedicides use as a consequence of climate change, and noted that the impact of increased pesticide and weedicide use was to increase the prevalence of illness amongst children. Similarly, whilst young men regarded dry-season farming as a response to a reduction of rainy-season yields (in order to supplement food shortage which arise as result of lower rainy-season yields), women regarded extra work on dry-season watermelon farms (and less time to care for children), as an impact of climate change. Weighing up how responses to climate change by one age or gender group impacts upon another, is an important consideration for future adaptation programming. In terms of spill-overs of negative impacts from adaptation strategies adopted to other groups, as in the examples given above, there appears to be a strong gender dimension. Men, both young and old, could not identify negative impacts of other groups’ adaptation strategies. Whilst women did identify negative spill overs, there appears to be an acceptance of those spill overs on the basis of unequal gender relations. This serves also as an important barrier for strengthening adaptive capacity of women, and future adaptation programming will need to find ways for dealing with the structural causes of gender inequalities if adaptation interventions aimed at women is to be effective.

**Table 7.1.** *Perceived climatic changes and impacts per social group in Farfar*

PERCEIVED CHANGE	IMPACT OF CLIMATIC CHANGE			
	Young Women	Older Women	Younger Men	Older Men
<b>Erratic Rainfall</b>	Economic trees do not fruit well in some years, lower yields, less income, less food. Heavy rains destroy latrines, children and animals fall ill.	Reduction in yields, especially for those without bullocks.	Lower yields and weaker livestock	Loss of traditional crops; farm larger areas, less time for fallow land;
<b>Increased Pests</b>	Increased use of Pesticide, makes children ill.	Reduction in yields	Destruction of watermelon harvests (after germination)	Insects entering the millet, and eating the millet from inside out, destroying yields.
<b>Poor Soil Fertility</b>	Reduced food supply, so have to farm larger areas, less time to for other domestic duties.	Lower yields, food shortages	Reduced yields	Farming larger areas, less fallow land.
<b>Lower yields for traditional crops</b>	Increase dependence on dry-season farming to supplement food supply			
<b>Increased number of bush fires</b>	Destroys economic trees (Shea and 'Dawadawa' or 'Locust Bean Tree)	Destroys economic trees (Shea and 'Dawadawa' of locust bean tree)	Lower soil fertility, reduces yields	
<b>Reduction in the availability of grass during the dry-season</b>			Bullocks weak (have to be fattened after the rains, so ploughing is late, reducing harvests)	
<b>Destruction of grass at watermelon farms through use of weedicide</b>			River flows 'any which way', washing away soil nutrients.	
<b>Dry-season becoming warmer</b>	New illnesses amongst children and animals (pigs).			New illnesses amongst the elderly; cannot sleep well.
<b>Reduction in Tree Coverage</b>	Difficulty in finding trees for making charcoal and firewood; less economic trees.		Drying of soils, reduced yields.	Drying of soil, lower yields; smaller planting windows (especially for watermelon).
<b>Economic trees not fruiting like they used to.</b>	Less income from Shea butter processing			Have to pay for things our wives paid for - school fees.

Kanyini (Table 7.2 - below) showed much the same patterns as Farfar, with a few noticeable and important differences. As in Farfar, gendered and age-based livelihood portfolios informed how climatic changes were perceived and impacted livelihoods. Women noted that climatic changes resulted in food shortages and an increase in the incidence of child illness, whilst men by and large focussed upon direct agricultural implications of various climatic changes. A noteworthy departure from Farfar was the emphasis on spiritual explanations for a lack of rain. Spirituality recurred in several discussions in Kanyini (and was not mentioned in Farfar). Older men in Kanyini, noted, for instance, that the 'misbehaviour of youth' had resulted in a breakdown in the relations with the 'spirits of the land', whereby, as

a result, they can no longer ‘do a thing’ to make it rain, as they had done in the past, when relations were better. In discussions with CARE staff, it was noted that traditional belief systems continued to be particularly strong in Kanyini, and that this in turn contributed to difficulties in the adoption of more climate-resilient pathways or other development mechanisms.

**Table 7.2.** *Perceived climatic changes and impacts per social group in Kanyini*

PERCEIVED CHANGE	IMPACT OF CLIMATIC CHANGE			
	Young Women	Older Women	Younger Men	Older Men
<b>Increase in Temperatures.</b>	Health issues for the children.	Increased health issues.		
<b>Windstorms</b>	Destroyed their houses and also crops.	Destroys their houses and farms.	Destroys houses, destroys the crops and the crops.	Destruction of houses and farms.
<b>Rains are shorter/ farming period is shorter.</b>	Lower yields (traditional crops); food shortages	Reduction in yields of traditional crops (without fertilizer use); food shortages	Traditional crops do not do well; increased migration of youth.	The traditional maize does not yield well.
<b>Increase time spent by women on farming because the amount of land to farm is plenty to get enough to eat.</b>		Less time for children.		
<b>Drying of waterbodies</b>	No dry-season farming; men using boreholes for dry-season farming, so less water for domestic use.	No potential for dry-season farming; the Fulani have left to find water elsewhere (so no bullocks, since children are either at school or have gone south)	The animals in the community will not get water; no more dry-season gardening; increased migration.	No dry-season farming, no water for cattle.
<b>Poor soil fertility</b>	Can't grow crops that don't require fertilizer.		Reduction in yields of traditional crops (which don't need fertilizer)	Farming larger areas, fallow periods shorter.
<b>Breakdown of relations with the spirits of the land.</b>		The relations with the land spirits/ gods are not good. We can't ask them to make it rain.		No longer possible to beg the land spirits to let it rain.
<b>Reduction in tree cover.</b>	Travel far to find wood - because we don't cut fresh wood/ economic trees.			
<b>Rising temperature from the dry-season</b>	Increase in illness amongst children.			Increase in illness amongst old people
<b>Boreholes drying up</b>	Walk longer distances to get water, longer time away from home/children.			
<b>Animal diseases</b>	A disease (beginning of the rainy season) which kills pigs, animals dying.		Animals die. This usually a way of saving.	
<b>Losses in storage of food</b>			The crops rot; less food	



Importantly, in Kanyini, whilst a number of perceived climatic changes were the same as Farfar (poor soil fertility, changing rainfall patterns), there are some important differences. A windstorm (preceding the rains) in 2011 caused mass destruction of houses and farms. Most houses in Kanyini have zinc roofing, which replaced grass roofing following the windstorm. Something of collective consciousness situates the 2011 windstorm (and the destruction of property and farms it caused), at the centre of thinking and articulating ideas about climatic change and variability. Indeed, in the first round of Focussed Group Discussions (focussed on perceived climatic changes and impacts), much of the discussion focussed upon windstorms. The drying up of water sources followed the windstorms in terms of importance. Across the age and gender groups, this was regarded as a major change, as dry-season farming has all but disappeared from the landscape (due to the drying up of water bodies), which is coupled with both ecological and social problems, in the form of increased felling of trees for making charcoal and selling firewood, increase bush burning for hunting, as well as increased seasonal migration to galamsey in the south of Ghana.

Furthermore, women (both young and older) in Kanyini made no mention of the impact on economic trees (despite the fact that women in Kanyini equally depend upon shea trees in their livelihood portfolios), unlike in Farfar, where the impact of climate change on economic trees was regarded as a significant impact. In Farfar, for instance, women noted that bush burning, erratic rainfall and reduced tree cover affects economic trees, and in turn, small-business enterprises built upon the fruits of those trees. In Kanyini, very little was said in the way of businesses. For the large part, these hardly exist, bar some very small-scale pito brewing. This is reflected also in subsequent discussions on the use of Village and Savings Associations (VSLAs), which in Farfar was used by women as a means for diversifying livelihoods into new business ventures, whilst women in Kanyini regarded them primarily as a way of covering existing costs, such as school fees, medical costs, and purchasing food to close gaps created by low (rainy-season) yields. An important distinction between discussions in Farfar and Kanyini is hard to capture in data, and is instead revealed by the process, participation and the tone of Focus Group Discussions. Generally speaking, participants in Farfar were more engaged in discussions, discussions brought forth more changes and impacts, and different social groups were better able to relate the impact of climatic changes to their own lives. In Kanyini participants of Focussed group Discussions by and large struggled to relate climatic changes to their own experiences, except in very obvious ways (the windstorm in 2011 destroyed my house). They especially struggled to articulate actions undertaken to strengthen resilience, and discussions were often general and hypothetical, rather than relating to their own experiences.

## 7.2. RESPONSES AND TRENDS

Perceptions of climate change and the impacts thereof (outlined above) were intended largely as a contextual basis for discussions about the types of responses people undertook, how those responses have changed, and finally, to what those changes were attributed. Results from the previous section revealed that;

- People reflect on climate change as embedded in a broader set of issues affecting local livelihoods, including sanitation, tree felling, and the excessive use of chemicals.
- The ways in which impacts of climate change are experienced are characterised by existing socio-economic distinctions defined by gender and age.
- What might be regarded as a response to climate change by one group, may serve as a (negative) impact by another (these are largely maladaptations, but have been identified as responses nonetheless, for instance, use of pesticide by men to eradicate new pests is resulting in increases in illnesses amongst children, the burden of which largely falls upon women or, the felling of trees by women to pay VSLA loans, results in a decrease in soil fertility, the burden of which falls in the first instance upon men who farm).

The section also highlighted important differences between Farfar and Kanyini. This relates to levels of uptake of adaptation strategies (diversification of livelihoods – See section 3 for an in-depth analysis of differences between Farfar and Kanyini).

Having identified climatic changes and their impacts, this section details responses to climate change and trends (how these responses are changing over time) in Farfar and Kanyini. The discussion on responses was conducted in two Focussed Group Discussions per social group (young women, older women, young men and older men). The

first round of Focussed Group Discussions dealt with more obvious responses, such as the use of new climate-smart seed and crop varieties, use of fertilizer, use water pumps and generators for irrigation in dry-season farming etc. The second focussed upon those attributes contributing to strengthened adaptive capacity, but not immediately obvious, such as participation, access to finance (through VSLAs), improved knowledge and information on climate change and the appropriateness of adaptation strategies, strengthened linkages with local government, training (and structures) for advocacy (in order to lobby for services) and access to climate information. The tables relating to this data are also divided in this way, whilst in reality the two Focussed Group Discussions (per social group) together represent one list of adaptation strategies. Especially comparisons across the two communities show stark differences. Table 7.3 and 7.4 below present more obvious adaptation strategies for Farfar and Kanyini respectively, and table 7.5 and 7.6 (further down) present those adaptation strategies which might not be immediately obvious for participants for Farfar and Kanyini respectively. In both rounds of Focussed Group Discussions, no attempt was made to steer the discussions towards responses that represented adaptation strategies, in contrast to responses that made no contribution to long term adaptive capacity and/or maladaptation. Instead, Focussed Group Discussions participants were simply asked how they responded to specific climatic changes they had identified (and presented in table 7.1 and 7.2).

Differences between Farfar and Kanyini were stark. Participants in Farfar were clear and concrete regarding various adaptation strategies, and linked them clearly to specific climatic changes and their impacts. Most of the responses represent genuine adaptation strategies, involving planning and forward-thinking. Out of 19 responses (all groups), 12 might be considered adaptation strategies, 5 might be considered responses to climatic changes, but not necessarily contributing to strengthened adaptive capacity, and 2 are clear maladaptations (increase use of pesticides to combat new pests and plant diseases & increased dependence upon charcoal production and selling of firewood). In Kanyini groups struggled to indicate adaptation measures that they were actually undertaking. Whilst participants appeared broadly aware of some of actions that might be appropriate in facing a changing climate, few were actually implementing those actions<sup>3</sup>. A lack of financial capacity was often cited as a reason for inaction (or lack of fertilizer or climate-smart seed varieties, due to lack of money), and whilst financial capacity is certainly a driver of adaptive capacity (it is clear there is less money in circulation in Farfar due to the dry-season watermelon farming), it cannot fully explain the lack of uptake or apparent urgency in term of climate change adaptation. For instance, many female Focussed Group Discussions participants as well as those engaged in private discussions, owned several pigs, worth upwards of \$100 each. Selling one pig could cover inputs for one acre of a climate smart maize variety, despite complaints that that they did not have the financial resources to purchase the seed and fertilizer to sow (desired) shorter yielding varieties. There are other examples of a lack of urgency to adapt. Older men (in Focussed Group Discussions) in Kanyini noted that they had planted trees around their houses to protect their houses from windstorms. Women however indicated that the men were supposed to have done so, but complained that in most instances they had not done so. Walking around Kanyini, only very few houses have such trees. The most prominent example of tree planting to protect houses against windstorms was owned by a women (her husband had left her) who had opened a bar, which had been destroyed by the 2011 windstorm. Following the windstorm, she travelled to the regional capital, Wa, to buy mango seedlings. The rain gauge monitor noted that the district assembly has a nursery and people are entitled to 5 trees per person. This was not widely known, and no apparent community initiative was taken to make use of this service. Furthermore, whilst most women in Farfar noted that engagement with the VSLAs served as an adaptation strategy in that it allowed them to take loans for new business ventures, thereby diversifying livelihoods. Women in Kanyini, in contrast, made no mention of VSLAs in discussing responses. When VSLAs were mentioned (prompted), young women in Kanyini noted that VSLAs were used to pay school fees and for emergency medical costs, not for taking risks, like starting new business. This attitude towards VSLAs was also shared by women from asset poor households in Farfar. We may conclude that the use of VSLAs is strongly determined by levels of poverty, and that especially women with an existing income stream, were more likely to take loans than poorer women without an existing income stream.

<sup>3</sup> Despite efforts to focus discussions on the responses that people within the group were undertaking, across the groups, possible responses were discussed, and by and large, why those responses (uniformly deemed important), were not being undertaken

**Table 7.3.** *Round 1 Responses to Climate Change: Farfar*

RESPONSES	Young Women	Older Women	Younger Men	Older Men
	CHPS (health) compound.	Rely more on others for food	Diversify crop varieties, and use fertilizer (maize, bean varieties, rice)	Diversify crop varieties
	Take Loans from VSLAs to buy food (in case of shortages), diversify crops (if we can get fertilizer), engage in new businesses (pito brewing, Sheabutter and Rice processing	Spend more time farming	Make pits for biodegradable waste (make compost)	Acute planting period (all hands on deck mentality when it rains)
	Start small businesses, like pito brewing shea production and sell provisions.	More charcoal production and selling of firewood.	Inter-cropping	Farm larger areas
	Spend more time helping husbands on farms (since they have to farm larger areas to get the same amount of food).	Use the VSLA loans to farm different crops; bambara beans, soya beans.	Try to leave land fallow longer	Using more pesticide to get rid of new pests
	Some built latrines (many did not do it well and they were destroyed by hard rain).	Work more on the dry-season farming to supplement rainy season farming (especially weeding)	Diversify into other sectors (transportation, 'motokings').	.

The discussions in Kanyini, despite efforts to get participants to concentrate on their own responses, primarily brought to light things that people should be doing such as, planting trees around houses, using short-yielding, climate-smart maize and cowpea varieties and building a sty for pigs (and vaccinating them) to protect them against disease. Much of the discussion was about barriers encountered in responding to climatic change, rather than actual responses people undertook. When asked what explains the lack of cohesion, collective action, initiative in terms of adaptation, women explained, 'since our husbands brought us here to this community (women who marry traditionally move to their husbands family house), we cannot decide what things should happen in the community.' Of 16 responses in total, 6 represent an adaptation practice which was not undertaken, 5 represent a maladaptation, 4 represent a genuine adaptation practice which was undertaken, and 1 (improving relations with the spirit of the land) might lead to long term changes in behaviour, and represents a certain capacity to adapt, but is unlikely to yield any immediate positive results.

In a series of (informal) discussions with key informants about why the uptake of climate-resilient options was slow in Kanyini, a number of possibilities were put forward, and whilst none on their own is satisfactory, perhaps together they go some way to explaining the poor uptake or apparent lack of urgency in Kanyini. Firstly, Kanyini has had very little history in the way of external development projects, and it may be that there is simply no established "culture of development." Secondly, unlike in Farfar, where ALP was introduced in 2010, ALP was only implemented in Kanyini in 2015, and mechanisms for increasing adaptive capacity are new. This has implications for the embeddedness of various ALP mechanisms, including the fact that Community Monitors in Kanyini appear to lack the capacities to mobilise the community, as is the case in Farfar. Thirdly, since land is relatively abundant, and continues to hold more fertility than, for instance, much of the land in the Upper East Region where Farfar is located, climatic changes (erratic rainfall, poor soil fertility etc.) can be absorbed through extensification, undermining a sense of urgency which may be required for people to act. Fourthly, unlike in Farfar, where it appears that especially youth have driven the uptake of new farming climate-smart technologies, youth in Kanyini are mostly absent, having migrated



southwards to work in the gold sector. This group is not well included in ongoing programming because they are absent for large parts of the year. Of 14 participants in the Focussed Group Discussions with young men in Kanyini, only one was a member of a VSLA. That one participant who was a member, was a member of 4 VSLA groups, owned the busiest bar in the community, and was regarded as one of the wealthiest members of the community. Asked why he would take loans from VSLAs, when it appears that he has enough money to engage in the activities without taking loans, he noted that as members, they were obliged to take loans. If nobody takes loans, there can be no profitable share-out. Asked, in this light, why people would join VSLAs at all, he noted that the share-outs were profitable (this was the primary reason he wanted to be a member of VSLAs. Conversely, it appears that other community members relate this success to his being good at doing business, or being serious in the business which he does, rather than to his use of VSLAs. Finally, the monies generated through dry-season watermelon farming in Farfar appear to drive much of the changes in rainy-season farming. Such an impulse, while somewhat compensated by seasonal migration, does not exist in the same way in Kanyini.

**Table 7.4.** Round 1 responses to Climate Change: Kanyini

	Young Women	Older Women	Younger Men	Older Men
RESPONSES	Educated/sensitised on the importance of tree planting, but don't have money for seedlings.	The husbands are supposed to plant trees around the houses, but they have not done it.	Use the new, short yielding varieties (constrained by lack of fertilizer).	They are working with the Kanyini Youth Association to try to improve the relations with the spirits of the land.
	Contributing Ghc6 every two weeks (for 4 months) for a new borehole. Change of government might cause delays.	Change varieties of crops, but the improved varieties are not easy to access	Inter-crop (if you farm yams one year, you have to farm groundnuts the next year).	Discussed rules around the burning or felling of economic trees (with chief and Tindana).
	Stop rearing pigs. If they don't have a sty, they get diseases and die (no money for vaccination).	Increase charcoal production and the selling of firewood.	Longer periods doing galamsey to cover household food shortages.	If it rains in May, they will plant the traditional variety (120 days). If there is a drought after May, those will die. Those who can will then plant the new variety in July (90 days).
	Increase charcoal production and selling of firewood to buy food and cover food shortages.	Small plot of land (from husband) for bambara beans, groundnuts (constrained by lack of fertilizer).	Pay more attention to the soil when deciding which crops to grow.	
			Use chemicals in food storage (used to use ash, but that doesn't work anymore, so we use chemicals).	

The second round of Focussed Group Discussions within this component, focussed upon the less obvious factors contributing to strengthened adaptive capacity, such as participation, access to finance (through VSLAs), improved knowledge and information on climate change and the appropriateness of adaptation strategies, strengthened linkages with local government, training (and structures) for advocacy (in order to lobby for services) and access to climate information. Due to fears about prompting answers, the initial idea was to facilitate an open discussion about other 'assets' or changes which might be contributing to how people respond to climate change. This proved

difficult, as participants did not immediately see the connections between their responses to climate change and 'software' improvements. A new approach saw Focussed Group Discussions being prompted with reference to 'planning', 'climate and other information', 'local government services' and access to finance or VSLAs. In Farfar, in response to questions about planning (what kind of planning has been done to adapt to climate change?) groups referred to the Community Adaptation Action Plan, and this was then used to guide a discussion about planning and participation. When discussing climate and other information, groups referred to the Participatory Scenario Planning (PSP), and this was then used to guide discussions about access to information. Specific developments within the community (new boreholes, new dams/dugouts, health facilities etc.) were used to initiate in depth discussions about how they came to be (organisation, participation, lobby and advocacy mechanisms etc.). People were asked in particular to give examples of how they participated in activities, what they learned, how they used what they learnt, and in how far they value the types of (new) structures which made it possible. In this way, we were able to identify 'software' components of adaptation (participation, capacity to organise, mechanisms for accessing services, knowledge of climate change, appropriate adaptation measures and entitlements) actually employed by people and groups to undertake initiatives which worked to strengthen adaptive capacity, as well as define the value placed on those components by participants.

The results from this second round of focus group discussions are presented in table 7.5 (Farfar) and 7.6 (Kanyini) below. The capacity to organise in Farfar was generally high. The discussions amongst women focussed primarily on the VSLAs, not only as a means of accessing finance, but also as a source of information, a source of social control and a source for innovation (and disseminating information). They noted that a constitution and enforced rules regarding attendance ensures that VSLAs function well, and has sustained engagement from group members. One VSLA group had sought to engage in block farming, and had, as a group, asked one of the community monitors to take this up with the District Assembly. They secured fertilizer on loan from Presbyterian Agricultural Station – Garu (unfortunately, a child making food burnt the farm down by accident, so its existence could not be verified). Relevant farming and market information was often distributed through VSLAs, membership was highly valued, for both financial and social functions), and they regarded VSLAs a way of seeing 'what other people are doing, and what works and doesn't work'. Another VSLA group had approached a community monitor to ask him to take up the issue of more boreholes. They were waiting for a new District Chief Executive to be appointed before continuing (following the elections in December 2016). This group, took their issues to community monitors, rather than the Assemblyman, because community monitors, they felt, had more responsibility towards women than the Assemblyman. Men in contrast pointed out the usefulness of the PSP in deciding which crop varieties to plant, and also when to plant them. But they also cited examples of when they were engaged in community development activities, such as building bridges over rivers so that children can attend school during the rainy season, building latrines, initiating local government for tractor services (for ploughing) and lobbying for a dam.

Taken together, responses show a committed community, innovating in the types of adaptation practices employed, but also in how 'software' is deployed, with VSLA groups playing a central role in mobilising women to access and make use of climate and other information, tackling issues relating to the under-provision of services and exerting some level of social control. It is clear from the discussions that many of the responses presented in table 7.2 are enabled by those presented in table 7.4. For instance, the PSPs guides farming practices of new, climate smart crop varieties amongst men, and VSLAs prop up diversification into small-business amongst women. Whilst men take the lead in community development (advocacy), women appear welcome to participate, and have their own mechanisms to better access government services (notably VSLAs).

**'I took a loan from the VSLA for GHC 60, and Yaro [a member of the same group] ploughed my land but only charged me GHC 40. I took the remaining GHC 20 and bought a little bit of feritlizer'**

OLDER WOMAN, ASSET-POOR HOUSEHOLD, FARFAR

Having said that, and this has been pointed out in previous reports (see Fenton, 2013), VSLA group membership appears to be lower amongst poorer community members, and amongst those who are members, poorer people are less likely to take loans for business and depend on the share-outs. Furthermore, it appears that many of the loans (for school fees, medical costs, to purchase food and other running costs) are repaid through the felling of trees. Whilst this is true of both Farfar and Kanyini, it is especially the case in Kanyini (see section 8.1 for a detailed discussion on how VSLAs serve as drivers and barriers to adaptive capacity).

**Table 7.5.** Round 2 responses to Climate Change: Farfar

RESPONSES	Young Women	Older Women	Younger Men	Older Men
	Joined VSLAs.	Build latrines to reduce illness of children and animals.	Contributed payments to build the health facility (government match funding).	Built Bridges over streams (so children can attend school)
	Set rules for VSLA attendance (50 Pesewa if people are late, Ghc1 if people do to attend).	Build housing for pigs, to reduce disease	Helped building bridges (to Wankuan and Natinton).	Lobby of health compound
	We farm in VSLA groups (labour) and wages are given to the box.	Send children to school	Lobbied for a dam - three representatives wrote a letter and presented it to the District Assembly - (no success yet).	Lobby for dam
	One VLSA group lobbied (through a community monitor) for block farming. CARE (through PAS-G) gave a loan to a VSLA of seed and fertilizer.	Rules of attendance of group meetings are adhered to and prevent VSLAs from collapsing	Helped build latrines (many were destroyed by rains).	Used tractor services from Local Government
	Have discussions in the VSLA groups regarding sanitation - ('if a member is not doing sanitation properly, we have a group meeting regarding sanitation, so as not to shame the woman personally').	Increased solidarity - no interest charged on loans for medical emergencies	Participation and use of PSP to establish appropriate varieties and timing of planting.	Lobby for Extension Services - they got somebody to come (through the assemblyman) to help with use of fertilizer.
	Doing more farming (getting land from our husbands) – Bambara beans, soybeans	Able to help poor women in the VSLA access LEAP grants (Social Welfare Grants)	Take loans from VSLAs for new businesses (albeit limited - women do this more).	Make use of PSP meetings to establish appropriate varieties and timing of planning
				Participate in VSLA meetings (for information and loans)
				Long range Forecasts distributed through the community

The situation in Kanyini was quite different to that of Farfar. In Kanyini, where as a result of the more recent implementation of ALP (and the fact that there were very few interventions preceding ALP), discussions about 'software' were especially difficult. The mechanisms for relevant types of collective action which did exist were mostly dysfunctional; a few participants were aware that the Kanyini Advocacy Committee had come to exist, but did



not know who the members were, or what their function was. The Committee, established in September, had never met. There is one woman on the committee. When women were asked if they ever approach the committee to make suggestions for community development initiatives, they noted that they had not because they are women. There is however one woman in the committee. Asked if they approached the woman in committee, one participant had noted that she had, but the committee member noted that if she wanted things done, she should speak to the men in the committee. Furthermore, young men noted that they did not have access to or participate in the PSP, and no one (in any group), besides the rain gauge monitor himself, could explain the purpose of the rain gauge. A number of participants (including men) were unaware of its existence. Few people had access to climate change through SMS services, and this information seemed randomly distributed. One of the community noted that since he had lost his phone, he no longer receives the SMSs.

**Table 7.6.** Round 2 responses to climate change: Kanyini

RESPONSES	Young Women	Older Women	Younger Men	Older Men
	Build sty for pigs to protect pigs and children from diseases (constrained by lack of finances)	Build houses for pigs, and use the pig droppings for compost on farms (constrained by lack of finance)	Educated in vocational training (masonry, electrician etc.) But there is no market in Kanyini.	We learned how to use the VSLA - making payments, taking loans and share-outs (few are members of VSLAs - 'it's mostly for women').
	Educated on the fact that having many income streams (pito-brewing, shea production, hairdresser, shop etc.) makes people better equipped to deal with climate change (due to lack of market)	Joined VSLA, use loans for school fees, food and healthcare costs.	Migration to do Galamsey, farming-for-money and Kayayei (porterage in cities).	A project sent a veterinarian to do vaccinations. Some vaccinated some of their animals, but nobody vaccinated all (lack of money)
	Diversification of crops - leaving the traditional crops and using new varieties, especially maize and cow pea (constrained by a lack of fertilizer).		We use money from galamsey to pay school fees and buy seeds and other inputs for the household (as well as motorbikes for themselves).	Advocacy Committee elected - people who can do advocacy (to local government, or NGOs) - since September (when elected), the committee has not met.
	Advocacy Training. Aware of who the members are. (constrained by the fact that they are women)			Lobbied for electricity for the section which does not have - people from the section gathered and met with the chief and the assemblyman.
	Piped water for the health facility (Advocacy Committee is responsible for this)			Some reported a broken bridge to the Assemblyman, but no action yet.
	Use VSLA loans to take pay school fees, health costs and cover food shortages.			They have seen the rain gauge but are unsure what it is for.

## 7.3 HOW HAVE RESPONSES CHANGED, AND TO WHAT ARE THE RESPONSES ATTRIBUTED

Whilst there are significant differences in the level of uptake of responses to climate changes in Kanyini and in Farfar, as well as across groups within communities, important responses in terms of adaptation might be seen as belonging to one of the following 5 categories:

1. Protection of assets against changes associated with climate change (including animal diseases and infrastructure)
2. Increased capacity for innovation, especially for women, through the VSLAs, which not only provide finance for the uptake of innovation, but also provide a platform through which new innovations may be observed and replicated (by other group members)
3. Access to new, improved climate-smart crops and seed varieties.
4. Information on climatic changes, and appropriate crop/seed decision-making, through PSPs and other sources of climate information (SMSs and radio).
5. Diversification of livelihoods (also off-farm).
6. Awareness and increased capacity to lobby local government for services

The following section discusses how these responses have changed, and to what those changes are attributed. Because people are likely to attribute changes to ALP (because the researcher is seen to represent CARE), some analysis is made of potential other drivers of change (in terms of responses), especially in attempting to understand the differences between Kanyini and Farfar in terms of uptake.

### 1. PROTECTION OF ASSETS AGAINST CHANGES ASSOCIATED WITH CLIMATE CHANGE.

Under this heading, we include housing for pigs, vaccination of animals, trees around houses to protect them against climate shocks, building latrines to prevent illnesses resulting from poor sanitation, building and maintaining bridges across streams for transportation and/or so that children can attend school in the rainy-season. In terms of sensitisation, much appears to have changed in this regard. People are now broadly aware that climatic changes are likely to result in extreme weather conditions, bringing new pests and illnesses (including for animals) and potentially destroying houses and farms. People are equally aware of the importance of taking preventative action against such shocks, through some of the responses above. Participation in activities of ALP is often identified as the reason for being more aware of the impacts of climate change, and what is to be done. The CAAP and the PSP are regarded as a particularly important original source of information, and the VSLAs are seen as an important means of disseminating such information. The Community Wealth Ranking Index and the Climate Vulnerability and Capacity Assessment (CVCA) was not mentioned in any of the discussions, although this may be regarded as part of the CAAP. As has been mentioned previously, there are important differences in the uptake of such responses in Farfar and Kanyini. Whilst in Farfar many of the options have been taken up (by fairly large parts of the community), in Kanyini, awareness has not translated into initiative. Many participants noted that they had learned that housing and vaccinating animals prevented them from disease and ensured that animals were not lost. None however had built housing for animals, and those who had made use of a veterinarian service which had come to the community to vaccinate animals, had only managed to vaccinate a few of their animals (usually fowls). The same is true of trees to protect houses – many named this as a way of responding to windstorms (one of which destroyed many houses in 2011), but few appeared to have planted such trees. It appears that the perceived risks on non-action still present more attractive odds than incurring adaptation costs in the present. Future adaptation programming should ensure that incentives are strong enough (in relation to the perceived risks presented by climatic change) to trigger ‘protective action’

In Kanyini, apart from a new dry-season watermelon farming initiative (which has only recently started, so the results are not yet clear), the focus remains hand-outs, rather than, in the case of Farfar, where farmers are convinced of the need to better protect assets against climatic changes, and such actions have now taken on a life of their own. To illustrate this, presenting the contribution of ALP to Kanyini at the ALP reflection meeting, the Kanyini representative pointed only to hand-outs (see quotation below).

**“ALP supported farmers with cassava products for 40 farmers; CAAP developed with support of care; benefits from CAAP, improved variety maize for 10 farmers. 5 New VSLAs from ALP were established and they are mixed; before there were no men involved. ALP promoted a demonstration to show the difference between people using fertilisers and non-users: very good results with fertilisers. They were also given soy beans to try; they did very well with no challenges. However, a general challenge is that the rain pattern was not long. Vegetables are farmed in the dry-season, including watermelons for the first time after the study trip to Garu Tempane. Farmers in the community were given maize, 4 people were able to cultivate. They received trainings on animal rearing and building housing for animals; before were not providing any housing to them.”**

COMMUNITY MONITOR, KANYINI

Furthermore, whilst participants in Farfar attributed changes in responses to climatic change to ALP, they were not always clear on how. Adaptation (vaccination and housing for animals, latrines and infrastructure), at least in some components of livelihood portfolios, is increasingly a simple fact, seen to be driven by endogenous forces and information flow mechanisms. Changes are also often attributed to local government services, such as the Ministry of Agriculture, rather than directly to ALP (although ALP has clearly contributed to strengthening extension and other linkages with local government. This is in stark contrast to Kanyini, where adaptation strategies are seen as a deviation from the norm, and driven by assets and knowledge committed by NGOs. This difference between the two communities, which is seen across the 5 categories of responses listed above, may have two drivers. Firstly, ALP has been operating longer in Farfar than in Kanyini, has been fine-tuned (such as a training for women on small business), and is better embedded. Secondly, the much prized dry-season watermelon farming enables peoples financially to commit assets to new, climate smart techniques, even when there are significant financial barriers to entry. It is unclear how much weight to attach to each of these drivers in explaining the uptake of (ALP) activities in Farfar (as opposed to Kanyini).

## **2. DIVERSIFICATION AND ACCESS TO NEW, IMPROVED CLIMATE-SMART CROP AND SEED VARIETIES.**

In Farfar, the use of new seed varieties (in line with weather forecasts) is fairly widespread (amongst men). This signifies a transformational change, not only in the shift to more appropriate crop and seed varieties, but also because it relates to rainy-season farming, where farmers are relatively reluctant to take risks by experimenting with new crop or seed varieties. The Presbyterian Agricultural Station – Garu (PAS-G), the implementing partner in ALP in Farfar is often accredited with this change. It is clear that income generated through dry-season watermelon farming plays an important role in enabling this transition, since new crop and seed varieties are often costly, as too is the fertilizer which they invariably require. This is in contrast to Kanyini, where people unanimously agree that the rainy season is shorter today than in the past, and that a shift to 90 day maize varieties (as opposed to 120 day varieties) is necessary, but where any broad transition is still outstanding. Whilst ‘poverty’ is often blamed for this, the reluctance of committing existing assets to this transition (exchanging pigs or other animals for new crop varieties), suggests that poverty alone cannot explain the lack of uptake. It may well be that the adaptation is not (yet) considered urgent enough. It does appear that land, for instance, is plentiful in Kanyini (compared to Farfar), and anecdotally, it appears that Farfar’s problem of decreasing soil fertility is not shared to the same extent in Kanyini. In Farfar, whilst access to improved crop and seed varieties is attributed to PAS-G, the changes as a whole are clearly attributed to ALP.



Many women in Farfar appeared to have their own farms, including married women who had been given land by their husbands (many widows have inherited land). In Kanyini, this appears to have been less frequent, and women were exclusively engaged in contributing to the family farm. The fact that more women were farming in Farfar initiated interest and participation in the PSPs (for which crops to plant, and when to plant them) amongst women. Whilst women's farms are much smaller, and a change in control of land assets, from men to women would be an exaggeration, there is clearly better access to landed assets than in the past, as well as compared to Kanyini.

Livelihood diversification (even the limited scale in Kanyini) amongst women is attributed squarely to CARE/ALP. Whilst women in Farfar note that VSLA loans enable them to be able to diversify (pito brewing, shea butter processing), they note training on running small businesses which they have received through ALP, and in turn attribute VSLAs to ALP. It is perhaps illustrative that whilst in Farfar people speak largely of 'ALP', in Kanyini they speak largely of 'CARE'.

### **3. INFORMATION ON CLIMATIC CHANGES AS A BASIS FOR CROP/SEED DECISION MAKING**

Access to relevant climatic information and knowledge has vastly improved in both Farfar and Kanyini. Not only are people receiving daily updates on rainfall through SMS services as well as through radio programmes, the PSPs set out scenarios for the upcoming season (late rain, early rains, long rains or short rains), and make suggestions as to which (largely maize) crop varieties are most appropriate (long yielding, short yielding, drought or flood resistant). As in other instances, there are differences in uptake between Farfar and Kanyini in this regard. A Community Monitor in Farfar noted in an ALP reflection meeting that 45% of farmers received weather updates through their mobile phones. In Kanyini, two people appeared to have access to this service, and one of them had lost his phone, and as a result, no longer received the updates.

Furthermore, whilst Farfar appears to disseminate information (such as the PSP) through community meetings, structures for information flow in Kanyini appears more fragmented. Women appear to regard the Magazia (women's leader) as a women's representative, the youth (men) have a 'youth chief' whilst older men identify the chief and the 'Tindana' (landowner) as representatives. Young men, asked whether they had access to PSPs (and whether they used that information), noted that they did not get that information since 'old men and the chief shared it amongst themselves'. Asked what kinds of channels they thought would improve their accessibility to PSP, they noted that if the 'youth chief' was included, he would inform them of the outcomes.

In Kanyini, older men attributed much of the climate information, including the PSP to CARE, whilst young men and women did not make this connection. They instead noted that they listened to a radio programme on Sunday evenings where crop varieties and rainfall were discussed.

Whilst VSLAs do not serve as a source of climate information in and of itself, many women in Farfar noted that information was shared through VSLAs. In group meetings, they noted, time was taken to discuss weather forecasts and appropriate crop and seed varieties. This appeared not to be the case in Kanyini, where participants noted that VSLA meetings were largely used to discuss loans (although some indicated that domestic disputes and how to manage them was also a topic discussed within VSLA groups). Whilst other (non-CARE) VSLA groups exist in each of the communities, participants noted that prior to ALP there were fewer groups, and many were now members because of the new groups which CARE had created. Women in Farfar attribute what they have learnt (about climate change and how to address it) to VSLAs, which they in turn attribute to ALP. In Kanyini, this type of information was attributed to different community meetings (particularly the development of the CAAP), which in turn they attribute to CARE.

### **4. COLLECTIVE ACTION AND ADVOCACY:**

In Farfar, there is a clear increase in engagement with local government regarding services such as agricultural extension, boreholes and water sources. This is evident through a number of examples, and also was noted also by participants of Focussed Group Discussions. Whilst women generally used VSLAs as a vehicle for organising around issues (more boreholes, for instance), men appeared to organise informally around interests, and take issues up with Unit Committee members, or directly with the Assemblyman. It is clear that, whilst interests may be divided in Farfar (especially along party lines), capacities to organise and act collectively are relatively strong (and are said to have

improved). VSLAs, it was noted, provide an important framework in this regard. Participants struggled to attribute increased capacity to organise and lobby to a single factor. ALP is mentioned, but is not alone in driving increases in such capacities. Furthermore, whilst this does indeed appear to be the case (with a number of examples being cited), it appears weaker in the realm of dry-season watermelon farming, where farmers are afraid to confront each other regarding unsustainable practices and non-compliance with any bylaws goes unsanctioned.

In Kanyini, it was difficult to get a sense of structures and systems for advocacy, since participants struggled to identify issues being advocated for, in which they were involved. The church served as an important focus for social life, although none of the participants were able to identify any types of adaptation-relevant collective action (advocacy, for instance) coming from the church. One issue being taken up by different sections/wards within the communities is being driven by a section of the community which is not connected to the electricity grid. Several women also noted that officials from the district assembly had come to their wards and collect weekly contributions, which after several months, may be used to sink new boreholes. This type of collective action is not regarded as collective action, and is attributed to a fortuitous interaction with the district assembly, rather than an attempt to organise around specific issues and ensure that services are delivered upon.

### 7.3.1 ADAPTATION AND SUSTAINABILITY

In Farfar there is a clear increase in adaptive capacity, and much of this originates directly or indirectly through ALP mechanisms. VLSAs are being used to diversify livelihoods (especially by women), new crop varieties are being employed, and PSPs are providing relevant information in terms of choosing amongst a host of different crop and seed varieties. Whilst there is not enough quantitative data to be categorical, it does appear as if some of the 'upward trend' in the uptake of adaptation measures carries an ecological cost. For instance, through VSLAs, local tree coverage is being exchanged for diversifying livelihoods, and through (unsustainable) dry-season watermelon farming practices, old crop varieties are being exchanged for fertilizer and new crop and seed varieties. It should (again) be emphasised that there is not enough data to be categorical about this assertion. However, the danger posed by this trend (increased uptake of adaptation measures is coupled with a diminishing of the natural resource base), deserves closer inspection.







## 8. DRIVERS AND BARRIERS OF ADAPTATION

The ACCRA-LAC Framework sets out five pillars for strengthening local adaptive capacity; asset base, innovation, institutions and entitlements, flexible and forward thinking decision-making and governance and knowledge and information (see section 4 on Analytical Concepts). In principle, increasing any of these pillars, without negatively affecting another of the pillars, strengthens local adaptive capacity. On the ground, different factors may drive or serve as barriers to changes in the five pillars of adaptive capacity set-out by the ACCRA-LAC Framework, which also intersect in several ways. For instance, the manner in which natural resources are exploited (sustainability), has implications for the asset base; VSLAs may drive innovation; and lobbying and advocacy capacity may strengthen the capacity of governance structures to be more flexible and forward thinking.

The following sections identify the major drivers and barriers to strengthening local adaptive capacity in Farfar and in Kanyini. In each of the sections, attention is paid to how prominent dynamics drive or inhibit the five pillars of the ACCRA-LAC Framework. What emerges is that adaptation mechanisms rarely affect only one pillar, or even, in one direction. For example, dry-season watermelon farming may increase income (asset base), facilitate further diversification and enable the uptake of new climate-smart practices in rainy-season farming (knowledge and information and innovation). At the same time, the unsustainability of current watermelon farming depletes natural resources, and in this way, is equally responsible for reducing the (natural) asset base. Such contradictions are evident across the adaptation spectrum, and an effort is made to highlight such contradictions as far as possible. Trying to establish an overall result (balancing pros and cons of, for instance dry-season watermelon farming) is beyond the scope of this study (and perhaps not possible with any level of accuracy), but certain contours emerge, contours which may inform future adaptation programming.

### 8.1 VILLAGE SAVINGS AND LOANS ASSOCIATIONS (VSLAs)

Principally, Village Savings and Loans Associations (VSLAs) serve as source of reliable finance. At the community level, they are designed to be an important cog in the adaptation wheel; without finance, new climate-smart crop and seed varieties (and much needed fertilizer) and other climate smart-practices (housing and vaccinating animals, for example) cannot be adopted, and without the adoption of new climate smart practices and techniques, climate information and access to local government (for services) are largely irrelevant.

It appears that for women in particular, Village Savings and Loans Associations (VSLAs) serve as the most important driver for enabling climate-orientated decisions through loans and annual share-outs. VSLAs, however, serve not only as source of reliable finance for diversifying livelihoods and paying non-income generating expenses (school fees, medical expenses and covering food shortages), they also serve a host of other social functions, such as a means for diffusing information and replicating successful innovations. Despite this, there is a large divergence in

the effectiveness of VSLAs (in strengthening adaptive capacity), both across social groups (young men, older men, young women and older women) and across socio economic groups (asset rich households vs asset poor households), as well as across communities (Farfar and Kanyini). Importantly, whilst VSLA members from asset-rich households appear to be confident in their capacities to make the repayments on their loans (and therefore comfortable with taking loans to diversify into new livelihoods, as well as crop diversification), those from asset poor households are far more conservative in taking loans. They instead prioritise loans for non-income generating expenses, such as paying school fees, medical expenses and for covering food shortages in the case of poor yields. This distinction is important; the first (livelihood and crop diversification) serves as a proactive adaptation, seeking to combine adaptation with new opportunities for the improvement of wellbeing. The second (covering non-income generating expenses), whilst perhaps strengthening adaptive capacity in a step-wise fashion (in allowing people to better absorb shocks they could not have absorbed previously), serves as one off stepwise increase in adaptive capacity, rather than as a transformational change which increases peoples' capacities to also capitalise on new opportunities presented by changing climatic conditions.

In explaining this difference between groups, a key distinction appears to be the existence of multiple income streams; those with multiple income streams appear to take loans more frequently, and are more innovative in terms of what they do with loans, who do not possess an existing income stream, are more averse to taking risks, for fear of not making repayments and being expelled from the group (in which case they lose access to the VSLA loan buffer altogether, as well as the share out – of key priority of poorer VSLA group members). How second income streams come to exist varies by individual. Despite this, it does appear that women from households in which husbands are successful and engaged in forging more resilient livelihood trajectories are more likely have second income streams. This is in part because women are largely dependent on their husbands for a parcel of land to farm. It appears that women benefit from husbands who see value in their wives farming a separate parcel of land, focussed generally on different crops (since crops are highly gendered), as a diversification of household income. For instance, Abebetu Laar (see section 9 - Adaptation Champions), whose husband is a successful watermelon farmer in Farfar, owns a bar, has purchased a three-wheeled motorbike and provides transportation services, and engages in several ALP activities (new crop and seed varieties, the PSP, rain-gauge monitor), was able to access land from her husband once she had acquired fertilizer. Her husband only gave her land after she had acquired fertilizer since he believed the crops that she wanted to plant would only make a significant contributing to household income and/or food stocks, if she used fertilizer. Following on from this, Abebetu took a loan from a VSLA to trade cloth, and start a small business making school uniforms. The confidence to take the loans to further diversify income was a result of having a series of successful farming seasons (on her own plot of land). To conclude, since it is clear that women who already have an existing income stream are more likely to take resilience-strengthening loans from VSLAs, additional support (training, guidance, tutelage etc.) might be given to those women to develop a first income stream. Thereafter, it appears, they are more likely to further diversify livelihoods through additional loans.

In Kanyini, where there is little natural potential for dry-season farming, and therefore significantly less money in circulation, young women explicitly stated (unprompted), that they do not take loans for new business ventures because 'if the market is not there', they will struggle to repay loans and, as a result, lose access to important resources for paying school fees and filling gaps in household food supply. In Farfar, in contrast, several women interviewed detailed how VLSAs were employed, together with sophisticated business and adaptation decisions making, to diversify livelihoods.

**'I used to process shea and sell the butter. But shea is a luxury item, and I noticed that in the lean periods, when I needed money, people were not buying shea butter. So I took a loan from the VSLA and started rice processing. I still do the shea butter, but the rice processing is now my main business.'**

OLDER WOMEN, ASSET RICH HOUSEHOLD, FARFAR



In Kanyini, some women indicate that when taking loans to cover (non-income generating) costs, they might take a little extra, and buy inputs for pito brewing or processing shea butter. Most however noted that they repay such loans through the felling of trees, and the production of charcoal for selling. Because at the same time women indicate that as a result of the VSLAs, they no longer need to travel south to earn money to pay school fees and/or buy food, to some extent VSLAs have shifted the (over)-exploitation of natural resources to the community, rather than distributing risk over space (to the South). One interviewee (one of the rain gauge monitors) in Kanyini noted that, because of VSLAs, more people were felling trees. This was also the case in Farfar, although there appears to be more diversity in the manner in which women in particular repay loans (with a larger emphasis on small-businesses, and using income generated from those businesses to make repayments).

As a result, whilst VSLAs are unanimously regarded as being beneficial for adaptation (the most valued mechanism amongst women in both Farfar and Kanyini), there are some questions about the long terms contribution of VSLAs to strengthening adaptive capacity. By-laws might be created around the means of repayment, although this would be difficult to monitor, and might further marginalise the poor in access to the benefits which VSLAs undoubtedly provide.

### 8.1.1. VSLAS A SOURCE OF FINANCE

The primary (adaptation) benefit of VSLAs is that they enable members to take loans. Especially women perceive this an enormous benefit, and attributed many of their responses to climatic change as being made possible through their membership of a VSLA group. In both communities, women suggest that the VSLAs have given them a reliable source of finance, without having to 'beg' from others, which they considered to be shameful).

Whilst it has been noted that VSLAs are used to diversify livelihoods and crops, and there is evidence of this within the study, the extent of this, especially amongst women, is questionable (as opposed to utilising loans to cover non-income generating expenses). Based in data from Conti (2016) for Farfar, table 8.1.1 below, shows the types of loans taken by women in Farfar (percentage of women taken a loan for that purpose – N=90). Despite this, individual interviews and Focussed Group Discussions conducted for this study showed that women do use VSLA loans to diversify livelihoods through VSLAs (see section 9 - Adaptation Champions), but this percentage may be smaller than anticipated.

**Table 8.1.1.** *Types of loans taken from VSLAS in Farfar (percentage of people taking a loan for a purpose, n=90)*

WOMEN	MEN
Healthcare (88.7%)	School Fees (77.4%)
School Fees (81.1%)	Healthcare (74.2%)
Food (64.2%)	Watermelon Farming (74.2%)
Cope with Crops Damaged by Storms (60.4%)	Cope with Crops Damages by Storms (51.6%)
Non-Watermelon Agricultural Inputs (34.0%)	Non-Watermelon Agricultural Inputs (38.7%)
Festivals (Funerals etc.) (30.2%)	Home Repair (32.3%)
Home Repair (30.2%)	Food (25.8%)
Watermelon Farming (22.6%)	Buying Animals (25.8%)

SOURCE: CONTI, V. 2016

From table 8.1.1 above, it appears that less than 22.6% (20 of 90 individuals) of women indicate that they have used VSLA loans for diversifying livelihoods through new business ventures (the survey option in this regard was: 'Investment for an economic activity e.g. retail, production', which appears straight forward and unproblematic). Whilst there is no such (survey) data for Kanyini, women in Kanyini more explicitly indicated that they did not take loans for business ventures. table 8.1.2 below shows the loans of each group (from Focussed Group Discussions). As in Farfar, many of the loans taken cover non-income (non-diversifying) activities and whilst repayments are made through income-generating activities, it appears that in most instances, some of the loan taken (for instance, for school fees or food) is used to purchase shea nuts for processing, or guinea corn for brewing pito, which is then used to repay the loan. This should not be misinterpreted as a diversification of livelihood (they are not regarded new 'businesses').

Aside from a source of finance for covering costs and facilitating adaptation-orientated investments (diversification of livelihoods, buffer against food shortages, paying for school fees and health care), VSLAs also serve a number of other important functions, namely, as a source of information (regarding crop varieties, market prices, input suppliers etc.); a platform for innovation; a source of solidarity and as a mechanism for (domestic) dispute settlements. It is clear, in each of these functions, VSLAs in Farfar were significantly better developed than those in Kinyani. Whilst this might suggest that VSLAs 'get better with age' (since those in Farfar have been around longer and are more established), other factors may also have contributed (presence of dry-season farming; sophistication of micro-finance schemes which came prior to ALP, level of engagement, the provision of training, the quality of existing governance structures etc.).

**Table 8.1.2.** *Loan utilisation, means of repayment and other benefits of VSLAS in Kanyini*

	What Are Loans Being Taken For	How Are Loans Being Repaid	Other Benefits
Young Woman	School Fees	Charcoal and firewood	We no longer do Galamsey or Kayayei
	Buying food	Pito Brewing	They give advice on how to solve quarrels
	Tractor services for ploughing	Sheanuts for processing	
Old Men	Tractor services for ploughing	Selling Chickens	They don't have to go to Wa to get money.
	Buying maize when the price is low, and selling when price is high		When there is an instant problem (school fees, funeral etc.), you can get your money very fast.
	Borrowed money to send his wife to a funeral in Techiman	When they harvest, they will sell some produce and pay it back.	Share-outs
		Profit from speculation on price increases.	Mission Aid (they also have VSLAs), they came with a new method of applying chemicals with the maize - they brought the weedicide and pesticide and people borrowed from the groups to buy the chemicals.
Young Men	School Fees	Waged labour	Share-out's
	Tractor services for ploughing	Proceeds from other businesses (bar).	Some of the groups will help other community members, even if they are not members.
	Buying Fertilizer	Selling farm produce,	Some groups will give funeral support even to those who are not members. The money is with us so we cannot be cheated The groups get information - MissionAid Africa gave them information on agricultural practices. An NGO (MissionAid, CARE) charges subsidised rates for ploughing to some groups. Less time spent doing galamsey
Old Women	School Fees	Charcoal Production	Fosters a culture of saving.
	Tractor services for ploughing	Pito Brewing	Share-outs
	Buy food to cover shortages in case of drought.	Sheanut Processing	Solidarity - she wanted to farm cowpeas, and one of the members of her group gave her cowpea seeds, enough for one acre.
	Medical expenses		Innovation - a man in her group opened a bar and was selling beer. So she also opened a bar, and started selling beer. A storm came and destroyed the bar. She doesn't have money to reopen the bar.
	Loans for business in tandem with loans for school fees, in order to generate income and repay the loan.		We don't have to go to the galamsey to pay school fees, we can just take a loaned and then repay slowly.

### **8.1.2 VSLA'S AS SOURCES OF INFORMATION**

VSLAs serve as an important vehicle for diffusing a variety of different types of information. There is a stark contrast in this regard between Farfar and Kanyini. Whilst loans and share-outs were regarded as the most important functions of VSLAs, women in Farfar noted that VSLAs were also used as a platform for disseminating and discussing a host of different types of information such as community developments, weather forecasts, crop and seed varieties, sanitation issues and market developments. In Kanyini, this function appears much more limited, with participants noting that VSLA group meetings are focussed more keenly on loans, repayments and share-outs.

### **8.1.3 VSLA'S AS PLATFORMS FOR INNOVATION**

Wealthier members of VSLAs appear more likely to innovate. Especially those who do not have more than one income stream, are unlikely to borrow money for innovative business practices. By and large, they prioritise school fees and food in the event of shortages, and appear unlikely to do more with loans, since failure in business might mean that they cannot make loan repayments, they can no longer pay school fees and/or take a loan for food in the case of low yields and/or crop failures. That being said, women noted that through VSLAs they are exposed to business ventures (and are able to see which business ventures work). They noted that group members who 'do well', are likely to be copied by other members who have the capacity to do so (or are willing to take extra loans from their VSLA). In this way, the VSLA's function as excellent platforms through which good innovation are shared and uptake is diffused.

### **8.1.4 VSLAS AS SOURCES OF SOLIDARITY AND COLLECTIVE ACTION**

It is clear that VSLAs also provide a much needed source of solidarity amongst its members. This is clearly the case in both Farfar and Kanyini, for instance, women in Farfar noted that if they required land, they were likely to ask within the VSLA if members know of people ('good Samaritans') willing to rent out land. Some VSLA members are likely to be involved in brokering such a deal. In Kanyini, one woman indicated that she had asked another member of her VSLA who was growing cow peas, if she could purchase some seeds from her. In the end the woman gave her seeds for half an acre of cow peas, which yielded very well. The women did so because she is a member of the same VSLA and they meet weekly, and they have come to know each other very well. In some VSLAs, no interest is charged when loans are taken for medical emergencies, whilst in others, more emphasis was placed on helping out members in the event of a family death (including funerals).

VSLAs in Farfar in a number of instances also served as a structure for collective action in accessing institutional entitlements. One VSLA in Farfar noted that they had approached one of the CMs and asked him to give notice to members of the District Assembly that they wished, as a group, to engage in 'block farming'. They were provided with support (apparently through a programme encouraging block farming). Another group (successfully) took the same approach regarding a new borehole. Many VSLA groups also provide, as a group, daily labour on local farms for those farmers who require additional labour services. Wages earned by the group in this way are put back into the box, and may be used for loans by group members.

### **8.1.5 VSLAS AS A MECHANISM FOR (DOMESTIC) CONFLICT RESOLUTION**

Women note that mechanisms to resolve domestic conflict is likely to come through VSLAs. For instance, they often discussed domestic quarrels with the group members, especially when one of the group members was involved in a domestic dispute. VSLAs were regarded as a safe place to discuss issues arising in the household between a husband and wife. They indicated that VSLAs provided a place to seek council. In Kanyini, older women indicated that they were often consulted on issues relating to domestic conflicts amongst younger members. If the man (or woman) was not in the VSLA, then a committee might be established of two or three people from within the VSLA to go and talk to and advise the given man in terms of the grievances of his wife. This, they noted, had become an accepted means of settling domestic disputes.

### 8.1.6 THE LIMITS OF VSLAS

It appears that, especially amongst men, loans are infrequently taken to fund agricultural inputs required for the implementation of climate-smart technologies, such as new short-yielding crop varieties, and the fertilizer they require (except for watermelon farming in Farfar). The reasons given are, firstly, the maximum loans that one can take are generally not enough to cover these costs, secondly, one can only take a loan for one thing at a time (seeds or fertilizer or ploughing services) and, thirdly, there is a rush to take loans during this period (at the start of the farming season), and VSLA boxes are often empty at this time. Women, who farm smaller portions of land, and are more inclined to farm crops which do not require fertilizer (Bambara bean, groundnuts etc.) are relatively more likely to use VSLAs to finance rainy-season farm inputs. The difference between Farfar and Kanyini in terms of the uptake of climate-smart crop varieties is better explained through dry-season watermelon farming, because of which, there are large sums of money in circulation, rather than through more effective use of VSLAs. Despite this, it does appear that especially women in Farfar are more likely to use VSLAs to diversify income and crops, rather than using loans exclusively for covering non-income generating costs, as is the case in Kanyini. It appears that training on small business enterprises, which has been provided to women in Farfar, but not in Kanyini, has had some impact in increasing the likelihood that women take loans to diversify income.

The felling of trees to produce charcoal (for selling) in order to make loan repayments and VSLA contributions, poses a fairly serious risk to the sustainability of VSLAs. Especially young women in Kanyini noted that they no longer need to travel because loans taken from VSLAs are able to cover school fees and food shortages when they occur. Whilst women regarded this as one of the main benefits of VSLAs, they also indicated that the primary means of paying both weekly VSLA contributions, as well as loans (primarily for school fees and to cover food shortages) was to 'burn' charcoal and sell firewood. As a result, whilst exploitation of natural resources in the south initially covered school fees and food shortages, those expenses are now covered through the (unsustainable) exploitation of local resources. Importantly, the reduction in tree cover in Kanyini is perceived to be responsible for both 'wind storms', which destroy property and farms, as well as, changing rainfall patterns (with rain falling later in the season, and being shorter). Whilst this downside of VSLAs (the relocation of unsustainable) natural resource exploitation from southern-based resources basis to local natural resource bases does not fully offset the positive contributions of VSLAs to local adaptive capacity in the short-run, it does challenge some of the positive perceptions of VSLAs in strengthening local adaptive capacity in the long run.

### 8.1.7 ANALYSIS OF CHANGE

In Farfar VSLAs appear embedded institutions, both socially and economically. Particularly for women, they serve as a focal point for socio-economic life and an important component of women's identity. More and more women appear to be using VSLAs as a means of diversifying livelihoods into small-scale enterprises. The use of VSLAs as structures for collective action appears to be increasing, with recent examples of both lobby and advocacy through VSLAs, as well as offering a labour resource (as a group) for local farmers. There are some issues around the inclusion of poorer community members, with indications that they are less likely to use VSLA loans to diversify income, and instead use the loans to pay existing expenses, such as school fees, and for emergencies, such as medical expenses (also for children) and to buy food in case of shortages. There is also an increasing trend for men to take loans through their wives, which is problematic, since their wives bear the consequences for failure to repay loans. It appears also that farmers (male members of VSLAs) take loans for introducing new, climate-smart crop and seed varieties. This appears to be largely as a result of the loans required (at the scale required for family farms) being too large to be covered by VSLAs. The money required for such strategies appears to come largely from dry-season watermelon farming. Women, who farm smaller pieces of land (and often different crops), are more likely to take loans for farming.

In Kanyini, whilst an increasing number of people are joining VSLAs, including men (having been implemented previously by a women's empowerment NGO, it was regarded as something for women), it appears that VSLA loans are used almost exclusively for paying existing expenses such as school fees, and paying for unexpected costs, such as medical expenses and to cover food shortages. This results from a fear of an inability to repay the loans, and expulsion from the group (which results in no longer having access to the loans). There is no indication of a change in this trend, especially amongst women. Despite this, VSLAs are regarded as an increasingly important source of information, as well as means for settling (domestic) disputes. How the increasing number of male members will affect this function, remains to be seen.





## 8.2 RISK AND UNCERTAINTY

How risk and uncertainty are managed in the context of climatic change is fundamental in understanding drivers and barriers to adaptation. Risk and uncertainty are evident throughout local adaptation decision-making mechanisms, both in terms of climatic change itself, and in terms of how many and which assets are committed to various adaptation strategies. In this subsection, we deal with risk in two ways; on the one hand, risk taking is required in order to foster and diffuse new innovations. On the other, people face climatic risks, and how well equipped people are to manage those risks largely defines their ability to take that risk to innovate.

### 8.2.1 RISK-TAKING FOR INNOVATION

Risk is not something which one can be categorical about in the context of climatic change and variation. It may be positive (risks are required for entrepreneurship and innovation) or negative (an implication of taking risks is that one may lose). How much risk should be taken (for instance, for innovation)? At which risk-level does risk-taking become irresponsible? Furthermore, participants of the study in both Kanyini and Farfar appeared to be averse to risk in some respects, such as rainy-season farming, but willing to take significant risks in others, such as in watermelon farming, making it difficult to establish patterns. In discussions for the study, people displayed an unwillingness to take risks with regard to rainy-season farming, including adopting new, climate smart varieties. This led to a conservative approach, where new innovations have to prove themselves over several harvests before they are taken up more broadly. Young men in Farfar, for instance, noted that they might experiment with new crops in backyard plots for several seasons before adopting the new crop more extensively in their farms (and that seeing other people succeed with new crops was not always enough, since soil fertility fluctuates significantly across farms). The same group appears to take large gambles on dry-season watermelon farming, continuously trying new seed varieties, chemicals and fertilizer. The question of what will be done if watermelon farming is not possible due to unsustainable practices was largely met with laughter, and the same young men noted, we will go south again to do galamsey. The presence of an alternative (and especially one which itself involves high levels of risk, such as galamsey), might explain in part the willingness to take risks in dry-season watermelon farming, as opposed to rainy-season farming in Farfar.

In Kanyini, the risks associated with galamsey (both physical risks, as well as risks associated with income, which may be significant if gold is found, or maybe nothing, if gold is not found), were preferred by young men over farming-for-money, which is safer, and in which a level of income is guaranteed. Whether such risks pay off or not, serves to ultimately drive or hinder efforts to strengthen adaptive capacity (see 8.3. Adaptation and Migration).

Poor women in both Kanyini and Farfar were risk averse in loans taken from VSLAs. Having access to VSLA loans for paying non-income generating costs such as, school fees, medical costs and to cover food shortages was considered so valuable, that risk was avoided. As a result, poor women were reluctant to take loans for businesses since, if there turned out to be 'no market', they might not be able to make a repayment, and be asked to exit the group (thereby not having access to VSLA loans for non-income generating expenses). Conversely, men and women with an existing income stream, who were able to pay loans for new businesses even if the business those loans were intended to facilitate fail to deliver profits, are able to pay the loan, seemed willing to take risks with VSLA loans. The level of existing diversity and poverty appeared to be the most explanatory variable in how willing people were to take risks, either to innovate, or take up existing innovations.

Some of this has emerged organically, and was perhaps unintended, such as, VSLAs as a platform for group members to be exposed to successful (and less successful) innovation. However, VSLAs also provide important platforms for discussing advisories of the PSPs. Furthermore, emphasis in the development of the CAAP on the importance of diversifying livelihoods in order to strengthen adaptive capacity appears also to have triggered a local willingness to use loans as start-up capital for new businesses, although as pointed out, there are important distinctions across wealth categories. Training provided to women in Farfar (but not in Kanyini) on establishing and running new small business enterprises appears also to have played a role. Despite this, whilst people struggled to identify concrete benefits of the CAAP, VSLAs do seem to serve as an important vehicle for operationalising separate ALP activities and outputs in Farfar, and it is clear that VSLAs would function less effectively (in terms of adaptive capacity) were it not for the CAAP and the PSPs (those two in particular). For men, this is, importantly, restricted largely to information, since the size of the loans required to up-scale new climate-smart seed and/or crops in farms was too large to be covered by a VSLA loan. As a result, whilst information from the CAAP and the PSP was disseminated through VSLAs, VSLAs were not regarded as the primary way of operationalising climate-smart rainy-season farming. This was largely attributed to income generated through dry-season watermelon farming.

In Kanyini, whilst participants noted that the CAAP had set out a series of possible diversifications of livelihood, they appeared to be regarded as either unachievable or not-relevant. Occupations such as hairdressing, electricians and masonry were mentioned, but participants questioned whether there was any market in Farfar for such occupations. The PSPs were equally not regarded as particularly relevant, since very few people had access to new seed and/or crop varieties.

**'I am a member of four different VSLA groups. I can only take one loan per group, so from one I will take a loan for ploughing my farm with tractor. From another I will take a loan to buy fertilizer, from another for seeds and from another for something for my bar. Because of the money I earn from the bar, I can have a collapse and still manage to pay. And I want to be a member of all of them because of the share-outs. It's a way for me to make money. But if I'm a member, I'm obliged to take a loan'**

BAR OWNER KANYINI (WEALTHY, YOUNG MAN)

**‘We don’t take loans to do business. We pay school fees and buy food. If we take loans to do business, and the market doesn’t pick, we risk being expelled from the group. Then how will we pay school fees and buy food when we need?’**

YOUNG WOMEN’S FOCUSED GROUP DISCUSSIONS, KANYINI

### 8.2.2. CLIMATIC RISKS AND DISASTER RISK REDUCTION:

A major climatic risk faced by people in both Farfar and Kanyini is damage to households and farms as a result of windstorms and/or heavy rainfalls. Furthermore, in both Farfar and Kanyini, participants noted that planting (economic) trees around houses was an effective means of mitigating such risks. In Kanyini, where a strong windstorm in 2011 had destroyed houses, participants indicated that they had, in responses, and on the advice of NGOs, planted trees around houses. In Focused Group Discussions with women, they noted, such trees had not been planted, because their husbands had not done so. Looking around Kanyini, it indeed appears that few houses have done so. As a result, houses are largely as exposed today to the risk of windstorms destroying houses as they were in 2011. It may be that with the intensity of tree felling, this risk has increased.

Asked why they had not themselves planted trees around houses, women noted that firstly, this was the role of men, and secondly, they did not possess the financial means to do so. There are two revealing illustrations which disclaim this answer. Firstly, the District Assembly has a nursery from which individuals are allowed to take five seedlings each, free of charge. The second is that many women own several pigs. Together, the pigs represent a fairly substantial amount of wealth. Despite this, women showed a distinct reluctance to exchange pigs for, for instance, shorter yielding, and climate smart maize varieties, even when it was suggested that the difference in the value of yields between using traditional varieties with no fertilizer and new varieties with fertilizer may be larger than the value of the pigs required to make the transition to the new varieties. In the same way, one participant (woman from an asset rich household) with several large pigs, noted that she had not planted trees around the house to protect it from windstorms because she lacked the financial means to do so. When it was suggested that she sells a pig in order to purchase the trees, she stated, ‘you have given me an idea’. Finally, asked how she would pay for repairs to the house if it was destroyed by windstorms she noted, ‘I will sell pigs’. In short, women in Kanyini keep pigs largely for emergencies, and they are regarded as such, rather than a means of mitigating climatic risks. Put differently, the value attached to pigs as a means of coping with the consequences from shocks is more than their value attached to pigs as ways of financing mechanisms for reducing the risks of (climatic) shocks. The reasons for this are many, and are probably inter-related. The perception of the risk of a new windstorm is apparently too low to prompt proactive spending (in pigs). Furthermore, as is the case with cattle, there is significant cultural momentum in pigs being defined as a buffer in the event of emergencies (climate or non-climate), and as an indicator of wealth, rather than an economic mechanism. It certainly also relates to the financial roles played by women in terms of household finances. As elsewhere, men are allowed (even encouraged) to take risks, whilst women provide a financial backstop when things go wrong. This division of financial responsibility is clear in Kanyini and whilst these roles are not fundamentally different in Farfar, what has changed is an increase in the level of confidence (of both men and women), in the tools available to women to increase both income and income diversity (such as VSLAs as well as training and other forms of capacity building for women, in farming practices, for instance)

One (poor) woman had clearly planted trees (see image in header) along an exposed wall of her house. Her husband had left her several years ago, and now lived in Wa with another woman. She received no support from him to raise four children. Prior to 2011 she had saved money through farming-for-money in the south to open a bar. She built an extra room attached to her house to house the bar. In 2011, a windstorm ripped the roof off her bar, and destroyed the walls. The following week she travelled to Wa and purchased 6 mango seedlings, and planted them along exposed walls of her house. Based on this example, it appears, unlike the case with risks for innovation that, not the level of poverty defines how/if people mitigate risks, but how affected people have been by previous climatic shocks. Whilst it is difficult to generalise on the basis of one case, it does appear that this woman was not restricted by

the household financial roles assigned to women (in relation to men) and in terms of adaptive capacity (at least in dealing with windstorms), she was significantly better off than many households with men and women, and with greater financial capacity.

**‘I saw somebody had opened a bar and I wanted to do the same. I saved, and added a room to the outside of the house and made a bar. When the windstorm came [2011], it destroyed everything, including my bar. The roof was ripped off, and some of the walls collapsed. That week I went to Wa and bought mango tree seedlings and planted them outside my house to protect it in case those storms came again.’**

OLDER WOMAN, ASSET POOR HOUSEHOLD, KANYINI

Asked about the kinds of mechanisms which help people to better manage risks and uncertainty, participants pointed either to the PSPs (in Farfar) or to VSLAs (Farfar and Kanyini). PSPs are regarded as the primary means of managing uncertainty in the area of farming. In Farfar the PSP is widely seen as relevant, and both men and women engage actively in meetings through which scenario planning is disseminated. This however applies only to those who can afford fertilizer, which in Farfar appears to be a much higher percentage of both men and women than in Kanyini. For poorer members of the community, who cannot afford new seeds and/or fertilizer, the PSPs are not relevant, and therefore do not contribute to the capacity of those member’s adaptive capacity. Poorer women pointed to the VSLAs because, ‘if the yields are low because the rain does not come, or if farms are destroyed, we can use the VSLAs to buy food and manage’.

### 8.2.3 ANALYSIS OF CHANGE

In Farfar people appear to be increasingly comfortable with taking risks for innovation. This is encouraging, especially for women, whose financial roles within households has been to provide a financial backstop in case of sudden disasters (crop failures, illnesses etc.). Women in Farfar indicate that VSLAs provide an excellent platform for ‘seeing what works’. In short, more entrepreneurial members of VSLAs (or those better positioned to take risks as a result of multiple income streams and/or originating from an asset rich household) make attempts to start new businesses. Other women, who might ordinarily be more risk averse, are able to see what works, and in that case, emulate those businesses models. The VSLAs also provide a means for disseminating information regarding seasonal forecasts (via PSPs) and climate information. Women are made more aware of risks and uncertainties and also, appropriate responses (often through discussions at the VSLA level). Men, many of whom derive income from dry-season watermelon farming, engage in the PSP more directly. This serves as a source for innovation (new crop and seed varieties), as well as better awareness of risk and uncertainty, and appropriate responses. Diversification (into for instance transportation), is regarded primarily as a means of increasing income, rather than a means of reducing exposure to climatic changes.

In Kanyini, people are increasingly aware of the risks and uncertainties posed by climatic changes. This appears to be based largely on individual experiences, rather than engagement with CVCAs, PSPs the CAAP or other ALP mechanisms for change. The emphasis of the contribution of ALP continues to be in ‘hand-outs’, in the form of new crop/seed varieties given to selected farmers. Whilst there is a wide consensus that the new varieties yield better than the old varieties (largely based on these demonstrations), participants note they lack the financial capacity to introduce the new crop varieties. This does not appear to be whole truth; it does appear that the risks and uncertainties associated with climatic change are not regarded as acute to enough to prompt proactive measures. Tree planting around houses to protect houses against windstorms does not appear to be widespread, even amongst houses with visible assets (animals) that might be exchanged for trees.





## 8.3 GOVERNANCE, ADVOCACY AND COLLECTIVE ACTION

A key component of adaptive capacity is the capacity of communities to mobilise, be aware of entitlements to public services, and advocate for such services (extension services, roads, water infrastructure etc.). This may increase a communities' asset base, facilitate good governance structures (institutions and entitlements) and access to relevant knowledge and information. Usually, larger infrastructure required for strengthened adaptive capacity (i.e. roads and dams) can only be provided by local level governance structures. In the same vein, that the governance structures are able to provide more 'liquid assets' such as agricultural extension, healthcare services and high-quality education, is equally imperative if a meaningful strengthening of adaptive capacity is to be achieved. Indeed, that governance structures are flexible and anticipative is one of the five pillars of the ACCRA-LAC (flexible and forward thinking governance and decision making) and therefore prerequisite for local adaptive capacity. Conversely, the politicisation of local services, by reducing the quality of local governance mechanisms, institutions and entitlements, serves as an important barrier to adaptation.

### 8.3.1 ADVOCACY

The capacity to organise, lobby and advocate (and know to which services one is entitled) is an important driver of adaptive capacity. Agricultural extension, availability of boreholes, health facilities and schools, as well as for dams and other water sources for dry-season farming, livestock and domestic uses clearly push local adaptation forward, and the capacity to access such services through advocacy is an important driver of adaptive capacity. This capacity, unsurprisingly, has been an important focus for ALP. In old ALP communities, the importance of advocacy appears to have been incentivised through the (lobbying for and) establishing of health facilities in the community. Participants asked about advocacy activities in the community invariably point to the health compound. Thereafter some (in Farfar) are able to point to boreholes.

Certainly, the CAAP has increased awareness about the need to advocate the DA for the provision of services. Despite this, in Farfar, little of those services prioritised in the CAAP have been realised (the health facility is not yet complete, and as far as I understand, the nurses are staying in houses within the community, not in accommodation at the health facility as was intended, and there are no examples of the DA building any roads or bridges). A sense of community engagement largely lacks, although there appears to be plenty of engagement with the DA in smaller groups (see below). As part of ALP, in each the communities, an elected Advocacy Committee has been established, consisting of both men and women. In Farfar, whilst there were efforts to advocate for DA services, some very successfully, the Advocacy Committee had no real presence. Once, a VSLA group who wanted to practice block farming as a group, had asked a community member to take up the issue with the DA, and had done so, with some success. People felt free to approach the Assemblyman or members of the Unit Committee to make suggestions regarding community development. Men were more engaged in community development, although women's initiative did not appear to be discouraged (the VSLA group who had sought to do block farming consisted largely of women).

It seems as if the relative success of other advocacy channels (in advocating for DA services, not necessarily with much success) has made the Advocacy Committee redundant. Whilst men appeared more likely to approach the Assemblyman (or the unit committees) directly, women appeared more likely to engage the DA and other organs of Local Government through CMs. As indicated elsewhere, one VSLA group (consisting primarily of women) had engaged a CM for him to highlight to the DA their desire to start block farming, whilst another had engaged a CM to highlight the need for additional boreholes in the community.

In Kanyini, in contrast, few channels appeared to offer channels for advocacy. Asked if there were any examples of services for which they have lobbied (in which they were involved), most pointed to boreholes which, upon closer investigation, were not lobbied for, but for which the DA came to community and residents made weekly payments until they (as a participating group) had saved enough money for the DA to sink a borehole. This was always done by section, ward or sub-community. One sub-community connected to the power grid lobbied the DA to be connected, largely through a series of letters which have been presented to the assemblyman. Here, where an Advocacy Committee is much needed, the committee, elected in October, has not yet met, and has no immediate plans to meet. Many participants did not know the members of the committee. Some knew, but had never made suggestions to the committee in terms of development initiatives for which advocacy might be required. Regardless, there does not appear to be any significant change in who can lobby, with women largely excluded on account of being women, and young men being excluded in part as a result of their absence from the community, and in part because they claim to have limited access to the village chief, Tindana and the Assemblyman.

**'The men will tell us 'you [women] cannot push for change here [in the community], since we [your husbands] brought you here.'**

YOUNG WOMEN'S FOCUSED GROUP DISCUSSIONS, KANYINI

Regardless, women in Kanyini indicated that it was not their place to engage in community development. Asked what would happen if they grouped together and lobbied for more boreholes, they noted that, 'since our husbands brought us here (it is customary that upon marriage, a woman will move from her own community to reside with the husband in his community, in his family house), they will say, you cannot push to change things here, since we brought you here'. Asked why they did not approach women members of the advocacy committee, they noted, 'they will tell us we need to speak with our husbands, or to the men who are in the committee'.

A peculiar distinction between Kanyini and Farfar in this regard is that in Kanyini, there appears to be greater fragmentation of channels for securing services and community development. Women noted that initiatives such as new boreholes were managed through the Magazia (symbolic head for women), youth spoke of the need to integrate better the 'Youth Chief' into customary structures, whilst the older men appeared to have access to the village chief and 'Tindana' (landowner). In Farfar, whilst some of these institutions exist, all groups appeared to channel community issues through either Community Monitors or, through the Assemblyman himself. Some of this may be due to the implementation of ALP; or that Community Monitors are high standing members in the community (and relatively wealthy – of the three met, two had studied at a university in the south of country, and one was a nurse at the local hospital and hosted a radio show), with one Community Monitor having been the Assemblyman (for much of the ALP period). This dual function has certainly contributed to local perceptions of a fusing of official civic functions and community monitors. On the other hand, participants noted that the current chief in Farfar is a 'soft chief', and is not very engaged in community development, but that this had more to do with his person, than with his function as chief. In contrast in Kanyini the CM were less prominent (I only met three). One was very active, but appeared to hold little standing in the community, whilst another, who appeared highly respected, appeared to have no real interest in his position as a CM (he received climate information messages but had lost his phone). One

women who had been elected as a CM because she could read was, for the rest extremely poor, and in any event, gender divisions were highly pronounced in Kanyini in terms of community development and representation. In Kanyini, more emphasis appeared to be placed on membership to sections or wards within the community. A section of the community which was not connected to the electricity grid was lobbying (with some success) to be connected, whilst boreholes were secured through collective action within sections (section members make regular payments and save for a borehole, with funding apparently matched by the DA. As a result of this fragmentation, information too did not easily cross social lines. PSPs, for instance, were seen to be the domain of older men, the chief and the Tindana, and young men complained that, as a result, they did not receive the information. They noted that 'youth chief' should also be included in the PSPs, so that he can ensure that they too will have access to climate knowledge and information. It is clear that different communities are governed through very different structures and therefore have very different capacities for participation and dissemination of information. The quality of leadership in communities also varies significantly, affecting the uptake of adaptation strategies, and the distribution of resources. These should be assessed prior to the implementation of future adaptation programming, instead of implementing one-size-fits all approach in this regard (quality of governance and leadership).

### **8.3.2. PARTY POLITICS AND THE PROVISION OF SERVICES AND INFRASTRUCTURE:**

Perhaps in part because of the multitude of efforts and channels to lobby local authorities for services and infrastructure, politicisation of the provision of those services and infrastructure appears rife. Of the two main bars in Farfar, one is known as an NDC bar, and the other an NPP bar (the acronyms for the two main political parties in Ghana). The Assemblyman (defined in by the constitution as a non-partisan position), is rarely seen without his NDC cap on (literally), and it seems local opinion leaders are known either as an 'NPP man' or an 'NDC man'. Whilst local engagement with politics is certainly a positive trend, the increasing influence of party politics on the allocation and/or distribution of services, including those influencing local adaptive capacity is a worrying development; it creates mistrust and uncertainty necessary for planning, thereby hindering collective action. One NPP supporter noted, for instance, that it is difficult to reprimand other farmers (assuming they belong to the NDC majority), because, 'it might be seen as a political act'. The same farmer noted that he could not report a 'non-complier' of ecological or agrarian bylaws to the Assemblyman, 'since the Assemblyman is an NDC man himself'.

In Focussed Group Discussions, participants noted that after lobbying the DA, they were pleased to have secured a large dug-out for the community (see image above). Unfortunately, they noted, the dugout had not been dug deep enough, and had dried up. Participants indicated that as soon as a new District Chief Executive (to be appointed by the national government following the election of December 7<sup>th</sup>, 2016), they would lobby again to have the dugout deepened. Later it emerged that the dugout had been built a month prior to the elections by the then NDC DCE, and there are questions regarding the genuine attempt to build a functioning water source, or alternatively, a symbolic gesture to win votes. Having this emerge (and focussing the discussion on the dugout) participants were pessimistic about new attempts to lobby the DA to deepen the dugout, since the new DCE will be an NPP-man, whilst Farfar's electorate (and its assemblyman) support the "NDC-man" (although, the Assemblyman and members of the Unit Committees noted that this would not have any impact on the potential for Farfar to acquire local government services, since the assemblyman is a non-partisan function).

In Kanyini, it appears as if politics at the local level was far less evident, although participants referred to some boreholes as having been the result of the NDC government, and others, the result of the NPP government. This may have a number of explanations, but certainly the party neutrality of the assemblyman appears to contribute to a higher degree of party-neutrality in the provision of services.

The influence of party politics in the provision of services is not entirely new, although it is clear that political parties have increasing capacity to reach into rural communities. Whilst simple vote winning partly explains this trend, the dry-season watermelon boom in Farfar appears to have raised the stakes (for political parties). In Kanyini, where there is less at stake in material terms (for political parties), this trend appeared less pronounced (although one interviewee in Kanyini could ascribe different boreholes to different political parties).





### 8.3 ADAPTATION AND MANAGING NATURAL RESOURCES

Clearly, adapting successfully to climate change assumes that the natural resources upon which livelihoods depend are exploited in a sustainable manner, where sustainability is defined in terms of an ecosystem balance, and natural resource bases not declining as result of exploitation. Dwindling natural resource bases reduces the capacity of people, or groups of people, to manage climatic changes, including shocks. Conversely, managing resources sustainably is both an output of collective action, and as a result, further strengthening the capacity to act collectively. However, the creation of larger and more diversified asset bases should not be misinterpreted as increasing in adaptive capacity, as unsustainable increases in asset bases do not translate into long-term transformations towards more resilient structures. These may only be short-run successes, rather than representing real, long-term changes in peoples' capacities to respond to uncertain climatic changes and variation. A better understanding of how asset bases are managed is required to understand the significance of long-term, transformational changes, and new capacities to manage climatic changes and shocks.

#### 8.3.1. VSLAS AND TREE FELLING:

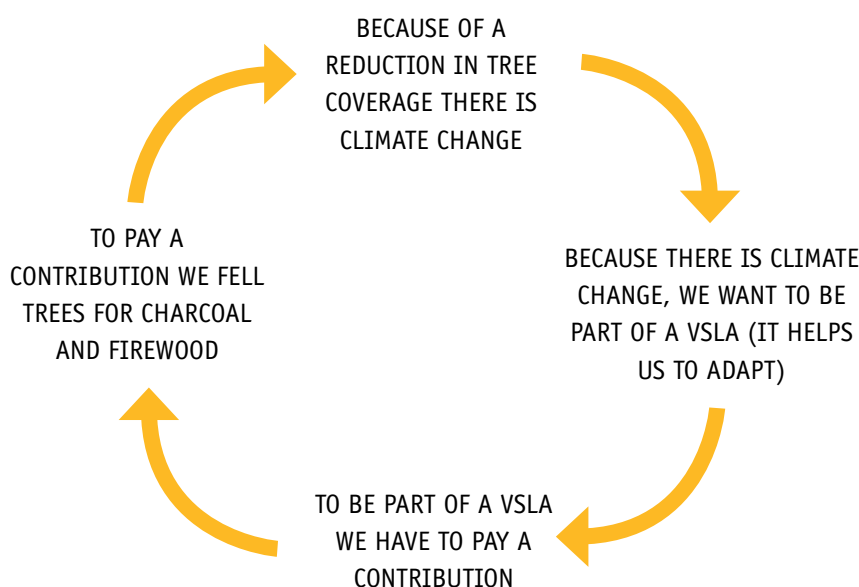
In this regard, many of the new tools for adapting to uncertain climatic conditions appear to come at a cost. We have indicated that VSLA membership, for instance, facilitates the taking of loans and that such loans, especially in the case of women, are used as a buffer against shocks, and to pay existing expenses, such as school fees. As a result, repayments (and interest), often do not come from profits generated by small businesses established through VSLA loans. In Focussed Group Discussions, all women who had taken loans, both young and old, and across the two communities, indicated that they made repayments by felling trees and either making charcoal or selling the wood directly. The felling of trees was associated with decreasing soil fertility, rising temperatures, destruction by windstorms, and declining yields. Women in Kanyini noted that, instead of doing *galamsey* to pay school fees, medical cost and/or funerals, as they had done in the past, they were now able to take loans from the VSLA. These costs, in other words, whilst previously covered by gold mining activities (elsewhere), are now covered through the felling of trees (locally) and the number of trees felled (per child going to school or, admitted to hospital, for instance) increases in this way. Whilst this was the case in both Farfar and Kanyini, the problem appeared starker in Kanyini, where woman indicated, it was too risky to take loans for doing business. A cycle emerges which, depending on the intensity of the inter-relationships between loan repayment and tree selling, may undermine the long-term effectiveness of VSLAs (see figure 8.3.1.).

Whilst Ghana has laws protecting economic trees (shea and Dawadawa trees), people were unaware (or disinterested). Instead, they indicated that they had stopped felling such trees for charcoal or other uses (for example, roofing)



because the Chief and the traditional landowner (the “Tindana”) had passed a by-law, forbidding the felling of economic trees such as Dawadawa, Shea and Mahogany trees. This by-law appears to be adhered to, with the chief apparently having threatened those who continue to cut economic trees with death (“if we hear cutting, we will come there, and we will not see you again, only your cutlass will remain”). It is clear that in Kanyini, the chief and the Tindana continue to possess significant authority, and serve as important channels for disseminating information and enforcing more sustainable practices. For non-economic trees, no by-laws exist on which varieties can be felled, or the amount of felling which can be done. Asked why no such by-law exists, participants noted that if such a by-law existed, many, and especially the poor, would not be able to survive. The District Assembly (DA) has a nursery where people can go to get trees for planting (unconfirmed). Some respondents indicated that they were going to get trees (but had not done so in the past).

**Figure 8.3.1: VSLA-Tree Felling Cycle**



### 8.3.2 COMMERCIALISATION OF DRY-SEASON WATERMELON

Dry-season watermelon farming in its current form comes with significant environmental costs, and there are serious questions about the sustainability of dry-season farming in foreseeable future. The practice employed delivers large and immediate benefits which drive a number of resilient practices, such as the use of climate-smart (rainy-season) seed and crop varieties and livelihood diversification (in part through an apparent greater willingness to take loans from the VSLAs amongst women). Despite this, for the purposes of watermelon farming, trees are felled to maximise areas of sunlight, a condition for watermelon to grow, causing a drying of soil, which, in turn, narrows the margin for planting, and reduces yields; watermelon is farmed to the river bank, causing the banks of the river to collapse, which, in turn, widens the river, makes it less deep, and leads to sedimentation, pesticides and weedicides are employed excessively, to deal with pests, and to remove grass, to make way for watermelon farming. This appears to bring new pests, leads to soil erosion and pollutes water bodies, including dug-outs, increasingly frequently used as the river dries (see images below). Furthermore, participants noted that since all the grass was being destroyed, bullocks lacked fodder in the dry-season, and were, as a result weak during the rainy-season. They noted that the beginning of the rainy-season, in some cases, was used to fatten-up the bullocks, which meant ploughing later, sowing later, and the risk of lower harvests. Some farmers, in part as a result, had started using local tractor services instead of bullocks. This, it appears, increases soil destruction, resulting in more erosion, and further need to chemical fertilizer. Farmers are aware of both the destruction caused by their current practices and the impact which that destruction has on the long-term productivity of watermelon. Many openly speculate that in 5 or 10 years, it will no longer be possible to farm watermelon. In the last 5 years, watermelon farmers have gone from using no chemical fertilizer, to almost all farmers having to use fertilizer.



Small tributaries of the main river which flowed between farms and was used for irrigation are largely dried, and people have started farming watermelon in the dried tributaries.



The main river, with high levels of sedimentation. Farmers note, these days we can drive our motorbikes right into our farms.



A tree that once stood on the river bank is now in the river, showing the extent to which the river banks are collapsing and increasing the width of the river.



Bottles of pesticide and weedicide can be found littered on farms and in rivers. Chemicals are excessively used, destabilising the ecosystem through mass eradication of grass and pollution of water source. It is also usually sprayed without any protective gear, and is detrimental to health.



Dead trees are found all over the farms. Usually the tree are simply burnt. This is done because watermelon requires sun to grow, and the trees (shade) therefore reduce the area that can be farmed.



Watermelon is farmed to the riverbank with no buffer zone. This results in a continuous collapsing of the river banks and sedimentation (see top right).



**DECEMBER 22<sup>nd</sup>, 2014**



**JANUARY 21<sup>st</sup>, 2017**

The images above show the main river used for watermelon irrigation in 2014 and in 2017 from almost the same position. Whilst the fact that the 2017 image is taken a month later in the dry-season can explain some of the difference between the two images in terms of the availability of water, it cannot explain all the difference. Due to farming up to the banks, the riverbank collapse, causing the river to become wider and shallower.

The unsustainability of watermelon has far-reaching consequences, some of which undermine the work of ALP and other development/climate change programming. One participant noted that following from the CAAP, his community (a small cluster of villages across a stream from Farfar itself, but part of the ALP community), had built a bridge across the river using local material so that children could attend the school during the rainy-season. The bridge broke, and cannot be repaired because, as a result of watermelon farming to the river bank, the river had widened, and they don't have the expertise to build such a long bridge.



### Box 1. Adaptation And Small-Scale Infrastructure

**Q: WHAT DO YOU REMEMBER ABOUT THE COMMUNITY ADAPTATION ACTION PLAN (CAAP)?**

A: We had a big meeting in the market. We mapped the community, and they showed us all the streams.

**Q: WAS THAT USEFUL?**

A: Yes, I live in Natinton. It's a small village next to Farfar, but was included in ALP. You have to cross a stream to get there. They told us we should get together and build a bridge across the stream, because when it rains, children cannot go to school.

**Q: DID YOU BUILD A BRIDGE?**

A: Yes, we in Natinton sat together and we built a bridge using local materials. We all contributed.

**Q: AND CHILDREN WENT TO SCHOOL MORE OFTEN?**

A: Yes, and we built it so that farmers could go and come from the farms using a donkey-cart, so they could take things to the farm, and then, carry things back.

**Q: ARE PEOPLE STILL USING THE BRIDGE?**

A: No, after a few years, the bridge collapsed.

**Q: DID YOU BUILD A NEW ONE?**

A: No.

**Q: BUT IF IT WAS SO USEFUL IN GETTING THE CHILDREN TO ATTEND SCHOOL, EVEN WHEN IT RAINS, AND FARMERS BEING ABLE TO TAKE THINGS TO AND FROM THEIR FARMS BY DONKEY CART, WHY DID YOU NOT SIT TOGETHER AGAIN AND BUILD BRIDGE?**

A: Because people farmed [watermelon] to river banks, and the banks kept collapsing. Now the river is so wide we cannot build a bridge again using local knowledge and materials. We have to get cement, and they have to send somebody who knows how to build that type of bridge.

**Q: SO NOW WHEN IT RAINS, THE CHILDREN CANNOT ATTEND SCHOOL.**

A: Yes.

Furthermore, rampant mistrust (perhaps as a result of the large amounts of income generated through watermelon farming), and increasing politicisation at the local level, leads to a breakdown of organisational capacity (this is especially true of watermelon farming, and is much less evident in other spheres of socio-economic life). The solidarity seen in other components of socio-economic life appears largely absent in the sphere of dry-season farming. An older woman from a poor household, with 3 children, all mentally handicapped, whose husband has recently passed away complained that she had to stop farming watermelon because she could not get somebody to carry the pump to her farm in order to water her watermelon.

**'I used to do watermelon farming, but I don't have money to rent the pump, so the soil is dry, so I can no longer farm more watermelon. Last year I even managed to get petrol for the pump, but nobody will carry the machine and the hose for me. They know I cannot pay them and it's too heavy for me to carry. I returned the petrol and collected the money.'**

OLDER WOMAN ASSET POOR HOUSEHOLD, FARFAR



Asked if farmers ever approached other farmers who they felt employed unsustainable practices, respondents suggested they do not. When asked why, they indicated that doing so might be interpreted as 'being a big man', or even, an attempt to undermine the farming of a fellow farmers. Asked if they might ever anonymously report unsustainable practices to the authorities (assemblyman, chief, NADMO, Forestry Commission, Police etc.), they indicated that they would not do so, for fear of having a spell cast on them (both in the Focussed Group Discussions, as well as in private interviews, conversations and informal discussions with farmers). Asked if farmers had a long term strategy, for when/if watermelon farming is no longer possible, they noted, 'then we will migrate south again'.

Despite the current unsustainability of dry-season watermelon in Farfar, because it results in 'coins in the system', it drives adaptation through a number of spill-overs. Income generated from dry-season farming is used to purchase climate-smart crop and seed varieties for rain-fed crops, and the fertilizer they require, which in turn, increases the relevance of and interest in the PSP. Many of the young farmers have used profits to buy a 'motoking', a small three-wheeled pick up, diversifying into small transportation business. The motokings are used in particular to transport women and their goods to different villages, following the rotational markets, increasing the incentives to do business, and further diversify livelihoods. In broad lines, the difference between Farfar (high levels of uptake of adaptation mechanisms in rainy-season farming practices) and Kanyini (low levels of uptake of adaptation mechanisms in rainy season farming practices) may lie primarily in the existence of dry-season watermelon farming. The fact that ALP has been implemented in Farfar for a longer period in Farfar (as well as programming preceding ALP), and is certainly more refined (training for women on small-business enterprises) undoubtedly also plays a role. In short, however, dry-season watermelon farming, should be regarded as an adaptation opportunity (currently a missed opportunity), and more effort is required to ensure that it can continue to be a positive force for change in the future. Farmers are aware of the impact that their practices (felling of trees, bush burning, excessive use of weedicides) have on the environment sustainability, and in turn, what that means for their long term prospects of their livelihoods. The problem is therefore not sensitisation (alone), but rather introducing mechanisms which facilitate collective action (in line with commons theories).

Whilst dry-season watermelon farming is on the whole sustainable, there are some examples of highly sustainable initiatives. Mr Kummark (see section 9), for instance, indicated that he has planted oil palm trees along the river bank (where his watermelon farm is located) in order to prevent continuous collapsing of the river bank, eroding his farm. He selected the oil palm tree because he has seen it 'working' elsewhere in the community, and because it does not result in a lot of shade, so that he can grow watermelon close to the trees. Interestingly, this initiative (the only apparent attempt to create a buffer zone along the river bank) results from season migration, rather than any external intervention. The oil palm trees which Mr. Kummark has seen, as is emulating, were planted by a seasonal migrant who brought them from the south. Mr. Kummark then asked his sons, who had migrated to the south, to bring oil palm seedlings (see section 9 – 'Adaptation Champions').

### 8.3.3 ANALYSIS OF CHANGE

In Farfar, whilst farmers are aware of the unsustainability of practices (especially in relation to dry-season watermelon farming), there is very little evidence of a change to more sustainable methods. Except in isolated cases, there is no emphasis on natural resource management. The short termism results from a number of characteristics. Much of the land is rented, with payment being made on the basis of a percentage of the outputs. Lower outputs may well result in the owner renting the land to somebody who appears a more successful farmer in the future. The relatively vast income generated through watermelon farming, coupled with insecure land tenure, as well the risk of the destruction of harvest by Fulani pastoralists, has created mistrust between farmers, which occasionally results in violence (last year two farmers had to go to hospital after 'cutlassing' each other over a dispute over watermelon land). There is a trend towards a deepening of 'cycles of maladaptation'; increase pesticides, herbicides, chemical fertilizer and farming along river banks. There is a desperate need to organise watermelon farmers if for nothing else, to create more sustainable agricultural practices. Whilst income generated through watermelon farming drives much of the adaptation in Farfar, declining incomes as a result of lower yields points to a general erosion of the impact of watermelon farming. In the long run, such unsustainable practices may well serve as a barrier towards larger community-wide adaptation initiatives (such as for instance increased illness as a result of excessive use of pesticide and herbicide).

In terms of rainy-season farming, whilst less destructive than dry-season farming, is not explicitly geared towards natural resource management. In all the discussions, there were few examples of attempts at sustainability. Pits were used to make compost, but all the pits observed were empty. Efforts are made to plough perpendicular to slopes in order to prevent rains from running along gullies and washing away nutrient rich top soil. Some farmers however noted that this also increased the risk of ‘drowning’ crops during very heavy rains. Tree felling is rife (especially by women), and this is likely to increase as the population increases (people are also coming from outside to do business because of the relative wealth in Farfar), increasing the demand for charcoal for cooking. Since selling charcoal is the basis of many women’s livelihoods, and with a higher year round population creating higher demand and better business, introducing more efficient cooking methods (therefore reducing the demand for charcoal) is likely to be ineffective if alternative sources of income for those women are not identified.

In Kanyini, practices remain largely unchanged. As in Farfar, people are aware of ecological destruction as a result of, for instance bush burning. Usually others are blamed for this; Fulani to initiate grass growth for foddors and local hunters. Despite this, farmers acknowledged that some of the fires result from farmers using fire to clear their farms, resulting in a spread of fire, burning also important economic trees upon which women base their livelihoods. There is little evidence of sustainable practices in rainy-season farming (although there is little emphasis that rainy-season farming is very unsustainable). There are very few bullocks in Kanyini, with most reportedly having been stolen by Fulani (who have now been expelled from the community), and an increase in the use of tractor services for ploughing. Hence while much has changed in relation to practices – due to a range of drivers including dry-season watermelon farming and ALP – the underlying lack of governance structures and incentives to support and enable longer adaptation and adaptive capacity will prevent resilience to climate change over time.



## 8.5 ADAPTATION AND MIGRATION

Migration continues to be a key component of livelihood strategies in both Farfar and Kanyini, especially for poor households. Young men and women, travel south to find work in small-scale, illegal goldmining (‘galamsey’), as porters (‘kayayei’) or in farming-for-money services. The amount of time spent in the south varies, with some settling fairly permanently and others on a more seasonal basis. Migration is both a complex and contested domain within adaptation discourses, with some arguing that migration represents a failure to adapt, whilst others argue that migration is better considered an adaptation strategy in and of itself. What is clear from the interviews is that

people regard migration to the south as a last resort and, as soon as it financially feasible, will return to settle in their respective communities. Galamsey in particular is considered dangerous. In both Farfar and Kanyini interviewees noted that they knew of community members who had died in Galamsey accidents. Regardless of the many drawbacks (and hardships) of providing labour services in the south, from a household perspective, the income generated in the south provides a much needed source of income through remittances. Such remittances are used in a host of different ways, including rebuilding houses, as well as for inputs for rainy-season farming. The networks established through migratory traditions have provided new opportunities, also in the way of adaptation. One farmer from Farfar (See Adaptation: Winners and Losers) had asked his sons, who reside in the south, to bring oil palm tree seeds, which he is planting along the perimeter of his farm, to prevent the riverbanks from collapsing. Many of the watermelon buyers come from Accra or Kumasi, a result of relationships built up during periods in the south. Indeed, the much praised watermelon farming itself was started by migrants returning from the south with watermelon seeds. Its success prompted a watermelon boom. Absent youth also means less mouths to feed. In this way, migration undoubtedly contributes to households' adaptive capacity in both Farfar and Kanyini.

#### 8.4.1 CHANGING MIGRATION PATTERNS

All participants in Focussed Group Discussions in both Farfar and Kanyini agreed that migration patterns have changed. Traditional seasonal migration had changed significantly in Farfar, where young men turned to watermelon farming instead of migrating during the dry-season. The presence of large numbers of young men (especially stark in comparison too Kanyini) is a clear indication of this change. Because the watermelon farms are quite far from the settlement (7 kilometres), and the work is arduous, landowners appear happy to let their sons (or other young men) do the watermelon farming (in return for a share of the profit). Some young men managed to buy 'motokings' (three wheeled motor cycles), and have diversified into small transportation businesses, another income generating activity which enables them to remain in Farfar year round, and further strengthens adaptive capacity. Women indicated that they were happy that their husbands and sons were no longer travelling south during the dry-season in order to offer assistance with raising the children and other household duties. However, it is only those with access to watermelon land who are able to remain. The majority of residents of Farfar do not enjoy such access, and many young men and women still spend much of the dry-season in the goldmining areas to the south of Kumasi (Tarkwa, Obuasi). This split, between the haves and the have-nots (in terms of watermelon land) is important, with those who do not have access to such land advocating for a dam so that they can also farm watermelon, and those who already have land, not engaged. As the major source of income, dry-season watermelon farming also is the primary driver of social differentiation within the community. Furthermore, those with watermelon land are much better positioned to further diversify livelihoods, than those who do not. The situation in Kanyini could hardly be more different; there were few young men present during the research period, and getting focus groups together (for young men in particular) was a challenge. Whilst in Farfar young men's livelihoods are now dependent upon staying in Farfar (and those who depend upon them), in Kanyini, young men's livelihoods (and those who depend upon them) is very much dependent on going. It appears that trying to make sense of adaptive capacity in Kinyani without reference to galamsey, is as senseless as trying to make sense of adaptive capacity in Farfar without reference to dry-season watermelon. Every household has one or more member involved in galamsey, and much of the private development is a result of monies generated through galamsey, either in the form of remittances, or as result of young gold miners themselves returning home and building houses and buying motorbikes.

Young men lean towards galamsey (as opposed to, for instance, farming-for-money), because the potential rewards are far greater. As in the Q&A above, with farming-for-money, people 'know what they will get', in contrast to galamsey, where gold found is shared amongst the group, and may be substantial (or indeed be nothing). In Kanyini, this type of 'gambling' is driven also by the fact that the most of the examples of local wealth (large houses, a motoking, and motorbikes) are known to have been built upon successful galamsey migrations.

Attempting to make sense of adaptation in the context of staying or going is not easy. The positive and negative spill overs appear to be both and simultaneous. In Kanyini, galamsey boys are regarded as somewhat of a menace, and yet, most are aware that without galamsey proceeds, most would struggle to make it through the dry-season. It is clear that this type of migration is a driver of adaptive capacity in Kanyini, in the same way as watermelon drives

strengthening of adaptive capacity in Farfar. It serves as an important inflow of cash and forms the basis of many capacities, including those relating to adaptation (because it funds much of the important climate smart innovations in farming, those relating to climate change). A cursory cross referencing of this type of seasonal migration with the ACCRA-LAC Framework largely reveals positive results. Migration is a source of innovation, as well as increasing the asset base through remittances. Unlike watermelon farming, it creates positives without negative ecological repercussions. Since much of the migration is seasonal (during the dry-season, and those migrating are not engaged in dry-season farming), important labour supply for rainy-season farming is not lost. At the same time, the 'quick money', and many of the ways that money is spent, appears to erode some cohesion in the community, especially driving a wedge between generations. The conditions for young men in galamsey mines are dreadful, it's largely illegal and social contexts are reportedly violent. Furthermore, a broader perspective should also acknowledge that galamsey is highly destructive in the places in which it is practiced, and this should not be lost in attempts to situate this type of migration as contributing to strengthening adaptive capacity. Other forms of migration i.e. as teachers, soldiers and/or nurses is certainly regarded as a better 'type' of out-migration by community members (much better, respectable). Whilst such migration is more permanent, the remittances are more consistent. The elderly women from an asset-rich household in Kanyini was a widow. Despite this, she had a healthy monthly income, had a block house, and traded tomatoes, much of which was financed by remittances through this type of migration (her son was a soldier, and her two daughters were nurses). Importantly, whilst more seasonal migrants are perhaps a more likely source of local innovation (since they regularly return to Kanyini), they are a less reliable source of remittances.

**Box 8.4.1. Q&A with young Doing Galamsey:**

**Q: WHY DID YOU GO INTO GALAMSEY?**

A: When I grew up, my parents were very poor. My mother is blind, and my father is not well. I am the only son. Three of sisters have married and have gone to their husbands' house. One is left, and she is at school. My parents and I didn't have any food to eat.

**Q: WHEN WAS THE FIRST TIME YOU WENT?**

A: 2009, but it was not successful for the first two years. In 2011 I went again, and since then I have been going.

**Q: HOW OLD WERE YOU THEN?**

A: In 2009 when I first went, I was 12 years old. In 2011, I was 14. That was the first time I was seriously doing it.

**Q: WAS IT YOUR OWN DECISION TO GO, OR DID YOUR FAMILY DECIDE?**

A: We all decided. We didn't have any food to eat. We didn't have any other options.

**Q: HOW DID YOU GET SETTLED THERE?**

A: I went there alone. It wasn't easy. But I finally met some man who could spoke the same language as me (Wale), and he helped me find a place to work.

**Q: HOW DEEP IS THE PIT?**

A: They can be deep. Ten lamp posts. I spend time down in the hole, sometimes one week. They lower a gas cylinder and food for you to cook in the pit. It's not easy. Sometimes the mines collapse, and people die.

**Q: IS IT WAGED LABOUR, OR DO YOU ONLY GET MONEY WHEN YOU FIND GOLD?**

A: We are a group. When we find gold, we sell it, and then we share the money.

**Q: HOW MUCH MONEY DO YOU EARN?**

A: It varies, but between Ghc100 and Ghc200 a month is about average. But some get lucky and get plenty



**Q: IT SOUNDS TOUGH, WHY DON'T YOU STAY AND FARM YOUR FAMILY LAND?**

A: I want to, but because I am the only boy in my family, I don't have anybody to help me. Because of the reductions in yields, you have to farm a lot of land to get enough food for the family. You cannot do it on your own. And I don't have a wife to help me sow. People come to beg us to let them use it, and we let them farm it.

**Q: WHY DON'T YOU GO TO TECHIMAN AND DO FARMING-FOR-MONEY LIKE OTHERS HAVE DONE?**

A: When you do farming-for-money you know what you will get paid. With galamsey, it's like gambling; you can get plenty or you can get nothing. Some come back here and buy motorbikes and build a house. Others come back here and they have nothing. But almost every motorbike you see in this village has been bought with galamsey money. Almost every single one.

**Q: WHY ARE YOU BACK IN KANYINI NOW?**

A: My sister is at schooling. She has some money, but it was not enough, so I came here and gave her some so that she could pay her school fees.

**Q: DO YOU HAVE ANY OTHER INCOME STREAMS?**

A: No. But my mother gets LEAP. I think Ghc60 every two months.

**Q: WHERE ARE YOUR PARENTS NOW?**

A: The house they were living in was my grandfathers. It collapsed, and they were using a sheet of cloth as one of the walls. When it rained, they got wet. So I built them a new house. I moulded bricks from sand, and bought zinc and wood, and built a house.

**Q: BRICKS FROM SAND AND CEMENT?**

A: No, I couldn't afford the cement, so I just made them out of sand.

**Q: THAT WON'T LAST VERY LONG.**

A: No, it won't.

#### 8.4.2. ANALYSIS OF CHANGE

In Farfar, for many youth, dry-season watermelon farming has replaced seasonal migration. During the study period (dry-season), there were notably more young persons present in the community than in Kanyini. Despite this, the unsustainability of watermelon farming (the river bank is eroding whole farms), there is likely to be an increase in seasonal migration in the future. Whilst such migration can have negative consequences (unhealthy, illegal, dangerous), it may also be a source of new innovations. The watermelon itself is the result of an innovation learned in the south, and more recently one farmer experimenting with oil palm trees, with at least one other farming (having seen that it works), also planting the trees (see Adaptation Champion, Mr. Kummark).

In Kanyini most youths migrate seasonally to do galamsey. As long as this group produces the most obvious examples of financial success (many of the larger houses are built by successful miners, and most of the motorbikes are said to be owned by those engaged in galamsey), this is unlikely to change. Attempts at dry-season farming have been limited as a result of a lack of dry-season water sources. One farmer who, as part of ALP, was taken to see dry-season farming in ALP communities in the UER has now started a small watermelon farm. As part of the exchange, he trains women by having them help on his farm. The inclusion of women in Farfar's watermelon has not been very successful, and it's unlikely that (apart from the difficulties in ensuring water sources are established), the commercialisation of watermelon would come to fall within women's portfolios in Kanyini.



## 9. ADAPTATION; WINNERS AND LOSERS

### MR. KUMMARK, FARMER, FARFAR

#### Q: WHAT CROPS DO YOU FARM?

A: I farm millet, guinea corn, maize, sweet potato, pepper, rice and during the dry-season, I farm watermelon, and potatoes.

#### Q: I HEAR FROM OTHERS THAT THE MILLET YIELDS ARE ON THE DECLINE. THEY BLAME POOR SOIL FERTILITY. WHY DO YOU CONTINUE TO FARM MILLET?

A: It's not true. But people plant the millet too late. Young people think that that PSP applies to millet too. It doesn't. The PSP is good for the new crops which have been introduced, but not for our traditional crops. The maize you plant when the rain starts, but the millet is a drought resistant crop. It doesn't require a lot of water. If you keep with our indigenous practices, the millet yields are still good. But if you use the PSP – which is for maize and soya beans and other new crops – then yes, you are likely to have poor yields. Unlike the maize, it doesn't require fertilizer. I still plant mostly millet. I have never gone to the market to buy extra food for my household. We have enough.

#### Q: YOU FARM SWEET POTATOES, I HAVEN'T HEARD OF ANYONE FARMING POTATOES?

A: We used to farm potatoes and sweet potatoes here. The young farmers they don't do it anymore. Potatoes doesn't require a lot of land. This year I planted a small portion of land with sweet potatoes. With that small portion of land, I got four bags of potatoes. I then bartered those four bags for three bags of millet. 3 bags of millet would have required much more land than the small piece of land I used for the potatoes.

#### Q: WHY DID YOU BARTER THE BAGS FOR MILLET? WHY DIDN'T YOU JUST SELL THE POTATOES?

A: You can't keep potatoes for very long. But millet you can keep for a long time. So I barter the potatoes for millet immediately after harvesting the potatoes. Then I sit on the millet until the price starts to rise. Only then do I sell the millet.

**Q: WHY DON'T OTHER PEOPLE PLANT POTATO?**

A: You cannot use bullocks to plough for potatoes. You need a special hoe, which is expensive, and its hard work. Maybe that's why.

**Q: DO YOU LET YOUR LAND LIE FALLOW?**

A: No. I don't have enough land to let any of it lie fallow. I plant it each year.

**Q: WHAT OBSTACLES DO YOU FACE IN TERMS OF CHANGING WEATHER?**

A: We are cutting down the trees, and that is having an impact. But the introduction of different maize varieties, coupled with the introduction of the PSP has moved the farming season to the time the rain comes. We used to be planting millet prior to that. Now they let their animals roam during that period, believing it not to be a farming period. I have to sleep on my millet farm to prevent the animals from destroying the crops. If everybody was farming millet then, they would keep their animals inside.

**Q: YOU ALSO PLANT MAIZE. DO YOU USE THE PSP FOR THAT?**

A: Yes, I do. It's been very useful. It helps me select the early or late yielding variety. This year, because of the PSP, I chose an early yielding variety, and I had a very good yield.

**Q: YOU MENTIONED THAT FELLING OF TREES IS CAUSING CLIMATE CHANGE. YOU ALSO MENTIONED THAT WATERMELON FARMING IS HELPING YOU TO ADAPT TO CHANGING WEATHER. ISN'T WATERMELON FARMING RESPONSIBLE FOR FALLING TREES?**

Yes, the issue is contradictory, the tree felling has brought about erratic rainfall, and it's true that people are cutting trees to farm watermelon. There will be a problem in the future. People were farming to the banks of the river. I told them that they would destroy the river, and affect us all. Now the river has destroyed their farms. Their farms have been washed away by the river and now I have the one who is on the river bank.

**Q: ARE YOU TAKING ANY ACTION?**

Yes, I asked one of my sons who is working in the south to bring oil nut tree seeds. I have 15 planted along the river bank, but they have not yet germinated. Next year I will ask him to bring the seedlings.

**Q: CAN OIL PALM TREES GROW HERE:**

A: I didn't know that they could. But one man has planted six of them, and they are now fruiting. They do not give plenty of shade, so watermelon can grow under them. They will hold the riverbank in place. And if the watermelon can start to refuse in the future, then the palm can substitute as cash crop.

**Q DID SOMEBODY TEACH YOU THIS?**

A: No. I did it alone. I saw somebody doing the oil palm, and I decided to follow him.

**Q: WHY DIDN'T YOU DO IT EARLIER?**

I didn't think of it before. And it's only since the other farms have been washed away that I am now at the riverbank.

**Q: ARE YOU A MEMBER OF A VSLA?**

A: No. In 2011, a micro-finance organisation, GOBIX, came here and said we should deposit our money and that it will multiply. I did it. But they ran away with the money. So when the VSLA came, I decided not to join. But my wife is a member.

**Q: DID YOU EVER TAKE A LOAN THROUGH HER?**

A: No. I have never done so. But if I wanted to, by all means, I could.

**Q: WHAT ARE YOUR LONG TERM PLANS IN TERMS OF DEALING WITH WEATHER CHANGES?**

A: We don't need to do all that much. But in the long term, I will rear animals. I am getting old, and the hard work like weeding I cannot do forever. So I will do rearing around the home, and my sons can do the heavy farming.





## ABEBATU – FARMER & SEAMSTRESS, FARFAR

**Q: WHAT DO YOU CONSIDER YOUR MAIN LIVELIHOOD?**

I farm maize and soybeans

**Q ON YOUR OWN LAND?**

A: Yes, my husband cut me a piece of land.

**Q SO YOU HAVEN'T BEEN FARMING FOR LONG?**

A. No, I haven't. Before I was only doing some small rice. But then I joined a VSLA, and we were told that women could also do things together, and get money from the VSLAs. CARE subsidised some fertilizer, and I took a loan from the VSLA and bought some. Once I had the fertilizer, I asked my husband for some land, and since I had fertilizer, he cut me a piece.

**Q: BUT YOU DIDN'T HAVE SEED.**

A: For the maize I use my husband's seeds. He uses the new varieties, and is involved in the PSP. Whichever seeds he buys, I will use those seeds. For the soybeans I didn't have. But I was attending all the ALP meetings in the market about the PSPs when a CARE man called me and said that they had seen me at the meetings. He gave me a sachet of soy seeds and they showed me how to farm soybeans. It's good now. I use the soybeans for soup and sell some. Once I sell the soybeans, I can buy seed and fertilizer for the following season and have some money left for myself.

**Q: HOW IMPORTANT HAS YOUR HUSBAND BEEN IN ALLOWING YOU TO DIVERSIFY YOUR LIVELIHOOD?**

A: [LAUGHTER]. He has been very important. I am his first wife. He makes money from the watermelon, and he has a bar. He also has a motoking, and does some transportation for people sometimes. Because he is doing well, he is able to give me things too. Like the land, and the seed for the maize. And because he is serious about things, I too profit.

**Q: DO YOU HAVE OTHER LIVELIHOOD ACTIVITIES?**

A: Yes, I have now also opened a seamstress business. I took money from the soy, and added a loan from the VSLA. I go to Sankasi (Togo) to buy cloth, and then make dresses to sell. At first it was slow, but now I get materials to make school uniforms for the school children. That moves well.

**Q: HOW DID YOU END UP GOING ALL THE WAY TO SANKASI? WHY NOT GET IT IN GARU?**

A: Before, I was buying in Garu. Then a friend in Garu told her she should go to Sankasi, since the cloth is cheaper there. I took Ghc200 from the VSLA, and went to buy cloth in Sankasi. Nowadays I go to Sankasi about twice a month.

**DO YOU HAVE LONG TERM STRATEGIES OR PLANS?**

A: I will continue the farming. It helps me and my children with food, and also with school fees. When the next VSLA share-out comes, I will expand my business to also do men's clothing.



## DANIEL – FARMER, BAR OWNER & VSLA ENTREPRENEUR, KANYINI

**Q: WHAT IS YOUR MOST IMPORTANT ECONOMIC ACTIVITY?**

A: I own a bar, and during the rainy season I farm.

**Q: WHAT DO YOU FARM?**

A: I farm groundnut, cow peas and maize. Groundnut is my most important crop. I save some for the family, and then I call somebody from Wa to come and buy some. I have recently bought tubers for yam. I will plant them next week.

**Q: WHAT WOULD YOU LIKE TO CHANGE IN YOUR CROP VARIETIES?**

Next season I will plant the new, early yielding maize varieties, both maize and cow peas. Those are the crops with new varieties. And of course the yams I mentioned.

**Q: ARE YOU A MEMBER OF A VSLA?**

Yes, I'm a member of four VSLAs

**Q: Four VSLAs? WHY four VSLAS?**

A: When MissionAid Africa was here I was in two groups. Now CARE has started their VSLAs, and I have again joined two of them. They are a way for me to make money. I have money from my business. I put it into the VSLAs and get money for the "share-out". Since my money is in the VSLAs, others are also able to borrow. But I can also take several loans. From one I will take a loan for the seeds of the new varieties (maize and cow peas), from the next one I will take a loan for fertilizer, from the next one I will take a loan for tractor services to plough my farm,

**Q: ARE YOU TAKING LOANS? IT SEEMS YOU DON'T REQUIRE LOANS?**

A: I take loans. One is obliged to take loans if you are in a group, even if you can pay yourself. If nobody takes loans, then how will the group make money for the "share-out"?



**Q: BUT OTHERS SEEM NOT TO BE TAKING LOANS LIKE YOU DO, FOR BUSINESS?**

A: It's true. But because I have the bar business, if things do not go well, I can still repay the loans. Others don't have a business. If the crop fail they cannot repay the loan.

**Q: HOW DID YOU MANAGE TO OPEN YOUR BAR?**

A: I used to go and do farming-for-money in the south, close to Techiman. I used to suffer there, but when I came I had a little bit of money. In those days, people used to be selling the alcohol sachets in their houses. I had been seeing bars in other communities. So I built this small building and started selling. Later, when we got electricity, I bought a fridge. Now the bar is quite big, and people come.

**Q: YOU MUST HAVE HAD SOME HELP? PEOPLE ARE COMING FROM THE SOUTH ALL THE TIME. THEY DON'T HAVE MONEY TO OPEN BAR?**

A: No, I just saved a lot. I don't spend my money, even now. I'm a hard saver.

**Q: THE LOCATION IS REALLY GOOD, NEXT TO THE CENTRAL SQUARE, ARE YOU RENTING THE LAND, OR DO YOU OWN IT?**

A: It's my land. It belonged to my father, and now it belongs to me.

**Q: DO HAVE ANY LONG TERM PLANS IN TERMS OF DIVERSIFYING FURTHER?**

A: Yes, I want to buy a tractor.

**Q: WHY NOT BULLOCKS:**

With Bullocks, since the children are going to school these days, there is nobody to look after them. And when they get strong, and are good for ploughing, the Fulani are likely to steal them. It's too much risk to own bullocks these days. If you don't give it to the Fulani, they will steal it. The Fulani also left here because there are no longer places for their cattle to drink.

**Q WHEN WILL YOU THEN BUY A TRACTOR?**

A: I send my 5 brothers to school. That costs about Ghc10.000 per year. Most are almost finished, then I can save for a tractor. A home used one is about Ghc30.000. I'll save the school fees for 3 years and then buy a tractor.





## 10. REVISITING THE ACCRA-LAC FRAMEWORK

The ACCRA –LAC Framework is set out in section 4. It serves as an attempt to understand adaptive capacity beyond changing physical asset bases, and broadening the drivers and barriers to effective local adaptive capacity. It has been widely employed to underpin and guide ALP programming. It is premised upon the notion that adaptive capacity is defined not (only) by what people have, but how people are enabled to use what they have in order to strengthen adaptive capacity. The following section reflects on ACCRA-LAC Framework in terms of the findings of this report, focussing upon the linkages between those drivers and barriers identified in the report, and the pillars of ACCRA-LAC Framework (innovation, asset base, knowledge and information, flexible and forward-thinking decision making and governance, and institutions and entitlements – see section 4).

As a tool, the ACCRA-LAC Framework serves as a means of assessing adaptive capacity at the local level. It does so by means of providing a snapshot of the five pillars of adaptive capacity. Comparison might be made across groups. Since adaptive capacity is a long-run dynamic within a context of increasing (climatic) uncertainty, at the broadest level, snapshots themselves may be misleading. Whilst the simplicity of snapshots is understandably attractive, a framework which aims to assess adaptive capacity should be able to provide indication of trends. This is especially true of adaptation programming, where project flexibility is required both to seize new opportunities as well as address emerging threats. In principle, there is no reason why the ACCRA-LAC Framework might not take a series of 'snapshots' over time, and in doing so, provide some insights into changes or trends, but this needs to be undertaken at regular intervals over the period of a given project. That aside, there are several other areas in which the ACCRA-LAC Framework may be improved in order to capture complex and dynamic realities relating to local adaptive capacity. Table 10.1 and 10.2 below summarise the changes to adaptive capacity, drivers and barriers to adaptation in Farfar and Kanyini in relation to the ACCRA-LAC Framework. The sub-sections thereafter draw more generic lessons regarding the ACCRA-LAC Framework on the basis of the findings.

**Table 10.1.** *Changes, drivers and barriers by ACCRA-LAC framework: Farfar.*

	CHANGES (+)	CHANGES (-)	DRIVERS	BARRIERS
<b>INNOVATION</b>	VSLAs function as innovation platforms	Innovation in rainy-season farming appears slow.	VSLAs and exposure to other practices through seasonal migration.	Poor are reluctant to take loans for innovations
<b>ASSET BASE</b>	Increased income from watermelon farming; loans from VSLAs; diversification (amongst men) into transportation businesses, which spills over into improved transportation for women to follow rotational markets; people using pits to make compost.	Ecological destruction, mistrust amongst watermelon farmers; tree felling for VSLA loan repayment; VSLAs not taken for farming inputs (especially by men); boxes empty at times of the year everybody wants to take a loan (beginning of the farming season).	dry-season farming; training on small business enterprises;	Unsustainable farming practices; insecure (dry-season) land tenure; competition over land (including with Fulani); compost not regarded as an alternative to chemical fertilizer.
<b>KNOWLEDGE AND INFORMATION</b>	Access to Climate information; participation in PSP; market information.	Some evidence of inter-generational resentment.	Community Monitors; good dissemination channels; the fact that people have money to buy the new crop/seed varieties, makes PSP relevant; increased mobile phone ownership; regular market.	Breakdown of dissemination channels (especially those not members of VSLAs).
<b>INSTITUTIONS AND ENTITLEMENTS</b>	People more engaged in community development; collective action (especially VSLA groups; more women engaged as agencies of change).	Mistrust; contestations over land; insecure land tenure; party politics influencing service provision	VSLAs	Large gender gaps in livelihood, domestic duties, norms and values.
<b>FLEXIBLE AND FORWARD THINKING DECISION-MAKING AND GOVERNANCE</b>	Planning and forward thinking is evident in how VSLA loans are utilised; PSP's engaged with to make farming decisions; diversification of income, reducing exposure.	Increases gap between rich and poor (and between men and women), since the poor are not well enabled to act on forward thinking (since they do not engage the PSP – it's not regarded as relevant for those not using new crops/seeds).	PSPs; income generated from dry-season farming; VSLAs (for loans for diversification)	Those who cannot afford fertilizer (especially women), do not regard the PSPs as relevant; loans by those from asset-poor household use loans to cover existing expenses.



**Table 10.1.** *Changes, drivers and barriers by accra-lac framework: Kanyini*

	CHANGES (+)	CHANGES (-)	DRIVERS	BARRIERS
INNOVATION	Little apparent change in capacity to innovate; migrants appear to be coming back to Kanyini with new ideas (and in some instances the finances to be able to apply some of those ideas).	Absence of youth (a group generally inclined to innovate) as a result of seasonal out-migration.		Lack of resources, no money, unwillingness to take loans from VSLAs to innovate (on-farm and off farm); absence of young men due to migration; no evident scale of dry-season farming.
ASSET BASE	VSLAs for loans (although these are mostly used to pay existing expenses - not for diversification or climate smart practices; some have planted trees around houses to protect structures (this applies only to a few individuals).	Tree felling to repay loans.	People no longer feel the need to seasonally migrate.	Lack of finances; afraid to borrow in case the business fails; a lack of a market.
KNOWLEDGE AND INFORMATION	Increased awareness of climatic changes and what can be done; increased awareness of new crop varieties; increased awareness of housing animals; increased awareness of vaccinations.		Climate change information via mobile phones; weather programmes on the radio.	Lack of financial resources to act upon the required changes; fragmented channels for dissemination of information (by gender and ages, as well as by ward); Lack of capacity of CMs.
INSTITUTIONS AND ENTITLEMENTS	Customary governance structures strong and high degree of legitimacy.			Uphold traditions which discriminate against both women and youth.
FLEXIBLE AND FORWARD THINKING DECISION-MAKING AND GOVERNANCE	Community Monitors and rain gauge monitors appear to have plans (plant trees from nursery), but not well coordinated through the community.	Little change in flexible and forward thinking decision making and planning.		

## 10.1. CAPTURING INTERLINKAGES BETWEEN ELEMENTS:

In all, the five pillars of the ACCRA-LAC Framework captures the changes required for effective strengthening of adaptive capacity. Where the framework is less successful is in capturing interlinkages or spill overs from one pillar to another. Adaptation activities which may be regarded as immediately positive, may have negative implication for other pillars, and actions which might be dismissed as 'coping strategies', might have far reaching positive implications for household or community adaptive capacity. For instance, VSLAs clearly drive increased adaptive capacity amongst women (especially in Farfar), but the felling of trees, in order to repay VSLAs loans, or pay VSLA contributions (depending upon the extent of tree-felling) clearly undermines much of the initial gains made by VSLAs in strengthening adaptive capacity. Women in Kanyini note that as a result of VSLAs, they no longer have to travel south to earn money to pay school fees, pay medical expenses and/or to buy food to cover food shortages. Instead, they are able to borrow from VSLAs, and make loan repayments by producing charcoal and or selling firewood. Alternatively, migration may serve as a coping strategy, but especially in the short run, it serves as an important source of innovation, knowledge and information as well as, financial capacity through remittances, which in turn, may facilitate strengthening adaptive capacity of households in the community of origin. These spill-overs should be captured by the ACCRA-LAC Framework (the framework acknowledges the linkages), but circular causalities and/or the directions of linkages need to be much more explicit in order to get a more accurate understanding of local adaptive capacity is to be established.

## 10.2. CAPTURAING ECOLOGICAL IMPACTS OF RESPONSES TO CLIMATE CHANGE:

Ecological balance, or the sustainability of the natural resource base is captured by the ACCRA-LAC under 'asset base'. As a result, whilst there is nothing in the design of the ACCRA-LAC Framework which prevents it from capturing the impacts of responses to climate change on the natural resources base, the fact that asset base is such a broad category (including human, natural, social, financial and environmental assets), works to deflate the importance of the impact of responses to climate change on the natural resource base. The commercialisation of watermelon in Farfar, for instance, whilst regarded as a strengthening of local adaptive capacity (in that it increases the asset base), has detrimental effects on the natural resources base. Since the maintenance of natural resources is so central to rural livelihoods, one solution would be to provide an additional pillar which explicitly acknowledges the fundamental importance of ecological sustainability as a driver of adaptive capacity. In combination with points made in 10.1 above, the ACCRA-LAC Framework would better capture a holistic impact of, in this instance dry-season watermelon, on local adaptive capacity. It would also enable more responsiveness, since the manner in which dry-season watermelon is being farmed, and the ecological impact thereof, might have been identified sooner.

## 10.3. CAPTURING THE LONG TERM VS SHORT TERM:

Adaptive capacity is by definition long term. Responses to climate change that increase the asset base in the short run but are undermine long terms capacities to adapt to climate change are not, by definition, adaptation strategies. Despite this, the impact of current responses on long term changes is not well captured in the ACCRA-LAC framework. The same examples as indicated above are revealing. The impact of VSLAs on long term tree cover is overshadowed by the fact that VSLAs facilitate livelihood diversification in the present, and the negative sentiments around seasonal migration in the present, over-shadow the positive impacts of seasonal migration in on long term adaptive capacities of households and communities as a whole (for instance, through innovations and remittances).

## 10.4. CAPTURING INTERLINKAGES BETWEEN GROUPS:

Within communities, it is clear that many of the inputs required to strengthen adaptive capacity are scarce and contested 'resources'. As a result, actions which may strengthen the adaptive capacity of one group, may have the opposite impact on other groups within the community. One may (quite rightly) argue that this does not represent an adaptation strategy, but such inter-group linkages are not well captured by the ACCRA-LAC-FRAMEWORK. Men using pesticide to combat new pests, may result in an increase in illness amongst children, whose medical costs are largely covered by women. Whilst beyond the scope of this study, clearly, existing conflicts between farmers and

Fulani pastoralists in Kanyini, suggests that the rehabilitation of water sources (for which the residents of Kanyini are pushing local government, albeit relatively ineffectively) may have differentiated impacts on adaptive capacity of dry-season farmers on the one hand, and Fulani pastoralists on the other. As a result, whilst the ACCRA-LAC-Framework recognises that community are not homogenous, and that the adaptive capacity of, for instance, men, might be greater than that of women, it requires a structural means of capturing contestations between groups in terms of adaptive capacity (or how the strengthening of adaptive capacity of one group, affects the adaptive capacity of another). In particular, in order to understand the impact of community-wide adaptation strategies on women a broader landscape perspective is recommended.

### **10.5. CAPTURING IMPACTS ACROSS SPACE:**

Mobility is a key component of livelihoods. Seasonal migration, as has been noted previously, is a key part of livelihoods for many northern households (whether one regards this as a coping strategy or an adaptation strategy). Much of the seasonal migration (particularly *galamsey*) is a source of much environmental degradation elsewhere. In extreme cases, one might argue that in this way, ecological destruction is displaced to other regions in Ghana. Remittances from seasonal migration might increase the asset base and perhaps increase innovation, with no impacts upon the local natural resource base. The ACCRA-LAC is not adequately set up to capture such changes (happening elsewhere), including positive changes.

### **10.6. WEIGHTING PILLARS:**

Pillars of the ACCRA-LAC require weighting. For example, in Kanyini, it is clear, that on its own, an increase in knowledge and information (people are clear on the fact that climatic changes are occurring and what should be done about them), does not result in a wide-scale change in adaptive capacity. Changes in this regard are inhibited by a lack of financial resources, as well as a lack of flexible and forward thinking and governance. Despite having experienced a windstorm in 2011 which resulted in mass of destruction of houses and harvests, there appears to be a distinct lack of urgency in Kanyini. It appears as if the cost of adapting to climate change outweighs the cost of dealing with climate shocks (or the perceived likelihood of a climate shock occurring). In this instance, increasing knowledge and information does not result in meaningful increase in local adaptive capacity.

# 11. RECOMMENDATIONS

Evidence supports the fact that components of ALP have contributed to strengthened local adaptive capacity, although not all components have been equally effective, there are differences across groups in terms of effectiveness, stark differences across communities and finally, components have not always been effective in ways in which they were intended to be. Rainy-season, subsistence farming is the central occupation of community members, both in Farfar and Kanyini, and other income streams are largely regarded as important as supplements to rainy-season farming. Gains made in terms of strengthening local adaptive capacity through improvements in rainy season farming are likely to have the most sustained and widespread impact at the household level. **Future adaptation programming should seek to support rainy-season farming. Even those interventions that aim to facilitate other livelihood areas, such as dry-season farming, would do well to measure their overall impact in terms of the impact upon improvements in rainy-season farming.**

Participants in the study, both in Kanyini and in Farfar, struggled to distinguish between climatic changes and issues affecting livelihoods more generally. Sanitation, for instance, was frequently mentioned in discussion aimed at identifying experienced climatic changes. It appears that community members do not regard climate change as a stand-alone issue, and indeed regard climate change as one of a number of changes affecting livelihoods more broadly. **Future adaptation programming might embed issues relating to climate change and adaptation in broader livelihood concerns,** as indeed ALP has done.

## 11.1. VILLAGE SAVINGS AND LOANS ASSOCIATIONS (VSLAS)

VSLAs form the cornerstones of adaptive capacity amongst women. In Farfar in particular, there is an increasing engagement with VSLAs, especially by women, and increasing uptake of climate-smart crops in rainy season farming. This is evident in Farfar, where women take loans as start-up capital for new micro-enterprises. These not only increase income, but also increase diversification and thereby, reduce the overall exposure of women's livelihoods to climate changes. Aside from loans, and with reference to the ACCRA-LAC Framework, VSLAs also provide a platform for innovation, a means for disseminating (climate) information (which women might not have access to otherwise), thereby increasing the capacity to plan more effectively, serves as a means for collective action, including in terms of advocating local government for the provision of services. As a result, to some extent, VSLAs operationalise some of the other ALP components, notably the PSPs, because this information is disseminated through VSLAs, and because VSLAs provide women with the finance required to act upon the scenarios set-out in the PSPs.

Having said that, there are large differences across the wealth spectrum, with VSLAs appearing more effective for those with existing financial capacity, than those from asset-poor households. As the report demonstrates, poorer women are less likely to take loans which increase income and diversify livelihoods, which they consider to threaten their use of VSLAs to pay existing expenses such as school fees, or to cover expenses relating to sudden and unexpected shocks, such as medical bills and/or to buy food in case of shortage. As a result, poorer women are less likely to regard PSPs, the CVCA and the CAAP as relevant. **Efforts to change loan utilisation of women from poorer households is critical if the CBA system (VSLAs, PSPs, CAAPs etc.) is to be more inclusive. Since it appears that women with an existing income stream are more likely to take loans to diversify income, this might be achieved by providing extra support for women in generating their first reliable income stream from VSLA loans. That should, in line with the findings of this support, provide the financial confidence to further diversify livelihoods.** It appears as if men are not likely to use the VSLAs to take loans to implement new, climate-smart crop varieties because the monies required are too high to be covered by VSLA loans. In Farfar, this money seems to come largely from lucrative dry-season watermelon farming.

This may also explain some of the differences between Farfar and Kanyini. In Kanyini, where there is very limited dry-season farming, loans are used (by both men and women) as a means of paying existing expenses, rather than diversifying livelihoods. **This has implications for the applicability of VSLAs; they may be a useful vehicle for enabling**



women to diversify livelihoods, and they may be useful in enabling women to farm (since they farm smaller plots, VSLAs loans are sufficient to cover inputs), they may not be feasible in facilitating a wholesale, community-wide shift to more resilient pathways.

## 11.2. ACCESS TO INFORMATION

There is a vast difference in levels of engagement in weather forecasts and climate information between Farfar and Kanyini. Whilst the length of the time that ALP has been implemented (as well as a history/culture of interventions) might explain some of this, the most significant difference is the income generated from watermelon farming. Quite simply, this allows farmers to purchase expensive inputs for more climate-smart farming which, in turn, increases the relevance of the PSP and other climate information. As an indication of the difference, it is estimated that in Farfar 45% of farmers receive daily weather updates whilst in Kanyini, only 2 were identified, financed as part of ALP, of which one had lost his phone and no longer receives the updates. Although income alone does not explain the lack of uptake in Kanyini, this may suggest that a certain level of income is required for the community-wide uptake of climate-smart farming practices.

## 11.3. RISK AND UNCERTAINTY

Risk and uncertainty are key features, both of climate change itself, as well in adapting to those changes. Risk is an inherent part of innovation, and innovation is required to deal with uncertain climatic changes. VSLAs provide an excellent platform through which group members are exposed to innovations (by other members) which work and those that do not work. This is a particularly important dynamic for those who either, are simply less entrepreneurial or, as described above, are less likely to use VSLA loans as start-up capital to diversify income through small business enterprises. **Support for poorer women is required, and might involve better exploitation of VSLAs as platforms for innovation by future adaptation programming using VSLAs.** In terms of dealing with climatic uncertainties and risks, in Farfar PSPs and climate information have, in some situations, been very functional in enabling community members to better plan farming practices. In Kanyini these mechanisms are less valued. This is in part because people feel they do not have the financial resources to engage new climate-smart crop and seed varieties (and fertilizer) which, in turn, undermines the relevance of the PSPs and CVCA because they are felt to be aimed largely at new varieties. A major barrier in this regard is that the risk of a climate shock is not (yet) regarded as imminent enough to prompt proactive investments. A good example of this is that whilst participants in Kanyini noted that windstorms were a manifestation of climate change (and a windstorm in 2011 had destroyed houses and farms), many people, including those who are financially well positioned enough to make such an investment, many had failed to do so. Whilst no good explanation was given as to why people had failed to do so (in the Focussed Group Discussions they all indicated that they had done it, but it appeared upon inspection that they had not done so), it does appear that the risk is not regarded as threatening enough in order to forego present savings in order to make savings (on repairing damaged property) later. **It appears that sensitisation on how real, destructive and imminent climate threats are, might be communicated by future adaptation programming.**

## 11.4. GOVERNANCE, ADVOCACY AND THE COMMUNITY ADAPTATION ACTION PLAN (CAAP):

The participatory development of the CAAP in each of the communities serves both as a starting point, as well a roadmap for a more resilient pathways. It not only maps out community natural resources, but also adaptation options (and these are prioritised). Appropriate strategies for strengthening adaptive capacity are identified, including diversifying livelihoods (for instance dry-season farming, pito brewing, rice processing etc.). Some, although not all require collective action for accessing government services (a dam for dry-season farming, roads and bridges to increase access to market, especially during the rainy-season). Whilst it is clear that the CAAP has played some role in shaping community adaptation pathways, the impact of the CAAP appears to be limited. In Farfar further training on starting and running small-business enterprises (through taking loans from VSLAs) appears to have aligned some of the actions undertaken with the contents CAAP, although people did not attribute them to the CAAP. In Kanyini, participants across the groups failed to articulate any important features of the CAAP. The priorities set out by the CAAP were regarded as either obvious but unattainable (due to a lack of finance), or inappropriate, since Kanyini does

not have a market, and it was believed that many of the new livelihoods being promoted through the CAAP were therefore unlikely to be successful. In order to ensure that the CAAP steers adaptation actions, the CAAP requires ongoing validation, greater emphasis on demonstrating linkages between the CAAP and other CBA components i.e. VSLAs, PSPs etc., and greater efforts need to be made to ensure its ongoing relevance (over the duration of the project). Whilst CAAPs are re-evaluated, this seems to have been less participatory.

As set out in the CAAP, the ALP has gone to great lengths to strengthen the capacity of communities to engage local government for the provision of services by, for instance, strengthening capacities to organise, lobby and advocate. This is also a key part of the CAAP, in which lobbying and advocating for services is central, both in Farfar and in Kanyini. Community Advocacy Committees have been established through ALP. Interestingly, whilst progress on these fronts has been disappointing, with very little progress in the way of these types of infrastructure, there has been a significant increase in collective action, including collective action for advocacy through sub-community structures, such as, for instance VSLAs, community sections or ward, and sub-communities. This type of engagement activity has been increasing and, in many instances has been successful in securing resources (see section 8.2). This suggests that instead of using the whole community as a basis for collective action, future programming should identify sub-community structures through which to foster collective action, including collective action for lobby and advocacy.

## 11.5. MANAGING NATURAL RESOURCES

It appears as if some adaptation measures carry ecological costs which are not internalised. For instance, VSLA loans taken by women are often repaid by income generated through tree felling for the production of charcoal (for selling). This is the case both in Farfar and in Kanyini, although it appears that in the absence of other means of repaying loans, this negative spill over is more widespread in Kanyini than in Farfar. Furthermore, watermelon, which from many perspectives appears to drive much of the adaptation strategies in Farfar, including much of the take up of climate-smart crop varieties, which in turn make the PSPs and other climate information relevant for farmers, is funded by income generated through watermelon farming. However, practices around watermelon farming are highly unsustainable, with large scale felling of trees, excessive use of pesticides and herbicides, farming to river banks (with no buffer zone causing the river banks to collapse and dry out the river through sedimentation) and increasing use of chemical fertilizer to counter declining soil fertility. Not only do some of these practices threaten the long term sustainability of watermelon farming, some (women in particular) complained that the increase use of pesticide resulted in a higher incidence of illness amongst children and animals. There is an urgent need to better organise watermelon farming in order to address mistrust (and pave the way for collective action in the management of natural resources) as well as to establish recognised environmental by-laws in terms of which practices are allowed and which are not (as well as sanctions for non-compliers). Whilst high levels of mistrust make this a difficult task, farmers recognise that current farming methods are not sustainable. Whilst they are aware that tree felling and farming to river banks represent unsustainable practices, training on the use of pesticide/herbicide on the basis of actual pests present in the region is advised. Further (social and agronomical) research would be required to better understand/measure the ecological spill overs, and why adaptation strategies are not coupled with increasing and widespread ecological awareness amongst community members. Finally, whilst farmers are generally aware of what is and what is not sustainable, future adaptation programming should increase the capacities of communities to manage natural resources sustainably (through for instance, agro-forestry), and better understand the drivers and barriers for these being adopted.

## 11.6. ADAPTATION AND MIGRATION:

Mobility, and especially seasonal migration to goldmines in the south is a key feature of both Kanyini and Farfar. On balance, this probably has more downsides than benefits, although the benefits should not be lost in (negative) sentiments towards north-to-south migration. Seasonal migrants are a demonstrated driver of innovation. The watermelon farming in Farfar, which underpins much of the success of ALP in Farfar, was started by seasonal migrants who had seen watermelon farming in the south and took seeds back to Farfar to make an attempt to farm watermelon in Farfar. The bar owner in Kanyini, who is widely regarded as a successful businessman, notes that he saw bars working in small communities in the south, and used money earned in the south to open a bar in Kanyini. A member in his VSLA group decided to emulate him in another section of Kanyini. Furthermore, where watermelon props up much of the development in Farfar, participants in Kanyini note that much of the building of houses, motorbikes

and motokings is funded through income generated through gamamsey. Despite this, it is clear that young men in Farfar are more engaged with ALP (using climate-smart crops, application of fertilizer and engaging the PSPs) than older farmers and/or female farmers, and because this group is largely absent in Kanyini, some impetus for change (in adaptive capacity) is lost as a result. Young men in Kanyini, as a result of their absence, are rarely members of VSLA groups and in Focussed Group Discussions with young men in Kanyini they noted that they had not accessed PSP information. **Future adaptation programming must find a way of dealing mobile communities, embedding migration in adaptation programming by harnessing its potential, and limiting its downsides.**

## 11.7. SUMMARY OF RECOMMENDATIONS:

1. Future adaptation programming should primarily support rainy-season farming. Even those that aim to support other livelihood areas, such as dry-season farming, would do well to measure their overall impact in terms of the impact upon improving rainy-season farming. Adaptation programming should also embed issues relating to climate change and adaptation in broader livelihood concerns
2. Efforts to change VSLA loan utilisation of women from asset-poor households is critical if the CBA system as a whole (CAAP, VSLAs, PSPs, CVCA etc.) is to be more inclusive (pro-poor). Since it appears that women with an existing income stream are more likely to take loans to diversify income, this might be achieved by providing extra support for women in generating their first reliable income stream from VSLA loans. Support for women from asset-poor households might involve better exploitation of VSLAs as platforms for innovation, where group members are able to see which innovations work and which do not, and emulate those that do work.
3. Men appear less likely to use VSLA loans to finance farming inputs because the amount of finance required is larger than VSLA loans. This has implications for the effectiveness of VSLAs; they may be a useful vehicle for enabling women to diversify livelihoods, and they may be useful in enabling women to farm (since they farm smaller plots, VSLAs loans are sufficient to cover inputs), but they may not be feasible in facilitating a wholesale, community-wide shift to more resilient pathways.
4. Instead of using the whole communities as a basis for collective action (as the CAAPs and the CVCA have done), future programming should identify pre-existing, sub-community structures through which to foster collective action, including collective action for lobby and advocacy. The report shows these to be more effective in structuring collective action than larger, community-wide efforts.
5. Future adaptation programming must find a way of internalising some of the benefits provided by mobile groups (such as, as a source of innovation), and embedding migration in adaptation programming by harnessing its potential, and limiting its downsides.
6. There need to organise farmers for the purposes of sustainable natural resource use. Whilst the income generated from new exploitations of natural resources might be significant (for instance, dry-season farming), ecological costs incurred are often equally significant and not internalised. Further (social and agronomical) research is required to better understand/measure the ecological spill-overs, and why adaptation strategies are not coupled with increasing and widespread ecological awareness amongst community members.
7. Future adaptation programming should take note of the impacts of adaptation strategies across (intra-community) groups (women, youth, pastoralists etc.). Some strategies which may strengthen adaptive capacity of one group, may have adverse effects on the adaptive capacity of other groups.
8. Adaptive Capacity is strengthened when several of pillars of the ACCRA-LAC-framework (Asset Base, Knowledge and Information, innovation, flexible and forward-thinking decision-making and governance, institutions and entitlements) are addressed simultaneously. It may be, for instance, that improving access to knowledge and information will not result in a significantly improved adaptive capacity if people are also not given meaningful access to finance (asset base).

# 12. CONCLUSION

The study is, broadly, an attempt to understand the contribution of CBA to local adaptive capacity. More specially, focussing on two communities in which CBA interventions have been implemented, the study sought to assess the impact of CBA through answering the following four central questions

1. Which adaptation processes and strategies have influenced and strengthened useful adaptive capacity, how, to what extent, and why?
2. What is the relationship between them – how does the combination of process (i.e. CAAPs, PSP) and strategy (dry season gardening/farming, VSLA, agro-ecology practices, cassava bulking, advocating for dams and health clinics etc.) impact on changes in adaptive capacity or are there stand-alone activities which are most important triggers?
3. Which aspects of adaptive capacity are most valued and why?
4. What are the drivers and barriers which enable or prevent people from developing or using their adaptive capacity and why?

Generally speaking, it is clear that CBA processes have influenced and strengthened adaptive capacity. The extent of this influence varies significantly across gender, age and wealth indicators. Despite attempts to be participatory, future CBA interventions should take note not to address the symptoms of local inequalities without addressing the structural causes of those inequalities. Community-based microfinance schemes aimed at women, for instance, might consider whether women's lack of access to finance is a cause of the structural inequalities between men and women, or symptom of the inequality. Quite frequently women's access to finance through, for instance, VSLAs, is exploited by husbands, despite the fact that VSLAs clearly move women's adaptive capacity forward. This distinction, between symptoms and structural causes of local inequalities (and how those inequalities shape how adaptation facilities unpack at the local level) requires analysis in the pre-implementation stage which goes beyond the Wealth Ranking Index and CVCA's which have been conducted as part of the ALP programme. Furthermore, important intersectional contours play an important role in defining the level of access to and participation in facilities which can be used to strengthen adaptive capacity. For example, the study has made clear that existing distinctions between women from asset-rich and those from asset poor households largely define how effectively women are able to exploit facilities which can be used to strengthen adaptive capacity. Again, it appears that an extremely pronounced strategy is required (going beyond 'participation') if robust socio-economic cleavages are going to be bridged in defining access to the benefits of adaptation programming.

Not only are groups within communities differently impacted by CBAs such as ALP, different components of ALP have been differently affective. Whilst there is evidence of interplay between the VSLAs, CAAP and PSPs (that CAAPs and PSPs facilitate more anticipatory VSLAs loan taking), this interplay requires strengthening, as in contingent upon certain conditions. Very little value has been attached by participants of the study to the CVCA and/or the Community Wealth Ranking Index. Rain gauge data is considered largely irrelevant. Several factors weaken the interplay, and these deserve explicit mention. The VSLAs are largely regarded as female domains (although male membership is increasing). The advocacy components of the CAAP are male domains, whilst those parts of the CAAP outlining options for livelihood diversification are largely engaged by women. Women indeed have far more diversified livelihoods than men (which clearly on its own does not result in a greater capacity to adapt to climate change). PSPs are largely regarded as useful for men, and specifically those men who can afford to invest in climate-smart practices. In other words, the interplay between the VSLAs, the CAAP and the PSPs is weakened by sharp gender and wealth distinctions within the community. There may be other factors which weaken this interplay which are more contextual. Some communities may be more fragmented than others, resulting in more emphasis on geographic sections or wards. The individual facilities (CAAP, VSLA PSP), at least from a community perspective, are more 'stand-alone' than is perhaps desirable. In order to strengthen the interplay between the CAAP, VSLAs and PSPS, future adaptation programming must analyse gendered/intersectional divisions, and tailor programming to take account of such cleavages, and the process (i.e. CAAPs, PSPs and VSLAs) needs to be made more explicit through increased sensitisation and capacity building.



The success of these processes in facilitating local decision-making towards strengthened adaptive capacity is dependent upon a number of conditions. It must be recognised that adaptation can be costly, and some level of income or wealth is required in order to up-scale, for instance, climate-agriculture. The fact that adaptation bears costs means that risks are considered; people weigh up the risk of a downward trend (in for instance climate) with the cost incurred with moving to a more resilient pathway. We must not assume that the global urgency around climate change (and having to act immediately) is shared by communities, even those considered highly-exposed and extremely vulnerable. Climatic changes are instead part of a series of constraints on livelihoods, and dealing with such constraints, is etched into the socio-cultural histories of most communities in northern Ghana. If action is urgent, then the consequences of inaction need to be made much clearer, including the likelihood of disaster.

The value attached to different aspects of adaptive capacity varies across groups. Quite simply, and this is not unexpected, men value those aspects that relate to agriculture, whilst women value those aspects which relate to domestic duties, such as food stocks, health care and school fees. Here a decision must be made; does strengthening the adaptive capacity of women in gendered roles (in the short-run) outweigh a more ideological approach in which adaptation is used to try to close existing gender gaps (which appears a more long term ambition)? CBAs, including ALP, thus far, whether by design or by accident, have tended to favour the former, and VSLAs, CAAPs and PSPs, whilst strengthening women's adaptive capacity, have tended also to consolidate gender divisions. Within the current trajectories, in a successful scenario, the interplay of VSLAs, CAAPs and PSPs strengthen women's adaptive capacity by enabling them to establish small business enterprises and therefore diversify livelihoods, whilst men adopt climate-smart agriculture, increasing both resilience and yields. The objectives of CBA is this regard need to be made clearer in the pre-implementation phase.

Whilst there are several barriers and drivers identified in this report, and these vary across both gender, age and wealth, from a community perspective, achieving an ecological balance is fundamental. Without explicit attention to the natural resource base, adaption programmemeing runs the risk of (perhaps unintentionally) favouring what appear to be short term gains in adaptive capacity over long-term ecological sustainability. The study has illustrated that several of the adaptation strategies employed bear significant ecological costs. Since natural resources form the core asset of rural communities upon which livelihoods are dependent, they need to be taken up in baselines, and monitored for the duration of the project.

Finally, it is clear that CBAs such as ALP serve as a critical format for strengthening local adaptive capacity. The study illustrates that (albeit to different degrees), ALP has successfully strengthened the adaptive capacities of community groups (women, youth men etc.) and that the potential to increase local adaptive capacity through CBA processes is significant. Having said that, CBAs must better acknowledged that communities are not homogenous, and that CBA processes land within structurally uneven contexts. As a result, a better contextual understanding of structural inequalities is required in the pre-implementation phase, in order to better anticipate how CBAs are likely to play out (both socially and ecologically). It is clear that information and participation, albeit necessary, are not sufficient conditions for the prioritisation and uptake of adaptation strategies, nor are they sufficient conditions for pro-poor and/or ecologically sustainable outcomes (with increased resilience). More inclusive and sustainable CBAs programmemeing will require more overt strategies to address existing gender and age (power) inequalities (in terms of accessing the benefits of CBAs), as well intersectional cleavages.

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The Adaptation Learning Programme (ALP) for Africa aims to increase the capacity of vulnerable households in sub-Saharan Africa to adapt to climate change and climate variability. Since 2010, ALP has been working with communities, government institutions and civil society organisations in Ghana, Kenya, Mozambique and Niger to ensure that community-based adaptation approaches and actions are integrated in development policies and programmes. This is achieved through the demonstration and dissemination of innovative approaches for CBA, supported by practical tools, methodologies and evidence of impact. ALP is also working to create an enabling environment for CBA by working directly with local and national governments and with civil society to influence national and international policy frameworks and financing mechanisms for adaptation.

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