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Small-scale farmers and climate change

How can farmer organisations and Fairtrade build the adaptive capacity of smallholders?

2012

Jessica Frank and Chris Penrose Buckley
TWIN

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Smallholder farmers are disproportionately vulnerable to the impacts of climate change as a result of poverty, marginalisation and reliance on natural resources. Climate change is likely to lead to decreasing crop yields in most tropical and sub-tropical regions, negatively impacting agricultural sectors and reducing food security in developing countries. It is imperative to identify approaches that strengthen ongoing economic development efforts and enhance the adaptive capacity of farmers, their households and their communities.

This paper explores the links between farmer organisations, Fairtrade and adaptation to climate change, and the extent to which such institutions and market arrangements can enhance the adaptive capacity of smallholder farmers. It does this by reviewing evidence from published research and studies and by analysing case studies of two Fairtrade-certified farmer organisations in Uganda and Malawi. The paper's findings suggest that membership of farmer organisations and participation in Fairtrade can strengthen smallholders' capacity to adapt to climate change in a number of ways.

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Contents

Executive summary

Background and context

THIS PAPER EXPLORES THE LINKS BETWEEN FARMER organisations, Fairtrade and adaptation to climate change, and the extent to which such institutions and market arrangements can enhance the adaptive capacity of smallholder farmers. It does this by reviewing evidence from published research and studies and by analysing case studies of two Fairtrade-certified farmer organisations in Uganda and Malawi.

Smallholder farmers are disproportionately vulnerable to the impacts of climate change as a result of poverty, marginalisation and reliance on natural resources. Climate change is likely to lead to crop yields decreasing in most tropical and sub-tropical regions, thereby negatively impacting agricultural sectors and worsening issues of food security in developing countries. Although smallholders have considerable experience in dealing with climate variability, the unprecedented levels of variability associated with long-term climate change are outside the realm of traditional coping strategies (Pettengell, 2010).

As climate change impacts are increasingly observed and felt by smallholder farmers, there is an urgent need to identify approaches which strengthen ongoing economic development efforts and enhance the adaptive capacity of farmers, their households and their communities. Reducing people's vulnerability to climate change is closely linked to the poverty reduction and economic development agendas, since poverty is both a condition and a determinant of vulnerability (Hamill *et al*., 2008). Effective and sustainable adaptation to climate change in the long run is therefore dependent on broad-based economic development in which smallholders are able to move from low return subsistence activities to higher return livelihood activities.

Both farmer organisations and certification systems, such as Fairtrade, have received growing attention in rural development policy in recent years. Researchers, donors and practitioners alike have recognised the role and potential value of farmer organisation in enabling small-scale producers to access and benefit from formal markets. There has also been growing interest in the role that product certification schemes, notably Fairtrade, can play in promoting rural development and addressing market failures. Adaptation must sit high on the Fairtrade agenda since, as well as increasing producers' vulnerability, climate change magnifies inequality; those who contribute least to global emissions will suffer the most.

Smallholder Adaptive Capacity Framework

In order to assess the extent to which participation in farmer organisations and Fairtrade promotes adaptation, it is necessary to identify what we mean by adaptive capacity and examine how assets, processes and capabilities combine and interact at various levels. Drawing on the Local Adaptive Capacity framework developed by the ACCRA consortium, this paper develops a smallholder adaptive capacity framework identifying key characteristics of particular relevance to small-scale farmers.

This framework pays particular attention to farmer agency and important dynamic processes such as market engagement. The characteristics are grouped into the following three levels to emphasise the important, if complex, relationships and dependencies between the different elements:

Level 1: Agency, at the centre, links all the different elements and levels

Level 2: These are core attributes or capabilities that facilitate other processes

Level 3: These are key processes, enabled as a result of the existence of certain core attributes

Impact of farmer organisations and Fairtrade on adaptation: the evidence

Drawing on the smallholder adaptive capacity framework introduced in the previous section, recent studies and research findings are reviewed to identify what theoretical arguments and empirical evidence there is that farmer organisations and/or Fairtrade contribute to smallholder adaptive capacity.

Both the case study and theoretical literature suggest that membership of a farmer organisation such as a co-operative and involvement in Fairtrade can enhance the adaptive capacity of smallholders in a number of ways, including: better access to services, including credit and savings institutions and extension services; strengthened social capital within local communities which in turn can facilitate agency and innovation; enhanced financial capital, both through increased and more stable incomes, and improved access to credit;

Figure 1. Smallholder adaptive capacity framework

and access to market information enabling organisations to orientate themselves effectively in the market and add value to their product.

It is worth noting, though, that there are significant gaps in the research regarding the impacts of Fairtrade on farmers' livelihoods. This reflects, in part, a bigger gap in the evidence base on the impacts and outcomes of collective action through farmer organisations.

Case studies

Two very different farmer organisations are examined in the case studies section, which provides an interesting contrast in terms of their respective impact on adaptive capacity.

Gumutindo Coffee Co-operative in Uganda is an organically developed, democratic organisation of roughly 9,000 smallholder farmers who produce washed Arabica for the speciality coffee market. Gumutindo farmers are cultivating a highly climate sensitive crop – Arabica coffee only flourishes within a very small temperature band – on extremely steep slopes which are highly vulnerable to landslides. Gumutindo members are certified Fairtrade and Organic and have collective ownership of an export agency.

Kasinthula is a smallholder sugar cane outgrower scheme in Malawi, supplying cane to a large sugar mill run by Illovo Sugar Ltd. The scheme, based in the Chikwawa region of southern Malawi, is expanding to include 482 farmers, roughly one-third of whom are women. The outgrower scheme was established by the Sugar Corporation of Malawi, in order to increase sugar cane supply to the mill beyond the large existing plantations owned and managed by the mill.

Lessons and next steps

Although further work is required to develop a better understanding of the relationships between the different components of adaptive capacity identified, it is clear that membership of farmer organisations and Fairtrade schemes can have positive impacts in a number of ways. A particularly interesting insight is that the position of farmers within the value chain, linked to different business models, appears to shape smallholder adaptive capacity in very different ways. While it is difficult to say which type of set-up builds adaptive capacity more effectively, the findings nonetheless raise important questions about the varied scope of influence that the producers' position in the value chain and their relationships with immediate buyers can have.

Key questions which emerge are:

- *How can actors in the value chain and other stakeholders structure their business models and relationships with producers to maximise their impact on farmers' adaptive capacity?*
- *How can Fairtrade use its unique market position to leverage partnerships and resources to ensure that smallholders can access technology, knowledge and other resources to adapt?*
- *Climate change will force some farmers to diversify into other crops, or out of agriculture altogether. Given the uncertainty and constraints on resources, at what point should a farmer organisation start promoting diversification?*
- *To what extent do farmer organisations and Fairtrade enable farmers to transcend the social norms and hierarchies that constrain their access to the resources and services they need for development?*

Introduction

"ADAPTATION IS A DYNAMIC SOCIAL PROCESS: THE ability of societies to adapt is determined, in part, by their ability to act collectively" (Adger, 2003).

Poor people in developing countries are most vulnerable to the impacts of climate change owing to their limited capacity to cope with climate shocks and stresses and their reliance on natural resources and the environment (DFID, 2004). Smallholder farmers are disproportionately affected, with over 1.5 billion people worldwide living in smallholder households in rural areas where their livelihoods depend on agricultural activities (World Bank, 2008). There is therefore an urgent need to identify approaches that strengthen the adaptive capacity of smallholders and enhance their ability to respond to climate change.

In recent years, governments and donors have increasingly recognised that collective action, in the form of farmer organisations, enhances the ability of smallholder farmers to participate and compete in markets and strengthen their livelihoods (World Bank, 2008). However, these organisations are often operating in very challenging environments and with limited resources, and therefore require external support delivered in a skilled, consistent and sensitive manner to fulfill their potential as engines of pro-poor rural growth (ODI, 2005). Support mechanisms include certification systems, such as Fairtrade, which have received growing attention over the last decade.

Box 1

In Malawi, where tea is the second biggest export crop, there are four Fairtrade-certified producer groups, with membership totalling 9,800 smallholder farmers plus up to 2,600 workers. Fairtrade has led to stronger farmer organisations and given a greater voice to hired labour on large estates (Fairtrade Foundation, 2010). One example is Satemwa Tea Estate, which in partnership with its Joint Body is supporting an adult education programme, thought to be the largest in Malawi. The programme has over 550 pupils who are gaining skills and confidence. *"Most of us dropped out of school without knowing how to read and write. We are happy that the company through the Joint Body has introduced adult literacy classes to enable us to upgrade our knowledge"* Satemwa tea plucker.

Climate change adaptation must sit high on the Fairtrade agenda, since as well as increasing producers' vulnerability and threatening supply, climate change magnifies inequality within value chains; those who contribute least to global emissions are unfairly impacted by the lifestyles of wealthy consumers at the other end of the chain.

It is therefore clearly important to understand to what extent participation in farmer organisations and Fairtrade can enhance smallholder farmers' adaptive capacity in order to support the most effective interventions. However, until now these linkages have remained mostly theoretical. This paper explores this question by looking at research and case study evidence, which analyse links between farmer organisations, Fairtrade and adaptive capacity. These linkages will be explored using a conceptual framework that identifies key characteristics of smallholder adaptive capacity.

The paper is organised as follows:

Section 1 introduces the paper;

Section 2 sets out the contextual issues in greater depth;

Section 3 introduces a smallholder adaptive capacity framework, to shape the analysis;

Section 4 reviews existing literature about the impacts of farmer organisations and Fairtrade on smallholder farmers;

Section 5 details two case studies from Malawi and Uganda, demonstrating the impacts of farmer organisations and Fairtrade on their members;

Section 6 summarises the main discussion points and sets forth key remaining questions

Context

Climate change and smallholder agriculture

THE INTERGOVERNMENTAL PANEL ON CLIMATE Change (IPCC) predict that climate change will lead to decreasing crop yields in most tropical and sub-tropical regions owing to alterations in temperature and precipitation patterns (IPCC, 2001), thereby negatively impacting on agricultural sectors and worsening the prevalence of hunger in developing countries. As well as inflicting these direct climatic impacts, climate change will compound the existing vulnerabilities of smallholder farmers, as a result of poverty, sensitivity of their geographical locations, high dependence on natural resources and limited capacity to adopt new livelihood strategies (ADB *et al*., 2003). Smallholder farmers are particularly vulnerable given their marginalised status and dependence on climate-sensitive livelihood strategies. Although smallholders have considerable experience in dealing with climate variability and possess local knowledge to cope during difficult periods, the unprecedented and sustained levels of variability associated with long-term climate change are outside the realm of what traditional coping strategies are able to manage (Pettengell, 2010).

Box 2

Cashew farmers from India are among the thousands of smallholders across the tropics already reporting unusual levels of climate variability. These include higher temperatures, and abnormal rainfall patterns with heavier downpours and longer drought periods. Tomy Matthews of Fairtrade Alliance Kerala, a co-operative producing cashew, black pepper and coffee, talks about the problems local farmers are facing: *"Climate change, for us, is here and now. Climate change is not something that is going to be in the future, about which we have to be scared. Our cashew production nearly halved this year, because the rains played truant and that's a direct impact."*

Estimates of the impacts of climate change on agriculture suggest that in the future productivity and production stability will be reduced in areas which are already food insecure (FAO, 2010). Agriculture in developing countries

Box 3

Organic fertiliser

Planting cover crops and employing mulching and composting techniques all increase soil fertility and organic matter content. Nitrogen-fixing or leguminous cover crops usually have the greatest impact, since production is often limited by low concentrations of nitrogen in over-cultivated soils. Covering the topsoil with a protective layer also decreases soil temperature and reduces moisture loss through evaporation in tropical climates. These techniques are valuable for all organic farmers as well as those who have limited access to chemical fertilisers and herbicides but have agricultural residues that otherwise go to waste.

In Peru, Chirinos Co-operative is developing an innovative project to supply organic compost to local farmers using technology they call Pachakushi, meaning 'Happy Land'. The system uses waste products to produce fertiliser which is sold to farmers at affordable prices to improve local food security. The fertiliser plant has achieved good results so far and the co-operative is keen to expand the project by increasing production capacity and research and development (R&D). These plans include:

- Investing in small-animal husbandry to provide raw materials for production
- Creating an R&D centre to analyse and improve the quality of fertilisers and train locals
- Building a biogas plant to ensure a sustainable source of fuel for the heating processes
- Purchasing machinery to increase efficiency

Photo: @Twin

must undergo a transformation to become 'climate-smart' in order to prevent climate change from further exacerbating food insecurity amongst the rural poor. To adapt to climate change, smallholder producers will need new and improved technologies, skills and knowledge, or in many cases, to be linked to existing technologies which are currently inaccessible. These may include, for example, improved water management using rainwater harvesting or soil stabilisation techniques; soil conservation and erosion control through terracing and agroforestry; and greater use of renewable energy through biogas and solar PV.

Given the huge amount of uncertainty surrounding specific climate change impacts, choosing the most appropriate tools needs a very careful approach, to avoid locking poor communities into unsuitable technologies (Practical Action, 2009). Training and support for specific or technical interventions needs to be focused on areas which enhance adaptive capacity and boost resilience for farmers to avoid maladaptive interventions. Enabling producers to adopt or develop sustainable agricultural techniques is therefore an essential means of improving resilience.

Adaptation meets development

Adaptation can be framed along a continuum of different interventions from "pure" development activities, which address the underlying causes of vulnerability, to those responses which specifically target climate change impacts and hazards (McGray, 2007). There is therefore considerable overlap between adaptation and development agendas, with enhanced adaptive capacity supporting sustainable development, and vice versa. This reality is highlighted by the degree to which international development organisations have taken on the challenge of climate change, pushing adaptation right to the top of their agendas and mainstreaming climate change into existing programmes. This paper, therefore, takes a holistic approach, giving due consideration to the social, economic and environmental dimensions of adaptive capacity.

Reducing people's vulnerability to climate change is closely linked to the poverty reduction and economic development agendas, since poverty is both a condition and determinant of vulnerability (Hamill *et al*., 2008). Effective and sustainable adaptation to climate change in the long run is therefore dependent on broad-based economic development in which smallholders are able to move from low-return, subsistence activities, to higher-return livelihood activities, linked in to markets. A useful way of describing this transition is to distinguish between three livelihood strategies which poor households may adopt:

Hanging in – people are forced to undertake activities to maintain livelihood at a 'survival level'

Stepping up – people make investments in existing activities to increase returns

Stepping out – people invest in existing activities to accumulate assets as a basis for investment in alternative, more remunerative livelihood activities.

Just as effective economic development interventions need to enable smallholders to move from 'hanging in' to 'stepping up' and eventually 'stepping out', interventions aimed at building adaptive capacity need to go beyond merely supporting 'coping strategies' for climate related hazards and stresses and support farmers to build up their asset base and strengthen those capabilities and dynamic processes which are critical to resilience and economic development. Effective markets and increased market engagement are fundamental to this transition, although in practice markets and their frequent failures are often experienced mainly as a source of risk to smallholder farmers. There is therefore often a tension between promoting higher-return and higher-risk strategies, linked to the market, and promoting diversification as a risk management strategy. While diversification of assets and livelihood activities reduces risk, it is greater specialisation that enables smallholders to accumulate assets and develop pathways out of poverty.

A challenge for both economic development and adaptation is to enable smallholders to make this transition by identifying and promoting institutions and mechanisms that allow smallholders to manage and overcome market risks and failures. Both farmer organisations and Fairtrade represent institutional innovations in response to market weaknesses and failures. It is therefore important to understand to what extent they contribute to the various characteristics of smallholder adaptive capacity, both directly through economic development and indirectly through the processes they can nurture and stimulate.

Farmer organisations

For the purpose of this paper, farmer organisations are defined as having the following key features. Firstly, they are rural businesses; commercial enterprises which are financially sustainable and provide tangible benefits to their members as well as being able to cover costs. Secondly, they are democratically governed organisations which are owned and controlled by their members who are mostly small-scale farmers. The third defining characteristic of farmer organisations is that they are collective marketing organisations, and that while they may engage in other collective activities, they predominantly exist to market their members' produce (Penrose Buckley, 2007).

The focus of the international donor community has once again turned to small-scale agriculture as a means of pro-poor rural growth in developing countries. Although collective action through farmer organisations has a long history it has recently received considerably more attention in relation to the rural development policies of the donor community. In its 2008 World Development Report, the World Bank identified producer organisations as a 'fundamental building block' of its agriculture-for-development agenda, and prioritised support to enhance producer organisations' performance as a key strategy to increase the productivity and sustainability of smallholder farming (Oxfam, 2008).

Fairtrade

The 'Fairtrade' label is a mark given to products which have been certified by the Fairtrade Labelling Organisation (FLO) for meeting the required social and environmental standards. FLO aims to improve the livelihoods of smallholder producers in developing countries through a number of mechanisms

including: the producer and trade standards, the Fairtrade minimum price and premium, as well as capacity building, networking and advocacy activities (Nelson, 2010). Through these mechanisms Fairtrade has positively contributed to the lives of hundreds of thousands of smallholders, many of whose predominant livelihood activities are now at risk from climate change.

A number of Fairtrade products, including cotton, cocoa, coffee, sugar, tea, bananas and flowers are likely to be affected by climate change (Nelson, 2010). It is therefore important to assess to what degree Fairtrade can support both development and adaptation in an uncertain and challenging climate future and highlight those areas which will most benefit from interventions. As well as commanding their own wide ranging resources and networks of people across the globe, the Fairtrade system also has partnerships and relationships with actors throughout their supply chains, including importers, processors, commercial brands and retailers. This overview of the whole sector gives Fairtrade the unique position of being able to mobilise players across the entire industry and use their existing mechanisms to specifically support adaptation.

Farmer organisations and Fairtrade therefore clearly have the potential to make significant contributions to building the adaptive capacity of smallholders by working towards enhancing rural development in marginalised areas. However, although certification is becoming more inclusive and mainstream, credible impact assessments are still relatively few in number. Moreover, a significant proportion focus on Fairtrade outputs (such as higher prices and training activities) as opposed to impacts (changes in wealth, skills and empowerment) which are harder to measure (Nelson, 2009). Certainly, there has been relatively little analysis of the impacts of farmer organisations and Fairtrade on attributes and processes key to adaptive capacity which sit outside of traditionally evaluated developmental indicators.

Characterising the adaptive capacity of smallholder farmers

IN ORDER TO ASSESS THE EXTENT TO WHICH participation in farmer organisations and Fairtrade promotes adaptation, it is necessary first to identify what we mean by adaptive capacity and examine how different assets, processes and capabilities combine and interact at various levels to create this type of capacity.

There are a number of papers that examine determinant factors of farmers' strategies for adapting to climate change (Brooks *et al.,* 2005; Deressa *et al*., 2009; Dulal *et al*., 2010; Hassan and Nhemachena, 2008) including explanatory variables such as seasonal climate variations and socio-economic factors. However, these models have focused predominantly on individual assets, with less attention given to dynamic processes and capabilities and the ways in which individual capacities interact with local and regional institutions, such as markets, to shape and influence adaptive capacity.

Smallholder farmer adaptive capacity framework

A useful starting point to describe the key elements of adaptive capacity is the Local Adaptive Capacity framework (LACf) developed by the ACCRA consortium.[1] This framework (see Annex 1) identifies five core characteristics of adaptive capacity: the asset base; institutions and entitlements; knowledge and information; innovation; and flexible forward-looking decision-making and governance. This framework moves away from an asset-orientated approach to assess what a system does to enable it to adapt, as well as what it has (WRI, 2009). It recognises the important role of less tangible and dynamic dimensions, such as flexibility and innovation, alongside capitals and resource-based components (Jones *et al*., 2010). According to this model, each dimension has significant impact on the adaptive capacity of a given system, but not all five attributes are critical to achieve high adaptive capacity.

While the model recognises the systemic nature of adaptive capacity, it does not describe how the different elements interact, or how different capacities combine to enable other processes. For example, access to knowledge and adequate capital are prerequisites for technological innovation (Wennink and Heemskerk, 2006). In order to use this framework to prioritise interventions that build adaptive capacity, it is important to understand these interactions and enabling flows, in order to support an approach which targets all the relevant characteristics that need to be developed for specific circumstances.

Moreover, for the purpose of this paper, which focuses specifically on smallholder farmer organisations, greater prominence needs to be given to processes that are critical for smallholder adaptation and economic development: market engagement and influence, without which it is impossible to

Table 1. LAC's five characteristics and their features

Adaptive capacity at the local level	
Characteristic	**Features that reflect a high adaptive capacity**
Asset base	Availability of key assets that allow the system to respond to evolving circumstances
Institutions and entitlements	Existence of an appropriate and evolving institutional environment that allows fair access and entitlement to key assets and capitals
Knowledge and information	The system has the ability to collect, analyse and disseminate knowledge and information in support of adaption activities
Innovation	The system creates an enabling environment to foster innovation, experimentation and the ability to explore niche solutions in order to take advantage of new opportunities
Flexible forward-looking decision-making and governance	The system is able to anticipate, incorporate and respond to changes with regards to its governance structures and future planning

1 The ACCRA consortium includes: the Overseas Development Institute (ODI), Oxfam GB, Save the Children Alliance, Care International and World Vision International, and is funded by the UK Department for International Development (DFID).

Figure 2. Smallholder Adaptive Capacity Framework

build up an assetbase; and farmer agency and empowerment, characteristics fundamental to sustainable adaptation.

In order to capture these specific characteristics we have developed an amended framework, drawing heavily on the five components of the LAC framework. This framework separates the characteristics into three layers to reflect the inter-dependency of the different elements:

Level 1: Agency, at the centre, links all the different elements and levels

Level 2: These are core attributes or capabilities that facilitate other processes

Level 3: These are key processes, enabled as a result of the existence of certain core attributes

The relationship between these elements is highly complex – far more so than can be easily depicted in a simple schematic – with the dependencies flowing in both directions in some circumstances. A number of the characteristics transcend more than one layer. For example, well-developed institutions can support entitlements and access to knowledge and technology; equally, access to knowledge and strong entitlements can lead to participation in formal institutions. Likewise, while markets are a prerequisite for accumulating assets, without any assets at all, they are impossible to engage with. This layered framework is a step towards acknowledging the dynamic interactions and dependency between different components of adaptive capacity. Each level and its different components is described in more detail below.

Level 1: Agency

Although participation in decision-making processes are included in the LAC framework as a result of involvement in well-developed institutions, this does not fully capture the central role of agency or empowerment in developing adaptive capacity at the individual and community level. Farmer agency has been put at the centre of the framework to highlight its fundamental importance in ensuring successful and long-term adaptation. Agency is inherently linked to all the other characteristics and flows throughout the different layers of the framework. Adaptive capacity is the ability of individuals, communities or organisations to actively engage in the process of increasing their resilience to climate change (Pettengell, 2010) and as such it is critical that smallholders are the main agents of building resilience to climate change at the local level. Agency and collective action are closely linked, since collective action is both a manifestation of, and a vehicle for, empowered individuals taking proactive measures.

Level 2: Core capabilities

Institutions: formal and informal

Communities with effective social institutions are considered to be better placed to respond to changes in their environment compared to those that have less well-developed institutions (Jones *et al*., 2010). Of particular importance for this paper are formal primary-level farmer organisations, such as primary co-operative societies or village-level associations; the second-level organisations that aggregate primary-level organisations, such as co-operative unions; the intermediary organisations through which farmers access the market and services; and the networks and partnerships that build individual and collective social capital. The ability of local institutions to enhance adaptive capacity depends on these linkages with other organisations, and institutions with multiple links are likely to have greater capacity to adapt than those who act alone (Agrawal, 2002).

Knowledge and technology

Access to appropriate knowledge and technology is central to maintaining and increasing productivity as well as making crucial investment decisions about how to diversify or specialise and intensify in the face of changing climatic conditions. While communities have always adapted to variations in the climate, the unprecedented rate at which the global climate is now changing is not within the realms of experience and so outside expertise will need to be integrated with local knowledge to build adaptive capacity effectively. In many circumstances, there are existing technologies and sustainable agricultural techniques which could enhance the resilience of ecosystems and increase production. Examples include: rain water harvesting and irrigation techniques; building contours and trenches and planting grasses to stabilise soil; and employing integrated pest and disease management, to name just a few. However, more action research needs to be done to develop technologies and approaches specific to certain crops and commodities. For example, more work is needed to develop shade systems that provide nutrients and stabilise soils without competing for water. Similarly, more water-efficient techniques and technologies need to be developed to replace certain wasteful processes, as well as efforts to produce more resistant varieties of seeds.

Understanding of global climate change and the consequent local impacts in the short and long term is also essential to enable farmers to take appropriate action and extend their planning horizons. There is currently a considerable gap between the research carried out by institutions at the national or international level, and the knowledge and technology that is actually utilised by individual farmers. The development of strong action research partnerships between farmer organisations and relevant institutions would ensure that appropriate research is conducted and then effectively 'translated' and disseminated amongst smallholders.

Assets

The focus here is on tangible natural, physical and financial assets. As well as acting as a 'safety net' in time of crisis, assets enable farmers to innovate and take risks, supporting longer-term sustainable adaptation as well as merely 'coping'. As such, assets are critical to forward-planning and innovation, as well as market engagement and influence. A diverse asset base is also central to strengthening adaptive capacity since the ability of a household to deploy a surplus or alternative assets allows families to maintain existing livelihood strategies in times of crisis (Jones *et al*., 2010).

Natural assets –	land, water, forests and forest products
Financial assets –	savings, income, credit (formal and informal)
Physical assets –	inputs, tools and equipment, infrastructure (transport, storage facilities)

Level 3: Processes of a system

Market engagement and influence

The existence of markets and the capacity to engage in them is partly reflected in the Institutions and Knowledge components of the LAC framework. However, they are given more explicit attention here, as a separate element of adaptive capacity, because of their fundamental importance in determining livelihood strategies for the rural poor. Moving out of 'hanging-in' strategies inevitably involves specialisation and trade. Agricultural markets are critical for such transitions, as they affect poor people as both producers and consumers. However, in many cases markets do not exist, do not work properly, or do not offer secure prices that enable small-scale producers to invest in production and 'step-up'. In this context markets are often viewed as a threat or risk to livelihoods rather than an opportunity, and the imperative to avoid losses rather than increase returns discourages many smallholders from actively engaging in markets. In the context of weak and failing markets, there is need for greater market coordination between different actors to reduce transaction risks and costs, strengthen bargaining power and overcome minimum price thresholds. Farmer organisations are one means through which smallholders can actively influence and shape markets to increase their bargaining power, and improve access to markets and critical services.

Innovation

Experimentation and innovation are essential characteristics of adaptive capacity and will be central to ensuring that a system can cope with, and adapt to, shocks, stresses and long-term changes in the environment (Jones *et al*., 2010). Innovation relies on access to credit or a strong assetbase (Jones *et al*., 2010) with extension services or other social networks providing key knowledge about the impacts and threats of climate change, and fostering environments in which farmers can adapt existing knowledge and build on their own experience to respond and prepare for changes in the environment. At a national level, participatory and user-orientated research and extension are considered the main drivers behind agricultural innovation, supported by a multi-directional flow of knowledge and technology between farmers, extension providers and researchers (NRI, 2010). It is important to recognise that not all individuals will be innovators and effective institutions are therefore critical so that successful innovations are shared more widely.

Entitlements

Entitlements are the ability of individuals and communities to access the resources, services and assistance they need, through market exchange, state welfare provision or as a gift, in order to meet their basic needs (hanging in) or to invest to accumulate wealth (stepping up and out). The ability, and not just the right or freedom, to access these resources, services or assistance depends on a range of factors, including access to functioning markets, membership of and position in social networks and hierarchies, and social norms such as gender. These factors shape and define and often constrain

individuals' and communities' ability to exert their rights, develop the social capital required to access markets on favourable terms, develop reciprocal support relationships, or access state services. Entitlements are closely linked to the other elements of adaptive capacity, in particular organisation and networks, knowledge and skills, and market engagement. It is also important to recognise the potential role of collective agency in influencing and challenging social norms and hierarchies that constrain entitlements.

Forward planning

'Flexible forward-looking decision-making and governance' is identified in the LAC framework as the ability to anticipate change and shape plans and institutions accordingly, and is a critical dimension of adaptive capacity ignored in earlier, assetbased approaches. However, emphasis on this capacity at the system level ignores the complex relationships between different parts of the system, and how flexible forward thinking at one level, for example in the strategic plans of a farmer organisation, does or does not encourage longer planning horizons in the investment decisions of individual farmers.

Smallholders generally work with short-term timeframes for decision-making and farm-level investment, which represents a key barrier to building adaptive capacity in the face of climate change. Being part of an organisation can potentially increase the planning horizon for individual farmers, but equally, a democratic approach to decision-making may hinder the flexibility and long-term planning that collective businesses require to adapt to a changing environment. The degree to which farmer organisations can be flexible will be highly dependent on their access to knowledge and information, their links into wider networks through which they access this information, and their capacity to plan effectively. Institutions shape the ability of households to respond to climate impacts and pursue adaptation strategies (Agrawal, 2008) so strong, forward-looking decision-making from farmer organisations will support their members to adapt successfully. At the individual level, strong market access and influence, a good asset base and developed flows of knowledge should support flexible forward-planning and decision-making.

Farmer organisations' and Fairtrade's impact on adaptation: the evidence

WHAT EVIDENCE IS THERE IN OTHER STUDIES AND research findings regarding the relationship between farmer organisations, Fairtrade and increased adaptive capacity?

This section provides an overview of relevant arguments and concrete findings from published research and reports, through the lens of the adaptive capacity framework introduced in the previous section.

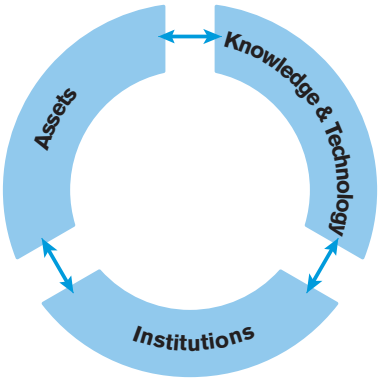
Collective action for empowerment

Agency

According to Penrose Buckley (2007), the process of working collectively for a communal outcome can create solidarity and develop confidence amongst smallholder farmers, thus enabling them to face the risks and challenges of the market and increase their influence on local policies. Wennink *et al*. (2007) state that social inclusion is closely related to empowerment, and people taking control of their life and destiny such that membership of a well-governed farmer organisation can lead to producer agency. It is therefore likely that participation in decision-making within the institutional context of a farmer organisation can promote local ownership, support community empowerment and enhance key entitlements, particularly those of marginalised groups, for example women.

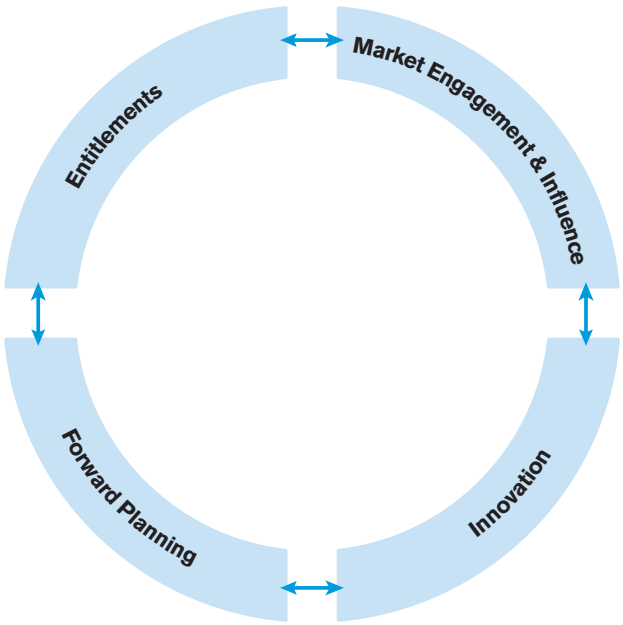
Nelson and Pound (2009) suggest that all of the various inputs of Fairtrade (social development principles, economic inputs and environmental criteria) positively shape the extent to which it is empowering for different groups of producers and workers. Out of the papers analysed in 'The Last Ten Years: A comprehensive review of the literature on the impact of Fairtrade' (Nelson and Pound, 2009), the majority identified positive elements of at least one empowerment aspect examined for individual small-scale producers.

Specifically with regard to the producer ownership dimension of empowerment, a number of studies cite the example of Kuapa Kokoo, a Ghanaian cocoa-producing co-operative which owns the chocolate trading company Divine. In this case, farmer ownership has clearly had some positive effects, with farmers reporting increased confidence and self-esteem flowing from their upgraded roles in the value chain (Ronchi, 2002), although it is harder to attribute increased material wealth or social wellbeing directly to ownership (Nelson, 2010). It is also important to note, however, that this level of farmer influence on downstream linkages is an exceptional case, with Fairtrade principles and rules strongly focused on upstream links and little opportunity for co-ownership and profit sharing further along the supply chain (Ruben *et al*., 2008).



Assets: Fairtrade premium and minimum prices

Fairtrade entitles smallholders to a minimum price and a social premium, designed to support community projects. The Fairtrade minimum price acts as a safety net when the market price is low, providing farmers with a stable income, and is considered to be one of the most important direct benefits to smallholders (Hopkins, 2000; Raynolds, 2002; Murray *et al*, 2003; Pérezgrovas & Cervantes, 2002; Milford, 2004; and Fend, 2005 - in Imhoff and Lee, 2007, cited in Nelson and Pound, 2009). With regard to the social premium, Ronchi (2002) reports that members of Kuapa Kokoo co-operative feel highly positive about community investments made and the changes that have resulted from certain projects. Producers and their families are also able to increase physical capital using the Fairtrade premium, which is invested in community infrastructure, services including water and roads or transport links (Utting, 2008). In an impact assessment of two Nicaraguan co-operatives, Bacon (2006) found that as a result of Fairtrade participation, they had raised $1.5million in social premiums over the previous 10 years, and a further $14million in 'above market value-added sales' into premium and speciality markets.



Access to services: credit, technology and extension

Members of farmer organisations may also enjoy significantly greater access to services owing to the cost savings that service providers enjoy by working with large groups (Penrose Buckley; Wennink *et al*., 2006), including access to financial services such as credit and insurance institutions. Some farmer organisations support their members directly with access to financial capital. Markelova *et al*. (2008) identify a number of cases, including those of potato and millet farmers who have acted collectively to provide savings and credit facilities for their members. Kuapa Kokoo has set up its own credit union to allow members to access finance and raise their standards of living (Ronchi, 2002). Furthermore, a number of authors provide evidence that membership of a formal organisation can help to release a higher level of credit to farmers, with Fairtrade producers enjoying greater access to credit than their non-Fairtrade counterparts (Nelson and Pound, 2009). In their study of coffee and banana co-operatives, Ruben *et al*. (2008) found that "almost without exception, the case studies reveal substantial and significant positive effects for FT households with respect to credit access and asset value".

There is some evidence that membership of farmer organisations supports smallholder access to agronomic training since farmer organisations and local service providers are increasingly working together to provide fundamental extension services where government-funded programmes are failing (Wennink and Heenskerk, 2006). According to Wennink *et al*., (2007) this is made possible owing to the lower transaction costs and economies of scale involved in providing services to groups instead of individual farmers. In the same report, the authors provide case study evidence of a number of farmer organisations in Benin, Rwanda and Tanzania, which are improving access to agricultural services for their members. Extension delivered by farmer organisations may also benefit from the product specific expertise of trained agronomists who are well placed to deliver participatory extension which is sensitive to the needs of smallholders and their agro-ecological conditions (ASFG, 2010).

An assessment of Fairtrade-certified organisations by Max Havelaar (2009) which considered six different farmer groups, notes that strong producer organisations are able to deliver training, technical assistance and extension services to members, in particular through promoting organic certification. Utting (2008) also comments that Fairtrade is generally having a positive impact owing to farmer organisations providing technical and agronomic support which can lead to improvements in the environmental and physical conditions of members' farms.

Eakin *et al*. (2011) describe farmer organisations as key institutions for rural communities and smallholder farmers that can facilitate various forms of adaptation, including access to markets, technology, information and other resources. Links have been established between involvement in the Fairtrade movement and an increased social capital base (Utting, 2008), with smallholders benefitting from a greater number of connections with other farmers, leading to networks of informal organisations, as well as links with wider national and international institutions. Owing to the benefits they receive from enhanced bargaining power in the market place and strong service provision, many farmers of Fairtrade-certified groups perceive their organisations as a vital link into the Fairtrade network and consider the support they receive as an important guarantee for improving quality and delivery (Ruben *et al*., 2008).

Being part of a Fairtrade farmer organisation can also bring wider financial and technical benefits to a farmer organisation and its members in the form of support from the international donor and Alternative Trading Organisations (ATOs)[2] that provide additional capacity building and export support. Nelson and Pound (2009) describe the 'honey-pot effect' by which "the demonstration of an effective organisation convinces development agencies and governments that the co-operatives are viable and worth supporting and investing in", leading to financial support for project activities which would otherwise be impossible.

Market engagement and participation

Penrose Buckley (2007) makes the links between increased access to fundamental services enabling farmer organisations to develop specialised market capabilities, which in turn allow them to improve their position and competitiveness in the marketplace, leading to greater influence with buyers. Another possible benefit of collective action for improved market interactions is from the increase in scale which has the potential to deliver the quality, quantity and consistency demanded by buyers in both domestic and export markets (Penrose Buckley, 2007). By meeting the precise demands of buyers, farmer organisations may be able to increase their bargaining power, negotiate better prices and potentially wield more influence in the supply chain.

Economies of scale may also support investment in communal resources, such as storage and transport and processing facilities, enabling farmer organisations to add value to their

2 An ATO is usually an NGO or a mission-driven business which has fair trade principles at its core. ATOs utilise trade as a development tool, recognising its huge potential for socio-economic development. Examples include: Twin, Traidcraft and Equal Exchange.

products and, with access to the right market information, wait for better prices rather than selling to the first buyer (ODI, 1997). Of the papers analysed in one Fairtrade review, six demonstrated that the presence of democratic Fairtrade organisations have influenced the local market in some respect, for example by forcing middlemen or hired labour contractors to increase their prices and wages, and nine highlighted that certification can lead to increased access to new buyers (Nelson and Pound, 2009). The review also sites 'improved market knowledge and negotiating skills' with producer groups able to operate in a number of different international speciality markets. According to OPM and IIED (2000), increasing producers' market influence through access to knowledge and capacity building is a key impact of the Fairtrade 'approach' although the degree to which this is facilitated by Fairtrade certification – as opposed to long-term partnerships with ATOs – is unclear.

While there is little empirical evidence to show that farmer organisations or the Fairtrade movement engender innovation as a characteristic in itself, it can be argued that by increasing access to necessary services and engendering those conditions critical for promoting innovation, farmer organisations can support experimentation. As well as increasing access to extension activities, the role of farmer organisations goes significantly further in improving access to knowledge and information by providing support services such as market information, sharing learning experiences between members and improving access to credit facilities (Wennink and Heemskerk, 2006). The "farmer organisation supports local farmers' groups to manage knowledge and information for innovation by setting up social support networks and encourages farmers to include indigenous knowledge when participating in research activities" (Wennink and Heemskerk, 2006). Ruben *et al.* (2008) note that in some cases, the stable income from Fairtrade provides a guarantee that allows farmers to engage in more risky activities, with Fairtrade farmers found to be significantly less risk adverse, in general, than their non-Fairtrade counterparts.

Reflections on the evidence base

The case study and theoretical literature suggest that membership of a farmer organisation and involvement in the Fairtrade movement can enhance the adaptive capacity of smallholder farmers in a number of different ways. Positive impacts which emerged strongly include:

- better access to services including credit and savings institutions and agronomic and extension services
- strengthened social capital within local communities which in turn can facilitate agency and innovation
- enhanced financial capital, both through increased and more stable incomes, and improved access to credit
- access to market information enabling organisations to orientate themselves effectively in the market place to and add value to their product

It is worth noting though, that there are significant gaps in the research regarding the impacts of Fairtrade on farmers' livelihoods. This reflects, in part, a bigger gap in the evidence base on the impacts and outcomes of collective action through farmer organisations in general. A fair amount of the 'evidence' cited above is based more on theoretical arguments than empirical evidence and what empirical evidence there is largely draws on case studies, making it difficult to generalise the findings.

Case studies

THE CASE STUDIES DESCRIBED IN THIS SECTION examine how the adaptive capacity of members of a Ugandan coffee co-operative and a Malawian sugar organisation have been impacted by their membership of democratically-appointed, and Fairtrade-certified, farmer organisations. The information in this section is primary data collected from semi-structured interviews with key informants and targeted focus groups. The interview questions were based on a research protocol developed by the ACCRA consortium to investigate how development projects have impacted on the adaptive capacity of the communities they are supporting.

Gumutindo Coffee Co-operative Enterprise, Uganda

Climate change is posing an increasingly serious threat to coffee and there is mounting evidence that the world's supply is at risk from rising global temperatures and unpredictable rain patterns (Baker, 2010). Over the last few years, unusual and erratic climate conditions have had a detrimental effect across global coffee producing belts leading to considerable economic losses in many countries. Arabica coffee is particularly vulnerable to the impacts of climate change, since it flourishes within a very narrow temperature range and is highly sensitive to changes in precipitation. Recent observations of precipitation over Uganda show decreasing trends in annual rainfall, but falls are heavier and more violent (Republic of Uganda, 2007). Extreme events are likely to become more intense over much of East Africa (ILRI, 2009) including increased frequency, intensity and severity of: droughts, floods, landslides, windstorms, famine and epidemics (Oxfam, 2008).

Gumutindo Coffee Co-operative is an organisation of roughly 9,000 smallholder farmers who produce washed Arabica for the speciality coffee market, and live and work in the lush upland valleys of Mount Elgon, an extinct volcano on the eastern border of Uganda. The Mount Elgon region has attracted a large influx of people owing to its temperate subtropical climate and fertile soils, giving rise to intense land pressure, leading to severe environmental degradation and high deforestation, including encroachment into the National Park. Gumutindo farmers are cultivating small areas on extremely steep slopes and are highly vulnerable to landslides, particularly following heavy rains; in March 2010 a landslide in Bududa district killed over 300 people. Gumutindo members are certified Fairtrade and Organic and are grouped into 15 primary societies. Each member is registered with one primary society, where they deliver their coffee, and through which they decide how to spend their Fairtrade social premium and receive support from field officers and coffee quality promoters employed by Gumutindo.

Strengthened institutions

Gumutindo farmers are linked into a variety of self-formed community groups and associations as a result of their membership, which they are able to turn to in times of crisis. Masanda Farmers Association is one such example. It is made up of a group of men and women from Nankusi Village who are members of Peace Kawomera primary society. As well as supporting one another during times of personal crisis, members of the association work communally on one another's farms to provide labour for activities such as pruning and building trenches when extra help is needed. When

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Masanda Farmers Association wanted to help their community to improve hygiene and sanitation practices to reduce sickness in the village, they asked Elias their field staff officer from Gumutindo for support. Elias in turn contacted the Sub-county Health Assistant who came and gave training, which the Association has passed on to the wider community.

This is just one of many examples that demonstrate how membership of Gumutindo has supported access to other service providers and networks, thereby developing vertical social capital and enhancing the adaptive capacity of smallholder farmers. Various types of association have been formed by Gumutindo's members. Of particular note are the numerous women's groups which support a diverse range of activities and empower women farmers by giving them a stronger collective voice within the organisation. The women's groups act as a support network for one another during difficult times, and are also using innovative communication methods such as drama and dance to improve gender dynamics and entitlements within their households.

Operating as a Fairtrade farmer organisation has given Gumutindo access to wider international networks, and has enabled the organisation to benefit from trading relationships with a broader number of Alternative Trading Organisations (ATOs) that provide: pre-finance, market information and technical support. Willington Wamayeye, Managing Director of Gumutindo, makes particular reference to Twin with whom the organisation has had a long-term partnership both in terms of its trading agreements and support for capacity building work. Gumutindo has also received funding from links with various international donors for a diverse range of projects.

Enhancing financial assets and access to credit

The price that Gumutindo pays for washed coffee is set at the beginning of the season and is based on the current local market price, the price at which Gumutindo is able to sell the coffee, and the costs of marketing and exporting. As well as offering members a fair and stable price, Gumutindo helps to raise the local market price by setting a good price at the beginning of the season, which local traders then try to match and beat in an attempt to secure supply. While this is a disadvantage for Gumutindo, as they may lose out on some coffee from farmers who do not wish to wait for the premiums which are delivered as a second payment, it highlights how the farmer organisation is impacting the wider community. If Gumutindo sets the price too low at the beginning of the season, members are able to wield their considerable influence to ensure that it is raised. When other traders come to purchase their coffee, farmers gain critical market information, and if Gumutindo's prices are too low members will hold back their crops, forcing the organisation to re-adjust the price upwards to reflect the local market.

This dynamic also highlights some of the challenges that farmer organisations face when commodity prices are extremely high. Although in the short-term the smallholders benefit, Gumutindo needs to remain competitive when prices are high – and the additional income that farmers receive from Fairtrade and organic certification is relatively small – so that when prices are low, they are able to protect members by bolstering local market prices and continuing to offer a fair and stable price, as described above. When coffee prices were lower, members benefited significantly from the Fairtrade minimum price, which acted as a safety net ensuring farmers had sufficient income to survive and maintain production. As well as increasing farmer income, through higher levels of competition and Fairtrade and organic certification, membership of Gumutindo has also increased farmers' access to credit as highlighted in Box 4.

As well benefiting from the Fairtrade minimum price, and added income from organic certification, farmers also receive the Fairtrade social premium through their primary societies. Members have chosen to use this money in a number of ways including: water tanks and taps, metal sheets for roofing buildings, local clinics and sanitation facilities. Farmers from a number of societies also used the Fairtrade premium to contribute 40 per cent of the costs of new hand pulping machines to improve post-harvest processing, with Gumutindo meeting the other 60 per cent. Having reliable and timely access to hand pulping machines has greatly improved coffee quality and has therefore been one of many factors that has enabled Gumutindo to access higher value niche markets and command higher prices – a financial gain which, in turn, can be passed on to farmers. Gumutindo has also purchased other tools for farmers such as spades, secateurs and pruning shears, which have helped farmers to manage their coffee more efficiently and improve quality.

Box 4:
Savings and Credit Co-operative (SACCO)

With support from the Lutheran World Relief programme, Gumutindo has hired six SACCO staff that work with the primary societies, helping community members to manage their money effectively. The SACCOs have memberships of several hundred but are not exclusive to members of Gumutindo. Local farmers who are not members and organisations including women's groups and schools are also welcome to join. "Although the SACCOs have only been running for one year we have already seen a big change in the savings culture of our members" (Victor Mandu, Gumutindo). SACCO offers deposit and withdrawal accounts, and is now extending its services to include loans over a period of 4 months at an interest rate of 3 per cent. These loans are providing farmers with the opportunity to cover short-term needs including: pre-season inputs, school fees and hired labour costs. Support is also given for payment plans to ensure borrowers are able to meet their repayments. SACCO is keen to extend their offer to longer-term loans to support the strategic plans of members and to grow their own business but require greater working capital to achieve this.

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Box 5

Shade trees

With support from the Waterloo Foundation, Gumutindo has set up shade tree nurseries in five primary societies. These nurseries are being managed by the societies and will enable hundreds of thousands of seedlings to be delivered to members in the coming season. The project is also providing members with training on how to grow seedlings and manage nurseries. The training and capacity building elements of the project will make it possible for the societies to continue to manage the nurseries sustainably after the duration of the project has finished. Planting trees is a critical long-term adaptation strategy for coffee in Mount Elgon, supporting soil structure, reducing erosion, providing shade to lower the canopy temperature and diversifying income sources through fruits and wood. Gumutindo also provides members with coffee tree seedlings every year. These coffee trees can either replace old trees that are no longer productive, or increase the size of members' farms thereby increasing income.

Extension services for knowledge and technical support

Although government agricultural services are extremely limited in Mount Elgon, Gumutindo employs a team of field staff as well as a number of coffee quality promoters who visit members and offer advice and training on farming practices and in particular management of coffee trees. Staff offer support on a number of sustainable agricultural techniques that are key resilience strategies in the face of long-term climate change. These include soil stabilisation techniques from contouring, trenches, trash lines, effective application of fertiliser, mulching, composting and planting shade trees and cover crops, and sound coffee management practices such as, pruning and control of pests and diseases, as well as good post-harvest practices. Field staff all have agronomy backgrounds and are given regular training, which ensures members have access to the latest knowledge and technologies with regard to coffee management.

Although Gumutindo field staff are encouraging farmers to employ a number of adaptation strategies including planting shade trees and other sustainable agriculture techniques identified above, the livelihoods of members are still highly vulnerable to the impacts of climate change. As temperatures gradually increase, the lower areas of Mount Elgon will become unable to support existing coffee varieties, since it will be too hot for those varieties currently being cultivated to survive. Field staff are currently testing a number of new

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Box 6

Supporting innovation

Gumutindo has promoted factors key to fostering innovation such as access to information through training sessions, use of new technology and tools, and a higher basic income which enables farmers to take small risks.

Oliva Fungo from Konokoyi explained how she has started to partition her land, planting different crops in different areas (in addition to her coffee trees) to maintain the fertility of her land, increase her income and ensure that she receives money from her farm all year round. "Training I received from Gumutindo and the government NAADS programme showed me how to partition my farm. I was worried at first about losing income by reducing the size of my plot but it has been very successful. I have used the extra money to pay school fees for my children and I have even saved a little. Some of my neighbours have now done the same thing. There are a few who have too little land and money to try this though."

James Kilobi has also tried a number of new ideas. He is keen to diversify his crops to ensure a good, stable income throughout the year and this year raised his own passion fruit seedlings from a single fruit he was given. "I was most worried about the lack of market so I started with a small plot. Now a factory has opened nearby that took all my produce. I am so pleased that demand is high, and next year I will plant a much bigger area. I raised the seedlings on my own, but the tools provided by Gumutindo have helped me to manage my coffee garden more quickly so that I have time and energy to try new things."

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Box 7
Konokoyi Adaptation Initiative

This community-based adaptation (CBA) initiative is a pilot project designed to develop Twin's and Gumutindo's understanding of how to build the adaptive capacity of smallholder coffee farmers through the farming co-operative. The project is utilising the existing staff, social networks and resources of the co-operative to support adaptation amongst members and the wider community. Employing a participatory approach to identify major threats and assess the vulnerability and needs of the community, the project aims to empower farmers to identify and develop adaptation strategies that enhance resilience at the community level.

The group prioritised a community cow-share proposal, designed to provide manure to combat loss of fertility brought about by soil erosion and over cultivation. Since Gumutindo members are certified organic, farmers can only use organic manure to fertilise their crops. As well as making manure accessible, cows will diversify smallholders' incomes and improve family health. A new relationship has been fostered between Gumutindo and Send-a-cow Uganda (SACU) who will provide livestock training and heifers to community members that will be delivered through sustainable organic agriculture and social development training approaches. If the model and partnership proves successful, the initiative will be scaled-up throughout the co-operative.

The farmers' interest and agency has been extremely strong in relation to this initiative, such that not only is Gumutindo matching the funds provided by Twin, in order to increase the scale of the project, but the society involved is also contributing their Fairtrade social premium. This willingness to contribute demonstrates farmers' concern for building community resilience and highlights the high level of agency and producer participation. The community now feels that they have adaptation strategies at the individual and community level and a greater understanding of climate change and how to prepare. The capacity of Gumutindo to spread this knowledge to all of the primary societies has also grown considerably.

varieties, which will be more suitable in the future, particularly on the lower slopes. Trials are going well and Gumutindo will start to produce these varieties to distribute to members. However, it will be a slow process as these temperature resistant varieties require slightly different management practices, and it is critical that farmers are properly sensitised before this new technology is disseminated.

Through a project being delivered in partnership with Twin, Gumutindo is also sensitising members to the impacts of climate change and piloting projects with the specific aim of supporting adaptation (see Box 7 below). Gumutindo is also linked into the Mbale-based TACC (Territorial Approach to Climate Change) project, one of ten pilot initiatives jointly managed by UNDP, UNEP and regional governments. The TACC initiative will support the district to develop integrated territorial climate plans as well as investing in 'quick win' projects to demonstrate the potential of the approach. As an active stakeholder in this project, Gumutindo will hopefully have access to relevant climate information.

Kasinthula Sugar Cane Growers, Malawi

Kasinthula is a smallholder sugar cane outgrower scheme in Malawi, supplying cane to a large sugar mill run by Illovo Sugar Ltd, a company owned by Associated British Foods PLC. The scheme, based in the Chikwawa region of southern Malawi, involved 282 smallholder farmers in Phases 1 and 2, and is expanding to include another 200 farmers in Phase 3, roughly one-third of whom are women. The outgrower scheme was established in 1997 by the Sugar Corporation of Malawi (Sucoma), owned by the British sugar company Lonrho, in order to increase sugar cane supply to the mill beyond the large existing plantations owned and managed by the mill.

The farmers' stake in the outgrower scheme is structured in a complex arrangement: the irrigated land, comprising 754 hectares in Phases 1 and 2, and an additional 400 hectares in Phase 3, is owned by the Shire Valley Cane Growers Trust, leased from the Malawian government. The farmers are represented through the Shire Valley Cane Growers' Trust, which owns Kasinthula Cane Growers Limited (KCGL), a cane management company that manages the irrigated scheme, including overseeing production from planting through to harvesting and delivery to the mill. Illovo have a 5 per cent stake in KCGL. KCGL's mission is "to grow quality cane for sugar production and earn increased returns with the aim of not only improving the farmers' livelihoods but also those of the people within the greater Kasinthula area in line with government's initiative to reduce poverty among rural communities."

The Lower Shire Valley where Kasinthula is located is a low lying area near the river Shire which is prone to flash floods. More than half a million people living in this area are highly vulnerable to climate extremes such as floods and droughts (Republic of Malawi, 2006) which are likely to become increasingly extreme with the onset of climate change. Climate models for Malawi predict higher temperatures (UNDP, 2008), which will increase the need for irrigation of crops such as sugarcane, at the same time that rainfall in the region becomes more unpredictable. While predictions for rainfall

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do not indicate substantial changes overall, the proportion of rainfall that falls in heavy events is likely to increase, thereby raising the risk of flash floods and landslides (UNDP, 2008), causing damage to crops and impacting on the health and livelihoods of vulnerable people.

Institutional arrangements and obligations

Under the land lease agreement between the trust and the government, local communities have given up their land to the sugarcane plantation and have signed a 25-year contract to only plant sugarcane, 100 per cent of which is sold to Illovo. Despite the underlying business being profitable, KCGL is still servicing the considerable development loan taken out to finance the scheme when it was first set up, which dramatically increased in value following the collapse of the national currency in 2002. Due to their interest in the organisation, the government has provided support to KCGL in the last two years helping them to restructure their debt by acting as a guarantor and allowing them to take out a loan from a local bank, as well as supporting an extension of the scheme into Phases 3 and 4 funded by the EU. It is expected that the debt will be repaid by 2017.

The private-public partnership nature of this organisational set-up offers the farming communities involved significant technical support, the likes of which few other independent producer organisations can draw upon. In theory, this institutional arrangement with Illovo could prove to be highly valuable in the face of shocks and stressors to the business, including future climate change challenges, owing to the elevated levels of investment and access to technology which the relationship brings. For example, Illovo played an important role in getting Kasinthula Fairtrade certified, which has generated significant revenues for the farmers through the Fairtrade Premium, addressing underlying poverty and thereby significantly enhancing members' adaptive capacity. However, whilst this set-up has provided substantial benefits for the farmers involved, the institutional arrangement locks the farmers into a production and supply arrangement over which they have minimal influence and to which they are contractually committed for a 25-year period. Moreover, it is also possible that these long-term commitments could hinder the ability of the organisation to engage in flexible planning processes that take into account possible stressors such as climate change and other alterations in the local situation.

Market engagement and influence

Illovo Sugar Ltd purchases, processes and markets all of the cane sugar produced by the Kasinthula cane growers and they have no alternative buyers, as there are no other accessible mills as all mills in Malawi are operated by Illovo.[3] As Illovo relies on sugar cane from the outgrower scheme for its mill and there is growing demand for Fairtrade sugar, it is in Illovo's interest to ensure KCGL manages production effectively and the scheme maximises productivity. Illovo therefore actively supports KCGL's management, including seconding an interim manager in 2009 and providing advice and technical assistance to improve quality and productivity, and to respond to problems when they arise, e.g. removal of silt build up when the irrigation pumps fail. Furthermore, this supply and demand situation means that KCGL has a guaranteed buyer for its produce; a strong business strategy for the farmers.

While the arrangement with Illovo provides these benefits, there could also be disadvantages inherent in the supply relationship. As the cane growers only deliver cane to the mill, at which point Illovo takes title of the product, they have no further role in marketing and limited ability to add value to

their cane. The Kasinthula cane growers are relatively isolated within the chain as they have little knowledge of downstream buyers, although since obtaining Fairtrade certification this situation is beginning to improve. Their reliance on one buyer could put them in a weak bargaining position, although the mill's reliance on their output to run at capacity and the demand for Fairtrade sugar provide some balance. This lack of influence is highlighted by the lower payments they receive compared to cane growers in neighbouring Zambia.

Stronger market influence following Fairtrade certification can be demonstrated by the ongoing relationship between Kasinthula communities and The Co-operative supermarket. Facilitated by Illovo, Kasinthula Cane Growers Association has enjoyed a long association with The Co-operative, which launched the first own-brand Fairtrade sugar product sourced from Kasinthula farmers. As well as paying a fair price for sugar, The Co-operative also invested £285,000 in a three-year project to support the Kasinthula communities which commenced in July 2009. This additional layer of value chain funding is a result of market engagement from all players in the chain - supplier, processor and buyer, a condition facilitated by Fairtrade certification.

Access to technology and services: pivot irrigation system

Membership of the scheme has provided members with access to new technologies and services, including training and extension support as well as financial services. For cane production the new members have access to modern and resource-efficient pivot irrigation technology. While Phase 1 and 2 members work with a gravity-fed system, in Phase 3 KCGL has invested in an electrified pivot system which is more water efficient, reduces the need for manual labour, and suffers from fewer breakdowns compared with traditional pumps. Local farmers are keen to give up their land to join the scheme, since individually they do not have the capital to invest in these kinds of technology which are able to significantly raise productivity and are likely to become increasingly necessary in the face of even longer droughts and heatwaves. Farmers are also encouraged to cultivate small plots of maize next to the sugarcane to utilise the underground water from the irrigated fields, thereby directly increasing food security as well as income from cash crops. KCGL farmers also profit from improved varieties of seed (including those which are more resistant to changes in the climate) and information about best practice and management of cane, which is provided by Illovo.

Farmers new to the scheme have often not previously farmed sugar and therefore require significant training in order to manage the crop effectively. While technology and training is restricted to sugarcane production only, the substantial increase in income which members receive compared to subsistence production, enable them to diversify their income by investing in other farm and non-farm activities. Credit is available to farmers in the form of fertilisers, the cost of which is then deducted from their payments from KCGL. KCGL operates a revolving fund from Fairtrade premiums which members can access to allow them to invest in their own gardens (separate to the sugarcane allotments) where they grow maize and sorghum for subsistence. Part of the Fairtrade premium is also paid to individual farmers as a 'dividend' which has significantly increased members' income from what it was prior to certification.

Impacts on farmer income and community assets

Since obtaining Fairtrade certification in 2004, Kasinthula farmers have set up a committee to determine how their social premium is spent every month. Some of this money has supported investment in community development initiatives including:

- drilling bore holes to supply clean, safe drinking water
- a medical clinic at Kasinthula which provides essential HIV education and treatment
- new school buildings
- electrification for hundreds of households by supporting a government electrification project in villages where Kasinthula members live.

Kasinthula communities are also benefiting from the Co-operative-funded project which will reach 10,000 people and is being delivered in partnership with Concern Universal. Their investment has already delivered around 50 new or repaired water points, 1,000 latrines in households and schools, and training to encourage water committees to take responsibility for water point maintenance. To improve conservation of local natural resources, around 100,000 trees have been planted and networks trained to produce and sell fuel-efficient cooking stoves.

Fairtrade premiums now represent a serious source of income for the farming community which is benefiting from a significant increase in capital. As well as the community projects mentioned above, the premium has also supported large direct payments to member farmers, which has allowed them to significantly improve their housing conditions and lifestyles (last year each of the 282 members received roughly $2,000). This use of the premium is not encouraged by FLO-Cert (the Fairtrade certification body), which maintains that the premium should be spent on social development projects or invested back into the business. Rather than distributing the Fairtrade premium as "unearned income" to individual farmers, it could instead be invested in business operations to sustainably increase "earned" income in the long term, for example, by investing in transport infrastructure. As it is, it remains to be seen how far-reaching the impacts of Fairtrade have been outside of the few farmers involved in the scheme.

Farmer agency and empowerment

Unlike in many other smallholder organisations, Kasinthula did not form organically but was set up as an outgrower scheme by the government and a private entity. Owing to this, the institutional arrangements of the organisation are such that the Trust makes strategic and financial decisions about how Kasinthula is run and how profits will be spent. This is an unusual situation and places the member farmers in a marginalised position with regard to decision-making and

3 A new mill, not owned by Illovo, is supposed to be opening in Nkhatabay district.

Pivot irrigation system at Kasinthula
©George Matiya

Water hole providing safe drinking water to the community
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influence over their business. Although, in practice, farmers approve all nominations to the Trust Board at the AGM, they do not feel adequately involved in decision-making and are disempowered by their lack of influence. Management and staff of KCGL also feel disempowered in their operational roles since it is the Board of Trustees which makes the strategic business decisions on their behalf; although they now have representation in the form of the Trust Manager, Trust Accountant and Administrator who sit on the Trust Board.

With the support of an EU-funded technical assistance programme, farmers are currently in the process of establishing an association to formalise and strengthen their position in the governance and ownership of the outgrower scheme. The constitution for the Association is under development and member farmers are due to hold elections at the next general meeting.

Lessons and next steps

THIS STUDY HAS SOUGHT TO TEST THE LINK BETWEEN farmer organisations, Fairtrade and adaptive capacity and the assumption that participation in Fairtrade certified farmer organisations helps smallholders adapt to climate change. Drawing on a review of past research and the two case studies it is possible to draw a number of preliminary conclusions that need to be tested further. These are grouped below under three headings: Adaptive structures; Fairtrade challenges; Critical gaps. Further work is also required to develop a better understanding of the relationships between the different components of adaptive capacity identified in the framework. A deeper understanding of how some elements depend on or reinforce others can then be used to prioritise and focus interventions aimed at strengthening the adaptive capacity of smallholder farming systems.

Adaptive structures

The case studies involve two very different types of farmer organisation: an organically developed farmer co-operative which is free to sell coffee where it wants, in the case of Gumutindo, and a smallholder outgrower scheme set up to supply a mill, in the case of Kasinthula. While the Kasinthula model is an unusual set-up within the Fairtrade smallholder standards, the contrast between this model and the more conventional model represented by Gumutindo and their respective effect on adaptive capacity is striking.

An interesting insight from these case studies is that the farmers' position within the value chain, linked to the different business models, appears to shape adaptive capacity. In some regards the Kasinthula outgrower model has resulted in a paternalistic structure, in which the farmers have received much higher income than the farmers of Gumutindo and have benefited from access to technology, assistance and risk management. But this has come at the price of being locked into a fixed supply relationship, with limited control and influence over the rest of the value chain.

In terms of farmer agency Kasinthula would not score so favourably, despite significant benefits to individual farmers. Gumutindo, in some ways presents the reverse situation: as an organically developed farmer organisation with democratic structures and collective ownership of an export agency, Gumutindo's development has resulted in much stronger farmer agency and market influence but as noted earlier, even here the sense and reality of ownership and control varies quite significantly across the membership. But the flipside of freedom and greater agency and negotiating power within the value chain is that Gumutindo cannot count on a single buyer to invest in production to secure supply. And while Gumutindo has attracted significant technical assistance over the years, most of this is concentrated at a central level with limited benefits to members' farms.

The resulting picture from this comparison is therefore complex and it is not easy to draw straightforward conclusions regarding which model promotes adaptive capacity more effectively. At a collective level, Kasinthula's ability to adapt relies to a large extent on Illovo's capacity to adapt sugar production to the changing climate and invest its resources accordingly to ensure the outgrower scheme can continue production. If Illovo ever chooses, or is forced, to shut down the mill for any reason, the Kasinthula farmers may have to rely on what assets and other income sources they have built up over the years to survive. Meanwhile, Gumutindo farmers' ability to adapt to climate change is much more in their own hands. This means they have to rely on their own modest surpluses to invest for the future although they can also draw on Gumutindo's collective resources and networks for assistance.

How can actors in the value chain and other stakeholders structure their business models and relationships with producers to maximise their impact on farmers' adaptive capacity?

Fairtrade challenges

The evidence from the two case studies and other research suggests that Fairtrade does make some contribution to adaptive capacity, in particular by promoting institutions and networks, providing a guaranteed price, and increasing market influence. However, the evidence is mixed and the Fairtrade system, including those companies engaging in Fairtrade supply chains, needs to address a number of challenges.

Firstly, through Fairtrade and participation in the outgrower scheme, Kasinthula farmers have been able to accumulate assets and invest in other livelihood activities and therefore begin 'stepping up'. Individual Gumutindo farmers have not benefited to the same extent from Fairtrade certification and their experience is probably more representative of Fairtrade- certified producers in general, as many

studies point to relatively modest income gains. Unless participation in Fairtrade enables small-scale producers to move beyond 'hanging in' survival strategies, the system's overall contribution to building adaptive capacity has to be questioned.

Secondly, one of the key identified benefits of Fairtrade – access to capacity development assistance and the wider Fairtrade support network – cannot strictly be considered part of Fairtrade certification under the FLO system. Much of the capacity development support attributed to Fairtrade is provided independently by third party organisations with other funding sources. And yet this type of service will become increasingly important if smallholder farmers and their organisations are to access the knowledge and technology they will require to adapt to climate change. Other certification systems, such as Rainforest Alliance and Utz Certified, have actively sought to leverage public and private resources to invest in farm-level capacity and Fairtrade will need to do the same if farmers are not simply to face a growing list of environmental standards without the resources to implement them.

Lastly, as noted above, different business models affect adaptive capacity in different ways. Companies sourcing from Fairtrade producers therefore need to look beyond the certification and label to consider how the structure of its supply chains, and farmers' position within them, may contribute to or weaken farmers' long-term adaptive capacity.

How can Fairtrade use its unique market position to leverage partnerships and resources to ensure smallholders can access technology, knowledge and other resources to adapt?

Critical gaps

In addition to some of the challenges identified above, there are a number of gaps in the findings pointing to fundamental components of adaptive capacity that are not, and perhaps cannot be, addressed by farmer organisations and/or Fairtrade alone.

The capacity for 'forward-planning' was identified at the outset as an important component of adaptive capacity but there is little evidence from either the case studies or other research that farmer organisations or Fairtrade extend farmers' planning horizon. Part of the problem is that long-term planning depends on accurate forecasting of how climate change is likely to impact a specific area; while models are improving all the time the data is not, and may never be, reliable enough as a basis for significant change. This creates challenges for everyone in the value chain.

Climate change will force some farmers to diversify into other crops, or out of agriculture altogether. But given the uncertainty and constraints on resources, at what point should a farmer organisation start promoting diversification and what should it do until that point is reached?

One strategy could be to maximise returns from its current business so farmers can build up assets as a springboard into another crop or off-farm activity. But increased investment in a crop that has no future may tie up critical resources needed for diversification and lock farmers into a dead-end.

These dilemmas point to a need for both greater investments in research, to ensure farmers have access to the best possible information, and for much greater collaboration between farmers, other actors in the value chain and the research community to identify appropriate long-term strategies. Climate change is also likely to put significant pressure on the Fairtrade principle of long-term trading relationships as retailers and manufacturers switch and diversify supply to manage climate risk. Fairtrade can play an important role by incentivising and facilitating dialogue and action between all actors in the value chain to identify and resource strategies that secure supply and strengthen farmers' livelihoods.

Entitlements is another component of adaptive capacity that has not featured strongly in the case studies or other research findings. Although examining this point in depth is beyond the scope of the two case studies, it is worth briefly considering entitlement in relation to gender, not least as Fairtrade aims to promote more equal gender relationships. While there is some evidence that farmer organisations and Fairtrade can promote women's participation in the organisation once they are members, many women are not able to benefit directly from farmer organisations and Fairtrade in the first place as they are too poor or because their husbands control the sale of the cash crops. Fairtrade and companies sourcing from Fairtrade farmer organisations therefore need to consider more carefully how they can promote greater gender equality at the household and farmer-organisation level to ensure that women are at the centre of efforts to build adaptive capacity.

To what extent do farmer organisations or Fairtrade certification enable farmers to transcend the social norms and hierarchies that constrain their access to the resources and services they need for development?

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Annex 1: Local Adaptive Capacity framework (LACf)

This figure depicts a conceptual diagram showing the relationships between characteristics of adaptive capacity at the local level (Jones *et al*., 2010). For a full discussion of the framework and deeper analysis of the characteristics please refer to the original discussion document.

This can be found at: http://www.odi.org.uk/resources/download/5177.pdf

Figure1. The relationship between characteristics of adaptive capacity at the local level

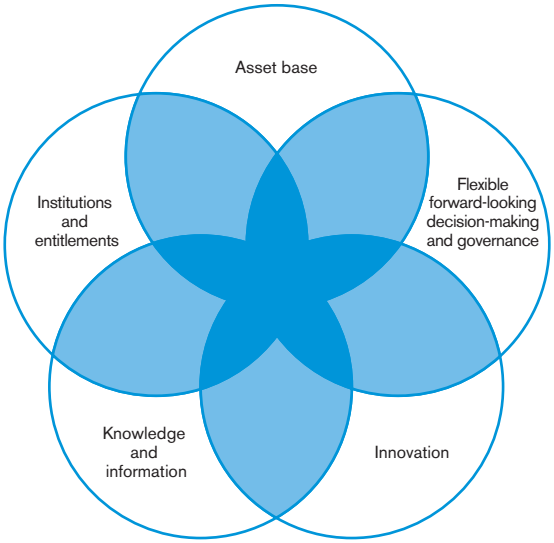

Table 1. LAC's five characteristics and their features

Adaptive capacity at the local level	
Characteristic	**Features that reflect a high adaptive capacity**
Asset base	Availability of key assets that allow the system to respond to evolving circumstances
Institutions and entitlements	Existence of an appropriate and evolving institutional environment that allows fair access and entitlement to key assets and capitals
Knowledge and information	The system has the ability to collect, analyse and disseminate knowledge and information in support of adaption activities
Innovation	The system creates an enabling environment to foster innovation, experimentation and the ability to explore niche solutions in order to take advantage of new opportunities
Flexible forward-looking decision-making and governance	The system is able to anticipate, incorporate and respond to changes with regards to its governance structures and future planning

Annex 2: The spectrum of development and adaptation

Adaptation can be framed along a broad spectrum of different interventions from "pure" development activities which address the underlying causes of vulnerability at one end, to those responses which specifically target climate change impacts and hazards at the other (McGray, 2007). Moreover an initiative can be development by design but also contribute to climate change adaptation albeit unintentionally, and vice versa.

In their paper 'Weathering the Storm', McGray *et al.* (2007) frame development and adaptation along a continuum of approaches, identifying four major types of intervention which are summarised in the points below, starting from the most vulnerability-orientated adaptation efforts and moving towards activities which focus solely on adapting to climate change risks.

The initiatives outlined in the two case studies presented in this report sit at varying points along the continuum, but with a clear bias towards the developmental end of the spectrum. Most specifically target the drivers of vulnerability and support adaptation by reducing poverty. For example, the SACCO initiative at Gumutindo which encourages farming communities to save and also allows them to access credit, employs a purely development approach. However, by supporting access to finance and increasing assets through saving, the project is addressing poverty and therefore vulnerability to shocks, including climate shocks. The same can be said for Kasinthula farmers gaining Fairtrade certification with the financial benefits it has brought.

The Konokoyi Adaptation Initiative in Gumutindo aims to build response capacity by raising awareness amongst farmer members and co-operative staff and management about the potential impacts of climate change. Education, awareness and access to information are precursors to building response capacity, especially in the context of smallholder producers who have highly limited access to new information and technology. Knowledge can be a first step towards planning, flexibility and the ability to respond to and manage risk effectively.

Both Illovo and Gumutindo staff are working to develop new seed varieties which are more resistant to climate extremes. These varieties are being bred for characteristics such as higher temperatures and drought resistance, based on existing climate variability but with an understanding of future predictions. While the main motivation is safeguarding livelihoods, this technical approach is also an essential element of managing climate risk.

1. Addressing drivers of vulnerability

At the development end of the spectrum, activities reduce poverty and address other fundamental shortages of capability that make people vulnerable to harm. Very little attention to specific climate change impacts is paid during these interventions, although they help to buffer households and communities against climate shocks and trends.

2. Building response capacity

Adaptation activities focus on building robust systems for problem solving. These capacity-building efforts lay the foundation for more targeted actions and overlap substantially with institution-building and technological approaches familiar to the development community.

3. Managing climate risk

Climate information is incorporated into decisions to reduce negative effects on resources and livelihoods, accommodating the fact that often the effects of climate change are not easily distinguished from the effects of hazards within the historic range of climate variability.

4. Confronting climate change

Actions focus almost exclusively on addressing impacts associated with climate change, typically targeting climate risks that are clearly outside historic climate variability, and with little bearing on risks that stem from anything other than anthropogenic climate change.

None of the initiatives presented in the case studies have been purely designed to confront climate change. This is partly owing to the smallholder context of marginalisation and poverty; whilst farmers are living from season to season with barely enough money to feed, clothe and educate their children, confronting future climate change cannot take top priority unless there are also clear livelihood benefits. Furthermore, climate change predictions can be unclear and uncertain. Even in a context where resource constraints are less extreme, making investment decisions about changes which are far from certain (with poor knowledge of precipitation patterns and extreme events particularly in mind) can be highly challenging; many developed countries are yet to demonstrate a sufficient response to direct climate change challenges.

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Small-scale farmers and climate change

How can farmer organisations and Fairtrade build the adaptive capacity of smallholders?

Smallholder farmers are disproportionately vulnerable to the impacts of climate change as a result of poverty, marginalisation and reliance on natural resources. Climate change is likely to lead to decreasing crop yields in most tropical and sub-tropical regions, negatively impacting agricultural sectors and reducing food security in developing countries. It is imperative to identify approaches that strengthen ongoing economic development efforts and enhance the adaptive capacity of farmers, their households and their communities.

This paper explores the links between farmer organisations, Fairtrade and adaptation to climate change, and the extent to which such institutions and market arrangements can enhance the adaptive capacity of smallholder farmers. It does this by reviewing evidence from published research and studies and by analysing case studies of two Fairtrade-certified farmer organisations in Uganda and Malawi. The paper's findings suggest that membership of farmer organisations and participation in Fairtrade can strengthen smallholders' capacity to adapt to climate change in a number of ways.

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