CLIMATE RESILIENCE AND FINANCIAL SERVICES

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BRACED KNOWLEDGE MANAGER

Working paper

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Acronyms

ACSA	Accumulating Savings and Credit Association
ACTED	Agence d'Aide à la Coopération Technique et au Développement
AfDB	African Development Bank
AMCEN	African Ministerial Conference on the Environment
BARA	Bureau of Applied Research in Anthropology
BCEAO	Banque Centrale des Etats de l'Afrique de L'Ouest
BNDA	Banque Nationale de Développement Agricole, Mali
BRACED	Building Resilience and Adaptation to Climate Extremes and Disasters
BWTP	Banking with the Poor
CBE	Commercial Bank of Ethiopia
CNFIM	Comité National de la Finance Islamique au Mali
CVECA	Caisse Villageoise d'Epargne et de Crédit Autogérée
DBE	Development Bank of Ethiopia
DECSI	Dedebit Credit and Savings Institution
DFID	Department for International Development
FID	Financière Islamique pour le Développement
GCCA	Global Climate Change Alliance
GDP	Gross Domestic Product
GIZ	German Development Corporation
IBLI	Index-Based Livestock Insurance
IFW	Insurance-for-Work
IMF	International Monetary Fund
IP	Implementing Partner
IPCC	Intergovernmental Panel on Climate Change
IRD	Institute de Recherche pour le Développement
LIFT	Livelihoods and Food Security Trust Fund
MEDA	Mennonite Economic Development Associates
MER	Netherlands Commission for Environmental Assessment
MES	Ministry for Environment and Sanitation, Mali
MFI	Microfinance Institution
MoFED	Ministry of Finance and Economic Development, Ethiopia
NAPA	National Adaptation Programme of Action
NECC	National Environmental Conservation Committee, Myanmar
NGO	Non-Governmental Organisation
OCHA	Office for the Coordination of Humanitarian Affairs

ODI	Overseas Development Institute
PRECIS	Providing Regional Climates for Impacts Studies
PSNP	Productive Safety Net Programme
RIMES	Regional Integrated Multi-Hazard Early Warning System
ROSCA	Revolving Savings and Credit Association
SACCO	Savings and Credit Cooperative
SfC	Saving for Change
SMEs	Small and Medium-Sized Enterprises
UK	United Kingdom
UNCDF	United Nations Capital Development Fund
UNDP	United Nations Development Programme
US	United States
USAID	US Agency for International Development
VSLA	Village Savings and Loans Association
WDI	World Development Indicators
WFP	World Food Programme

Introduction

BRACED programme

The Department for International Development (DFID)-funded Building Resilience and Adaptation to Climate Extremes and Disasters (BRACED) programme is helping people from 13 countries in South and Southeast Asia and in the African Sahel and its neighbouring countries become more resilient to climate-induced shocks and stresses. To improve the integration of disaster risk reduction and climate adaptation methods into development approaches, BRACED seeks to influence policies and practices at the local, national and international level. Grants have been awarded to 15 consortia, with projects covering a wide range of issues.

This paper forms part of the effort to generate new knowledge and learning within the BRACED programme, specifically around the potential contributions financial services can make in building climate resilience. The Overseas Development Institute (ODI), member of the BRACED Knowledge Manager,[1] commissioned the paper to generate new knowledge, evidence and learning on climate resilience and financial services in partnership with the BRACED Implementing Partners (IPs).

Key questions this research aims to address

This paper aims to inform further research in Year 2 of the BRACED programme by providing a high-level overview of the context and structure of the financial services sector in three BRACED countries – namely, Ethiopia, Mali and Myanmar.

1 For further information see www.braced.org/about/about-the-knowledge-manager/

In particular, this paper provides a discussion of the following three research questions for each of these three countries:

1. What is the availability and use of financial services?
2. How can financial services contribute to building climate resilience in terms of managing climate-related risks and exploiting climate-related opportunities?
3. How can policy-makers support the development of financial services to build climate resilience?

Key concepts

The 3As framework: Outcomes from BRACED projects are understood to be a set of interrelated resilience capacities – the capacity to adapt to, anticipate and absorb climate extremes and disasters (the 3As). The 3As framework can organise practical actions or processes, but which of the 3As these fall into can vary depending on the context, as actions and processes can overlap and interact (Bahadur et al., 2015).

Access: This is the ability of individuals or enterprises to obtain financial services, including credit, deposit, payment, insurance and other risk management services. Those who involuntarily have no or only limited access to financial services are referred to as the 'unbanked' or the 'underbanked', respectively (World Bank, 2008).

Collateral registries: These are publicly available databases of interests in or ownership of assets, allowing borrowers to prove their creditworthiness and potential lenders to assess their ranking priority in potential claims against particular collateral.[2]

2 www.mfw4a.org/financial-infrastructure/collateral-registries.html

Depth of financial services: Depth is used to describe the increased provision of financial services with a wider choice of services geared towards all levels of society (Fischer et al., 2013).

Financial literacy: Financial literacy entails basic literacy – that is, reading and mathematical literacy – and simultaneously its upgrade, as it requires more knowledge and skills specifically in the financial field. Although the notions of financial literacy and financial ability are often used as synonyms, there are differences. Financial literacy focuses on understanding and knowledge. Financial ability, on the other hand, is more extensive and covers also behaviour, decision-making and practical skills (Starček, 2013).

Financial safety nets: There is no generally accepted definition of the key elements of financial safety nets. A narrow definition is limited to deposit insurance and a lender-of-last-resort function, whereas a more expanded one includes (at least) four elements, adding the prudential, regulatory and supervisory framework as well as a failure resolution mechanism for financial institutions (Schich, 2010).

Non-traditional (or informal or alternative) financial services: These are financial services (saving, borrowing, insurance) typically provided by non-bank institutions. In developing countries, these services often take the form of microfinance.

Inclusion: The goal of financial inclusion is to develop financial markets that responsibly serve more people with more products at lower cost. Financially inclusive markets comprise a broad, interconnected ecosystem of market actors and infrastructure delivering financial products safely and efficiently to low-income customers. These market actors may include banks, financial

cooperatives, e-money issuers, payment networks, agent networks, insurance providers, microfinance institutions (MFIs) and more.[3]

Innovative products and services: These are financial products and services that go beyond business-as-usual by finding new ways or technologies of promoting financial inclusion and/or address directly climate risks.

Resilience: Resilience has multiple meanings. Within BRACED, it is understood to be the 'ability to anticipate, avoid, plan for, cope with, recover from and adapt to (climate related) shocks and stresses' (Bahadur et al., 2015).

Traditional or formal financial services: These are financial services provided by traditional banking institutions such as commercial banks. Traditional or formal services range from savings, credit and loans activities to insurance.

Brief outline of the methods, assumptions and limitations of the study

The findings in this paper are based on engagement with a range of stakeholders in the countries of interest, as well as a desk-based literature review. During the course of the study, we spoke to 16 stakeholders across the three countries, covering financial services providers, non-governmental organisations (NGOs) and academics. Appendix 1 provides a full list of stakeholders and Appendix 2 the semi-structured interview questions. We have supplemented these 'on-the-ground' insights with published literature and datasets, to reflect international best practice and approaches. We present these as a series of case studies.

3 www.microfinancegateway.org/what-is-microfinance

Presented in this paper are a small number of initiatives and financial products currently used in the three countries to address vulnerability to climate extremes, with an evaluation of their effectiveness in addressing the identified needs and potential for replication in other country contexts. It is also important to recognise that this paper does not aim to be exhaustive; it does not cover the full suite of climate and development challenges these three countries face, nor does it explore the full range of ways financial services can be used as a means to build climate resilience. Also, as with all action on climate change, there is no one-size-fits-all: it will be important to give careful consideration to specific resilience-building needs or existing gaps in the financial services market in other situations.

1. CONTEXT

IMAGE: WORLD BANK

This section first provides a brief overview of the climate change challenges facing each of the three countries (Ethiopia, Mali and Myanmar). We further describe the level of financial inclusion in each country and access by the poorest and most marginalised. Across the three countries, financial inclusion is generally low. Improved financial inclusion can be seen as 'good development' and would make sense even without climate change (World Bank, 2016), but is critical to increase resilience to climate change in developing countries. This is particularly the case within the most vulnerable groups, which are also often the poorest and most marginalised. This is not only because they are often more exposed and invariably more vulnerable to climate-related shocks, but also because they have fewer resources and receive less support from family, community, the financial system and even social safety nets to help them prevent, cope and adapt (World Bank, 2016).

Climate challenges facing developing countries

Developing countries are particularly vulnerable to the effects of climate variability and climate change. These countries are often located in regions with high climate variability and are highly exposed to climate extremes, such as droughts or floods. Such extreme weather events hinder economic and social development and cause high numbers of casualties. Economic losses from these disasters have also been increasing rapidly over the past decades. In some cases, disasters have set back development by several years or percentage points of gross domestic product (GDP). For instance, the 2008–2011 drought in Kenya caused an average growth gap of 2.8% per annum, with the country achieving an average annual growth rate of only 3.5% instead of the expected 6.3% (Republic of Kenya, 2012). Climate change is likely to exacerbate these losses. A recent study found that unmitigated climate change could lower average global incomes by 23% by the year 2100 and widen global income inequality (Burke et al., 2015). The Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report also estimated that global annual economic losses for temperature increases of ~2.5°C above pre-industrial levels are between 0.2% and 2.0% of income (Pachauri and Meyer, 2014, Box 3.1).

Ethiopia

Ethiopia is highly vulnerable to climate variability and change as a result of its geographic location, topography, high levels of poverty and heavy dependence on rain-fed agriculture for subsistence and income generation. In 2010, 77.5% of Ethiopians were estimated to live on less than $2 a day and

46% of the total population was undernourished.[4] Ethiopia's capacity to address poverty, food insecurity and various other socioeconomic problems is highly dependent on the performance of the agriculture sector (UNDP, 2014), as over 80% of the population depends on agriculture to make a living.[5]

Historically, the country has been prone to extreme weather variability. Rainfall is highly erratic, most rain falls with high intensity and there is a high degree of variability, temporally and spatially. Since the early 1980s, the country has suffered seven major droughts – five of which have led to famines – in addition to dozens of local droughts (World Bank, 2010). Currently, a slow-onset natural disaster is evolving, resulting from the failure of the spring *belg* rains, compounded by the arrival of El Niño weather conditions that have weakened the summer *kiremt* rains that feed 80–85% of the country. This has greatly expanded food insecurity and malnutrition and devastated livelihoods across six regions of the country. The level of acute need across virtually all humanitarian sectors has already exceeded levels seen in the Horn of Africa drought of 2011 and is projected to be far more severe throughout an eight-month period in 2016 (OCHA, 2015). Impacts on livestock have been particularly acute, including significant weight loss and deteriorating body condition, leading to pastoralists selling them at low prices or worse still losing them altogether.[6] Major floods also occurred in different parts of the country in 1988, 1993, 1994, 1995, 1996 and 2006 (World Bank, 2010).

4 WDI (2010): http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators

5 www.et.undp.org/content/ethiopia/en/home/countryinfo.html

6 Interview, Mercy Corps, 10 November 2015.

Climate change is likely to cause increased variability in rainfall and lead to more frequent and severe flooding and drought events (World Bank, 2010). Mean annual temperature is also projected to increase by 0.5–1.8°C by the 2030s (McSweeney et al., 2010). Small-scale farmers and pastoralists are likely to be significantly affected by these changes in climate, through increased poverty, water scarcity and food insecurity. Furthermore, Ethiopia, like many developing countries, is exporting primary products (e.g. coffee), which again are highly prone to the effects of climate change and climate extremes. As such, climate impacts on the agriculture sector have the potential to influence Ethiopia's GDP.

Mali

Mali's low economic development, limited land suitable for agriculture and poverty make the country particularly vulnerable to climate change. With more than 80% of the population dependent on agriculture for their livelihoods (Mali, 2008), which are predominantly rain-fed, people are extremely vulnerable to the impacts of climate change. Food insecurity is a recurring problem; according to the World Food Programme (WFP) (2015), in March 2014 1.5 million people were experiencing food insecurity. Conflicts between resource users are also relatively common, particularly between agricultural farmers and pastoralists. Climate change and environment stress are cited as possible contributory factors to conflict in Mali (Watts, 2012).

Like much of the Sahel, Mali is subject to frequent droughts and experiences significant variability in annual rainfall. Erratic rainfall, increased crop pests and rainfall shortages during critical growing periods, coupled with a moving desertification front over the past 50 years, have resulted in diminished land and water resources and stress on livelihoods (World Bank, 2011).

The climate zone shift – the combined effect of rising average temperatures and declining average rainfall – has already pushed the country's agro-ecological zones to the south over the past 50 years, with average rainfall down by about 200 mm and average temperatures up by 0.5°C over the same period.

> "Mali's low economic development, limited land suitable for agriculture and poverty make the country particularly vulnerable to climate change"

Climate change is expected to increase local temperatures, rainfall variability and the magnitude of extreme weather events. Mean annual temperature is also projected to increase by 0.8–2.6°C by the 2030s (McSweeney et al., 2010). Rainfall projections are more uncertain. For instance, one study shows that local climate models that consider three scenarios for a climate zone shift by 2030 suggest a decrease in annual rainfall by 2.2% (under the moderate change scenario); an increase in rainfall of 8.1% (under the high change positive scenario); and a decrease in rainfall of 10.6% (under the high change negative scenario). Under all three of these scenarios, Mali would suffer economic losses by 2030. The pessimistic high change scenario could involve losses of about $300 million USD annually (approximately 15% of the value of agriculture and livestock); the optimistic scenario losses of $120 million USD annually (6%) (Chaisemartin et al., 2010).

Spatial patterns of vulnerability vary significantly within Mali, with the northern parts of the country already at the edges of productivity, being identified among the most vulnerable. The north of the country is threatened by encroaching deserts, the borderline of which gradually shifts to lower latitudes, whereas

increasing pressure on natural resources in the intensively cultivated south is endangering agricultural production capacity (MER, 2015). Under climate change, this situation is likely to worsen, with accelerated desertification and limited water availability in the north (especially in already water-scarce areas) and more frequent extreme weather events (torrential rains and floods) in the south (GCCA, 2014). For further information on the complex links between drought and poverty, see the BRACED report *Climate extremes and resilient poverty reduction* (Wilkinson and Peters, 2015).

Myanmar

Myanmar is considered one of the countries at most risk of natural disasters in Southeast Asia.[7] The country's economy is highly dependent on natural resources and agriculture. About 26% of the population lives in poverty, with rural areas – where 70% of the population lives – most severely affected. These populations are especially vulnerable to medium- to large-scale disasters, which are likely to occur every couple of years (DRR Working Group, 2013). Myanmar, which is just coming out of a long period of political instability, is highly vulnerable to climate change owing to the combination of widespread poverty, poor infrastructure and exposure to extreme weather events (UNDP, 2015).

A number of climate hazards threaten Myanmar, with drought the most serious one over the longer term. The main hazards include droughts and extreme high temperatures in the central belt of the country; intense rains in the catchment areas of major rivers and in mountainous and coastal areas; cyclones in coastal areas; and floods and storm surges in coastal and low-lying areas along major rivers and upper reaches of river systems (NECC, 2012).

7 www.unocha.org/myanmar/about-ocha-myanmar/crisis-overview-0

In recent months, Myanmar has experienced significant floods, which lead to increased incidence of water-borne diseases.[8] In May 2008, one of the worst cyclones in Myanmar's history made landfall in the south of the country. The death toll from tropical cyclone Nargis reached 140,000 and a further 2.4 million lost their homes and livelihoods (DRR Working Group, 2013).

However, drought is the most severe recurring climate extreme event in Myanmar, based on its overall impact on local communities. Droughts in combination with deforestation and land degradation are leading to a severe reduction in water availability. Forest fires are a further hazard, and these are likely to be exacerbated by hotter and potentially drier conditions. Climate change will only increase agricultural losses, as most of Myanmar's food production is rain-fed. The future economic growth of the country is at risk as a result of water-related impacts (NECC, 2012).

Climate projections out to 2100 show an increase in the severity of climate-related hazards (NECC, 2012; McKinley et al., 2015). Temperatures will continue to increase across the whole country, with the greatest increases expected in the Central and Northern regions (NECC, 2012). By the end of the century, climate projections show an increase in mean temperatures of 1–4°C, although outcomes will vary throughout the year and spatially across the country (RIMES, 2011; World Bank, 2012a). Rainfall variability is expected to increase in rainy seasons, potentially by ~10% over the coming decades (NECC, 2012; McKinley et al., 2015). Combined with a continued shortening of the rainy season observed over the past 40 years, many climatologists expect greater concentration and variability in rainfall that will lead to increased frequency and intensity

8 Interview, Plan International Myanmar, 23 November 2015.

of flooding (NECC, 2012; McKinley et al., 2015). Finally, extreme weather events like cyclones, strong winds, flood and storm surges, intense rains, extreme high temperatures and drought are all expected to increase in occurrence and intensity (NECC, 2012) (based on the PRECIS model).[9] Rising sea levels along the coasts are likely to compound these problems by aggravating saltwater intrusion and soil salinity in the coastal areas and river deltas (McKinley et al., 2015).

Finance challenges facing developing countries

The poor often have little access to traditional financial services, and improving financial inclusion is critical to address development challenges, including increasing resilience to climate change in developing countries. Improved financial inclusion will enable the poor to access savings and transfer services and credit and insurance at an affordable cost (Zwendu, 2014). Furthermore, where non-traditional services exist, such as money lending, interest rates can be extremely high, discouraging investment in adaptive capacity and leading to greater debt burdens for poor households, or both (Hoff et al., 2005). Insurance penetration in most developing countries is also very low.

Traditional financial services are not so much represented in developing countries compared with non-traditional ones, as they rarely target rural inhabitants, who still make up the

9 Myanmar's National Adaptation Programme of Action (NAPA) to Climate Change uses the predictions from the model Providing Regional Climates for Impacts Studies (PRECIS). For further information about the model, see NECC (2012).

large majority of the population.[10] There are multiple reasons, from both a demand and a supply side, explaining why traditional financial services providers are not the key actors. These include a lack of regulatory frameworks, limited commercial interest to expand activities and poor financial literacy, means and trust from potential users.

> "According to the World Bank, the non-traditional financial sector in developing countries is three times bigger than the traditional one in terms of borrowing activities"

Non-traditional or alternative financial services in lower-income nations are more prevalent in rural or less populated areas and target individuals at the community level. According to the World Bank, the non-traditional financial sector in developing countries is three times bigger than the traditional one in terms of borrowing activities.[11] Microfinance, for instance, is more flexible and therefore more inclusive than traditional financial models. It involves the delivery of small loans and other financial services, which the poor can use to build up their assets, establish or further develop a business, increase their wealth and protect against risks (Agrawala and Carraro, 2010). Alternative financial services involve many informal exchanges between individuals from a close network, such as in family, friendship or commercial/professional ties. They also cover a multitude of autonomous and self-registered

10 http://data.worldbank.org/indicator/SP.RUR.TOTL.ZS/countries

11 http://datatopics.worldbank.org/financialinclusion/

savings clubs at the village level. The following subsections further describe the level of financial inclusion and the structure of financial services in the three countries.

Ethiopia

Box 1: Key facts on inclusion and structure of financial services in Ethiopia

- <8% of adults (7.1 million) have a deposit account (2013). The proportion of borrowers is even smaller (112,793) (IMF, 2013).
- 23% of men/21% of women have an account (2014) (IMF, 2013).
- There are nearly 44 million unbanked in Ethiopia of a total adult population of nearly 56 million (IMF, 2013). It is estimated that 350 million of the world's unbanked (2 billion people in total) live in Sub-Saharan Africa (2014) (World Bank, 2014).
- 14% used their account to save (2014) (World Bank, 2014).
- About 17,000 individuals/0.03% of adults had a mobile money account (2014) (World Bank, 2014).
- Structure of financial service providers (Zwendu, 2014):[12]
  - Central Bank/National Bank of Ethiopia
  - 3 public banks: Commercial Bank of Ethiopia (CBE),[13] Construction and Business Bank and Development Bank of Ethiopia (DBE)

12 Also www.nbe.gov.et/financial/insurer.html

13 CBE is the dominant commercial bank and accounts for 70% of total assets of banks as of May 2013 (IMF, 2013).

- 16 private banks
- 17 private insurance companies
- 1 public insurance company
- 35 MFIs
- >8,200 savings and credit cooperatives (SACCOs) in both rural and urban areas

The Ethiopian financial sector is shallow (AfDB, 2012) and coverage of financial services is low. Recent studies estimated that less than 10% of households had access to formal credit (AfDB, 2011) and only 22% of the population had an account in 2014. This is below the Sub-Saharan average of 34%.[14] One of the major problems in enhancing financial inclusion is lack of physical access. Although the number of bank branches has increased almost four fold over the past 12 years, to stand at 1,376 in 2012/13, there is still very high population size per branch (1:61,628). Informal financial transactions are common; for instance, in 2014, 30% of the population borrowed from family or friends, versus 7% borrowing from a financial institution (Zwendu, 2014). Furthermore, nearly all agricultural workers (97.3%) received payments for agricultural products in cash; only 0.5% received payments into an account. Rural households typically save in cash, rather than using banks, MFIs or SACCOs. There is also a strong perception among these communities that they own insufficient funds to use regulated financial services.[15]

14 http://datatopics.worldbank.org/financialinclusion/

15 Interview, Central/National Bank of Ethiopia, 3 December 2015.

The vast majority of Ethiopians do not save for the future and therefore find it difficult to come up with funds in an emergency. In 2014, only 23% of the Ethiopian population saved for the future (for old age or to start, operate or expand a farm or business).[16] This is partly because of the significant proportion of Ethiopians living in poverty (see Section 2.1.1). Women are also less likely to save to start, operate or expand a farm or business compared with the average for the population (15%). This lack of saving impacts the population's ability to deal with emergency situations. For instance, in 2014, 38% stated that it was impossible or not very possible to come up with emergency funds. Among women, this value increases to 45%. In an emergency situation, 41% of the population state that family or friends are the main source of funds, compared with using a financial institution or a credit card (only 1%).

The financial sector in Ethiopia is not diversified in terms of the type of institutions delivering the service and the type of financial products being delivered (Zwendu, 2014). It is highly regulated and completely closed from foreign companies, which has limited opportunities for competition. The closure of the system to foreign companies also means missed opportunities in terms of capital injection, foreign exchange access and banking technology and skills. There are no investment banks thus far, and financial services are dominated by a cash-based system. Another key constraint in the current banking system in Ethiopia is the absence of a movable collateral registry.[17] This means small entrepreneurs are unable to leverage their movable assets to obtain credit, and financial institutions find it challenging to diversify their assets, leading to poor risk management

16 http://datatopics.worldbank.org/financialinclusion/

17 Interview, Central/National Bank of Ethiopia, 3 December 2015.

practices.[18] Collateral registries also improve competition in the financial sector by enabling both banks and non-bank financial institutions to offer secured loans.

"In 2014, only 23% of the Ethiopian population saved for the future"

The expansion of MFIs has helped reach the unbanked section of the population, particularly the poor, providing savings mobilisation, loans and to some extent micro-insurance services. In 1996, the Ethiopian government issued Proclamation 40/1996 that allowed the establishment of MFIs. In 2014, there were 31 MFIs, up from only 11 in 1998/99 (Zwendu, 2014). Of all the MFIs, 14 (47%) are operating in Addis Ababa. Currently, MFIs have 1,385 branches and sub-branches in the various parts of the country. In terms of client outreach ratio, this is still very low, with one branch to 61,228 people. In 2011, it was estimated that MFIs had reached only 14.5% of households in the country (Amha and Kifle, 2013), which shows most of the population still has no access to financial services.

Member-based financial institutions, such as SACCOs, have increased in number significantly over the past few decades. Between 1992 and 2012, the number of SACCOs increased from 495 to 10,270 (Tesfamariam and Tesfay, 2013). They currently constitute the most common type of cooperatives in the country in terms of both number and membership, with extensive networking. As per Proclamation 147/1998, SACCOs were expected to play active role in bringing about broad-based development and poverty alleviation as they were permitted to take deposits from and grant loans to members.

18 www.mfw4a.org/financial-infrastructure/collateral-registries.html

Mobile banking is viewed as an underserved sector with strong growth potential (Melese, 2014). Very low mobile phone penetration has prevented the rapid development of mobile banking that has taken place elsewhere in Africa.[19] In 2014, less than 1% of the population of Ethiopia had a mobile account, compared with a Sub-Saharan average of 12%.[20] However, the number of mobile subscribers has increased significantly over the past few years, from 10.7 million in 2010/11 to 23.76 million in 2012/13, with a target of 40 million for 2014/15 (Zwendu et al., 2014). Mobile networks and infrastructure are also expanding in the country, with the percentage of the rural population with access (within a 5 km radius) to a telephone service increasing from 62% in 2009/10 to 84% in 2012/13, and a target of 100% for 2014/15 (MoFED, 2014). A number of mobile phone operators are thus preparing to launch, or have already launched, payment and transaction systems supported by mobile technology.[21]

Mali

Box 2: Key facts on inclusion and structure of financial services in Mali

- 26% of men and 15% of women have an account (2014).[22]
- Over 6.5 million are unbanked in Mali of a total adult population of over 8 million (ibid.). It is estimated that 350 million of the world's unbanked (2 billion people) live in Sub-Saharan Africa (2014) (World Bank, 2014).

19 www.mfw4a.org/ethiopia/financial-sector-profile.html

20 http://datatopics.worldbank.org/financialinclusion/

21 www.mfw4a.org/ethiopia/financial-sector-profile.html

22 http://datatopics.worldbank.org/financialinclusion/

- 3% used their account to save (2014) (World Bank, 2014).
- Nearly 1 million (12% of adults) have a mobile money account (2014) (World Bank, 2014).
- Structure of financial service providers (BCEAO, 2011):
  - 9 public banks, including the 3 biggest in terms of market share (BCEAO, 2013): Banque de Développement du Mali, Banque Nationale de Développement Agricole (BNDA) and Banque Malienne de Solidarité
  - 11 private banks, including the 3 biggest in terms of market share: Ecobank, Banque Internationale pour le Mali, Bank of Africa-Mali (BOA-Mali)
  - 11 private insurance companies (3 specialised in life insurance) (Djire, 2015), including Les Assurances Bleues – Caisse Nouvelle d'Assurance et de Réassurance du Mali, Lafia, Société Nouvelle d'Assurance Vie, Sabu-N'yuma, Colina
  - No public insurance companies
  - 126 MFIs (different categories include mutualist funds, village savings and loans associations (VSLAs), la Caisse Villageoise d'Epargne et de Crédit Autogérée (CVECA), direct credit institutions, tontines and others, including: Caece Jigiseme, PlaNet Guarantee, Nyesigiso, Kafo Jiginew, Kondo Jigima (Waigolo, 2010)

Access to traditional financial services in Mali is low and below the Sub-Saharan average, despite recent decreases in the number of unbanked. The traditional financial services provided are not context- or group-specific, remain unaffordable and inaccessible for the majority of the population and suffer from administrative delays, notably in the processing of credit

files.[23] Thus, non-traditional services are still more prevalent than traditional ones, notably because of their convenience in terms of geographical proximity, trust and financial accessibility. For instance, in 2014, 33% of the population borrowed from family or friends, versus 3% from a financial institution.[24] Furthermore, 55% of the population state that family or friends are the main source of emergency funds, compared with less than 1% using a financial institution or a credit card as the main source. However, there has been recent uptake of traditional services; in 2014, one out of five individuals had an account, up from only 8% in 2011.

MFIs have increased financial inclusion in some parts of the country; however, they fail to provide in-depth access to financial services to the most vulnerable and remote population. Although they provide opportunities to many vulnerable individuals in rural areas, MFIs also have drawbacks. For instance, they can be slow to develop, may require considerable support and tend to work better in densely populated areas with larger numbers of low-income individuals. Rural areas are disadvantaged in terms of coverage; the costs of delivery are high and there is low demand for loans large enough to turn a profit (BARA, 2013). Consequently, the majority of the world's rural poor lack access to basic financial services.

Where MFIs are not accessible, village savings and lending groups (called *tontine*s in Mali) bridge the gap between financial services and the population. Groups such as revolving savings and credit associations (ROSCAs) and accumulating savings and credit associations (ASCAs) are operating at the village level in many African, Asian and

23 Interview with SNV Mali, 24 November 2015.

24 http://datatopics.worldbank.org/financialinclusion/

Latin American villages. However, ROSCAs tend to be poorly organised, often lack transparency, are subject to misuse and are limited in the flexibility they can offer to their members (BARA, 2013). ASCAs also often continue to meet challenges in terms of group management. To help address these shortfalls in ROSCAs and ASCAs, several NGOs have delivered training courses for villagers. Programmes such as Saving for Change (SfC) carried out by CARE, Plan International and World Vision offer management training as well as financial literacy courses to educate villagers.

Saving groups have been established across Mali as a means to increase financial inclusion. For example, SfC has been used in nearly half of the villages of Mali to increase financial inclusion (Ashe, 2011). The funds are divided among members in proportion to the amount each has saved during the annual cycle and redistributed between the planting and the harvest season. The pay-out is often used to buy seeds, to make a larger investment in trading and agriculture or to pay school fees. These groups collectively manage more than $5 million USD (about $300 USD per group) mobilised entirely through member savings (BARA, 2013). Advantages include simplicity, low cost, profit accumulation to members and positive externalities to other groups yet to be trained. However, the funds cannot provide large loans and offer only a limited range of services. Additionally, these schemes are unlikely to lift group members out of poverty and address crucial issues such as lack of infrastructure and declining soil fertility. A more diversified choice of products and larger capital available could take shape if the village clubs were combined with another type of financial infrastructure, such as mobile banking.

Outreach of insurance products is still very low in Mali, for a number of reasons. MFIs are reluctant to offer agricultural insurance services to farmers, given the high probability of

default and as drought exposure is a non-diversifiable risk (Hartell and Skees, 2009). However, a number of recent initiatives have focused on the design of index-based weather insurance to increase financial inclusion among farmers. This innovative product would create a market to transfer drought risk, increase the capital let and serve as a safety net in the event of an extreme climatic event. The success of the product would depend on several conditions, including a favourable legal and regulatory environment; user acceptance; and quality of the index and weather infrastructure. Lessons can be learnt from Malawi and Ethiopia, where a similar innovative product has been launched.

Mobile banking users are diversified and the sector is much more advanced in Mali than in some of its regional counterparts. For instance, in 2014, the percentage of the rural population using mobile banking services was slightly above the national average of 12%.[25] In fact, while nearly all agricultural workers (97%) received payments for farm products in cash, 15% also received them via a mobile phone. Mobile banking is often used to send or receive remittances (both from within and outside the country) in a secure manner, especially when individuals are forced to migrate for climatic and/or insecurity reasons.[26] The appeal to and relatively high rates of adoption by isolated populations shows that mobile banking could be an effective way to increase financial inclusion and consequently build resilience to adverse climatic events.[27]

25 http://datatopics.worldbank.org/financialinclusion/

26 Interview, IRD Mali, 6 November 2015.

27 Interview, IRD Mali, 6 November 2015.

Myanmar

Box 3: Key facts on inclusion and structure of financial services in Myanmar

- 29% of men and 17% of women have an account (2014).[28]
- 29.5 million are unbanked in Myanmar of a total adult population of over 38 million (ibid.). It is estimated that 490 million of the world's unbanked (2 billion people in total) live in East Asia and the Pacific (2014) (World Bank, 2014).
- 13% use their account to save (2014) (World Bank, 2014).
- 7,640 (0.2% of adults) have a mobile money account (World Bank, 2014).
- Structure of financial service providers (GIZ, 2015):
  - 14 public banks (state-owned or semi-governmental), accounting for 66% of the total market share in 2013: Myawaddy Bank, Co-operative Bank, Innwa Bank
  - 13 domestic private banks (Duflos, 2013), including the biggest 3: Kanbawaza Bank, Myanmar Apex Bank, Asia Green Development Bank
  - 42 foreign bank representative offices
  - 12 private insurance companies (KPMG, 2013), including the biggest 3 in terms of market share: Aung Thitsar Oo Insurance, First National Insurance, Grand Guardian Insurance (Asia Insurance Review, 2014)
  - 14 foreign insurance representative offices including Sompo Japan Insurance Inc., Tokyo Marine & Nichido

28 http://datatopics.worldbank.org/financialinclusion/

Fire Insurance Co., Ltd, Mitsui Sumitomo Insurance Co., Ltd, Taiyo Life, United Overseas Insurance, ACE Group, McLarens Young International

– 177 MFIs: Pact Global Microfinance Fund, Myanmar Agriculture and Development Bank, Myanmar Microfinance Bank, government organisations, political organisations, 60 specialised agricultural development companies, Central Cooperative Society, Union of Savings and Credit Federation, NGOs (PaCT–UNDP, PaCT MFI, Proximity Design, World Vision, GRET), UN organisations, multilateral entities, ACLEDA MFI Myanmar Co. Ltd, AEON Microfinance (Myanmar) Co. Ltd

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The outreach of traditional financial services is low in Myanmar, for households and businesses. In 2014, only 23% of the population had an account at a financial institution, much lower than the East Asia and Pacific average of nearly 70%.[29] From a gender and geographical perspective, only 17% of women had an account in the same year. Women and rural inhabitants were also less likely to save at a financial institution. Moreover, bank lending to agriculture is largely restricted to the state-owned Myanmar Agricultural Development Bank, which faces financial and operational challenges of its own and covers only a small share of the financing needs of farmers (Nehru, 2015). Landholders' access to loans is also limited without any collateral, although the government recently expanded collateral options to include key agricultural export goods (ibid.).[30]

29 http://datatopics.worldbank.org/financialinclusion/

30 http://datatopics.worldbank.org/financialinclusion/

Despite recent reform and liberalisation of the financial sector, foreign banking companies still find it hard to penetrate the domestic market. Development of the private sector is key to the country's sustainable development. Small and medium-sized enterprises (SMEs) have the potential to become key drivers of poverty alleviation and job creation as they represent over 99% of the total industries in Myanmar; however, to date, their restricted access to financial services and credit represents a hurdle to their growth. Indeed, the Global Competitiveness Index of the World Economic Forum ranks Myanmar at 134 out of 144 analysed countries in terms of access to finance (GIZ, 2015). To increase access to finance for the most needy, Myanmar could learn from other countries (e.g. Mali (BNDA) and Egypt (National Bank for Development)) that have used state-owned development banking and are funding commercial activities with a focus on national development, while retaining government ownership (Nehru, 2015).

Demand for microfinance significantly outstrips supply. According to one estimate, demand for microfinance in Myanmar is four times greater than supply, meaning that fewer than 20 out of 100 potential microfinance clients have access to traditional financial services (Nehru, 2015). Most people consequently rely on family savings or costly alternatives such as non-traditional moneylenders. To this effect, the country enacted a Microfinance Law in November 2011 to increase the number of MFIs. However, the market is already saturated (see Box 3). In order to balance demand and supply of microfinance services, the high number of new licences attributed to MFIs would need to be significantly limited, as it can create confusion for potential clients. The real challenge would notably lie in increasing coordination between different MFIs as well as improving their products to fit the needs of the recipients. Thus, one of the priorities for Myanmar's

microfinance sector is the profusion of new licences given to MFIs, which weakens the efficiency of services (Nehru, 2015).

Lack of access to the traditional financial sector is balanced by the strong presence of informal exchanges between individuals. For instance, in 2014, more than 90% of the population stated that using family or friends, loans from their employer or their personal savings was the main source of emergency funds (emergency funds obtained through a financial institution or a credit card represented only 0.5%).[31] Overreliance on the non-traditional sector can be a weakness since the various parties mentioned above can also be vulnerable to financial shocks, for instance triggered by climatic events.

Data seem to indicate that Myanmar's population is somewhat resilient to sudden financial shocks; however, this might hide its long-term financial vulnerability. According to the World Bank, in 2014 only 10% of the population stated that it was not at all possible or not very possible to come up with emergency funds, compared with an East Asia and Pacific average of 27%. However, the amount of emergency funds available was not quantified, nor was the origin and likelihood of financial shock specified. Sudden economic shocks to individuals' income require immediate funds, but the impacts are likely to last longer, thus leading to an under-evaluation of the amount of finances needed as a buffer.

Levels of personal saving are low in Myanmar. In the past year, less than half of the population saved any money, compared with the East Asia and Pacific average of 71% (World Bank, 2014). This might imply the difficulty people are experiencing in having a supplementary income readily available. Out of all savers, only

31 http://datatopics.worldbank.org/financialinclusion/

13% put their money in a financial institution, denoting lack of a long-term savings strategy, because of demand and/or supply factors. Furthermore, only one in three individuals saved for the future (for old age or to start, operate or expand a farm or business).

The state of mobile banking is almost non-existent. In 2014, only 0.2% of the population had a mobile account, which is roughly the same as the East Asia and Pacific average (World Bank, 2014). Nearly all the population in Myanmar received payments for agricultural products in cash; 0.2% received them via a mobile phone. Recent innovations in branchless banking, such as telebanking and mobile banking, would allow Myanmar to leapfrog other countries and provide its people with access to finance more rapidly and cost-effectively. Given the importance of remittances in developing countries, mobile banking could greatly simplify transactions and reduce the need for the services of a close network, vehicles or *hundi* individuals to achieve financial exchanges (Proximity Designs, 2014).

The opening-up of the telecoms sector may facilitate growth in mobile services. In 2013, the state-owned Myanmar Posts and Telecommunications lost its monopoly after the Norwegian Telenor and Qatar Telecom's Ooredoo were granted licences for internet services (Proximity Designs, 2014). This could spur new opportunities and facilitate President Thein Sein's goal to reach 80% mobile penetration by 2015. This is an ambitious target considering the latest data, which suggest penetration is currently below 25% (Owen, 2015).

Some banks have recently introduced mobile banking applications; however, larger-scale infrastructure is missing in areas where these services would be most welcomed. For instance, the mobile application developed by the recent

partnership of Oberthur Technologies and Innwa Bank is provided in both English and Myanmar for wider financial inclusion. As well, banking services that are coupled with access to market information would also benefit businesses, such as a farmer owner looking for the latest selling prices of agricultural products in order to maximise profits. However, a lack of infrastructure development, such as unsteady electricity supply or limited capacity from generators, has prevented the growth of these services. Several special economic-development zones sit dormant and incomplete, impeding a wider outreach of mobile banking (Proximity Designs, 2014).

Insurance markets play a minor role, despite clear benefits for vulnerable populations (GIZ, 2015). Access to insurance services is still limited to a relatively small part of the population, mainly from the middle and upper classes. Many insurance products are also still in the design phase, for example crop insurance. According to the chief representative of Sompo Japan Nippon Koa Insurance, which was one of the earliest foreign insurers to open a representative office in Myanmar, the market availability of crop insurance is critical to Myanmar's development, considering that agriculture constitutes 40% of GDP and feeds 70% of the population (Mohn Win, 2015). Demand-side barriers to the outreach of this type of product include lack of awareness and buy-in from farmers. Potential key success factors in the penetration of crop insurance would be strong involvement of the public sector, as well as no-loss/no-profit approach in pricing.

Reform and modernisation of the insurance sector is underway in Myanmar; however, a number of barriers remain. As part of the current financial sector reforms, the Insurance Business Supervisory Board launched in 2012 a licence application process for private insurance companies to diversify the provision

of insurance services and to modernise the sector. Although private insurance companies are allowed in the country, their operations are still severely restricted by the requirement to use the same premium rates in order to avoid potentially harmful competition. Despite promising developments, possible supply barriers in the Myanmar insurance sector include lack of a skilled workforce, modern insurance technology, reinsurance and experience in insurance supervision. From the demand side, lack of public awareness of the importance of an insurance system is one of the challenges facing companies (GIZ, 2015).

2. ADDRESSING CLIMATE AND FINANCE CHALLENGES

IMAGE: ASIAN DEVELOPMENT BANK

The role financial services can play in building climate resilience is fundamentally around the provision of basic services for vulnerable populations to enable them to adapt to climate extremes and disasters. Across Ethiopia, Mali and Myanmar, a number of common market-based instruments are being developed and implemented to enable vulnerable households and communities to manage risk and to successfully transform their livelihoods. These include microfinance, insurance, VSLAs and mobile banking, which we explore in more detail below. Experience from these three countries shows that, when financial services are available to communities (through access to credit, insurance provision and encouraging

them to save), they are more capable of coping with and adapting to climate-related stress.[32]

Microfinance

Microfinance provides access to basic financial services for the poor. Through small loans with compulsory, frequent repayments to groups or individuals, microfinance helps the poor build up their assets, establish or develop a business and protect against risks (Agrawala and Carraro, 2010). MFIs are now spread all over the world (including in developed countries) and count over 100 million of the world's poor among their clients. Almost 90% of the clients of MFIs are women. MFIs can either be publicly or privately owned.

Microfinance services cover not only the provision of loans and credit for income generation but also savings, insurance, payments, money transfer, remittances and educational and health loans. Many MFIs also provide 'credit plus' complementary services such as skills education and training, advice on agricultural practices and health and nutrition workshops. One of the key advantages of loans and credit is that it makes the client value the investment (e.g. the assets they purchase) because they know they will have to repay the loan at some point in the future.[33] This suggests microfinance is a more appropriate strategy than donations, which tend to become an undervalued 'gift' for the beneficiaries (Agrawala and Carraro, 2010).

32 Interview, Mercy Corps, 10 November 2015.

33 Interview, Vision Fund, 30 November 2015.

Microfinance is an attractive vehicle for facilitating climate resilience, by allowing communities to diversify their livelihood or invest additional resources in their current practices to increase efficiency and improve resilience. There are two main reasons why microfinance is an effective means of building climate resilience. First, MFIs already have pre-existing networks of access to the poor, especially women, who are particularly vulnerable to climate change. Second, the nature of microfinance lending – high-volume limited value loans – is consistent with the fundamental nature of a majority of resilience-building actions, which will ultimately comprise thousands of decentralised actions by individuals, households and communities, as they continuously seek to internalise climate risks in their activities (Agrawala and Carraro, 2010).

Ethiopia

In Ethiopia, microfinance provides a mechanism to enable vulnerable farmers and pastoralists to access basic financial services. Small-scale subsistence farmers and pastoralists currently do not have the financial and technical capacity to cope with droughts and other climate stressors.[34] Loans and credit from MFIs allow farmers to enhance their productive capacity and start new income-generating activities while also become more financially independent and encouraged to adopt better saving habits. All these outcomes reduce their exposure to climate-related risks. Through the BRACED programme, Farm Africa is developing a market- and systems-based approach to provide immediate emergency response and continuity over the longer term (see Box 4).

34 Interview, Institute of Climate and Society, Mekelle University, 5 November 2015.

Coverage of MFIs across the country is generally good; however, their strength varies from region to region. The strength of MFIs tends to be based on how long they have been established and the level of financial and technical support they have received from government and different organisations, including donors and NGOs. Generally, MFIs in the Southern region tend to be stronger than those in Afar and Somali region, where until very recently there were no MFIs.[35] There may also be religious factors at play here, as these regions are predominately Muslim, meaning demand for financial products is typically lower.[36]

MFIs offer a range of products to meet the needs of the rural and urban poor. For instance, Dedebit Credit and Savings Institution (DECSI) operating in the Tigray region offers multiple affordable and accessible credit and saving services, all of which have potential overlap with climate resilience objectives. These services include (Mixmarket, 2015):

1. Regular loans, which are given for income-generating activities in agriculture, trade, handicrafts and services
2. Agricultural input loans, provided to agricultural extension programme beneficiaries for the purchase of inputs, such as soil fertiliser, pesticides, improved and select seeds, new equipment, irrigation and groundwater abstraction technology
3. Agricultural package loans, provided to rural household farmers embraced by the Agricultural Package Programme to achieve food security at household level and alleviate

35 For example, Afar MFI was licensed in 2014 and started operations in 2015. Somali MFI is older than Afar MFI.

36 Interview, Farm Africa, 6 November 2015.

poverty. The loan is provided for financing package activities such as dairy cows, dairy goats, modern beehives, water and treadle pumps, poultry, livestock-fattening, etc.

4. Voluntary deposits (saving schemes) from loan clients and the public at large

The structure of MFIs, and the services they provide, could be better tailored to reflect the diversity of contexts in Ethiopia.[37, 38] The concentration of MFIs in the regional capital towns and lack of systems and branches through the regions means there is a need for alternative models to reach remote rural communities.[39] Possible options being explored to address this structural deficiency include the partnering of MFIs with intermediaries, such as local traders and cooperatives.[40] In terms of the services MFIs provide, products are often developed in a top-down fashion, rather than being customised to the needs of different target groups (DFID et al., 2014). As such, there is a need for context-specific products, for example to reflect the variability in agricultural activities across the country (e.g. more mixed agriculture in the south and pastoralism in Afar and Somali regions), the ability for vulnerable communities to repay loans (e.g. including a guarantee programme of 50:50 or 60:40 to share the risk of default)[41] and religious considerations (e.g. Muslim clients will not ask for loans or pay interest and therefore there is a need for Sharia-compliant products in predominantly Islamic areas).[42]

37 Interview, Farm Africa, 6 November 2015.

38 Interview, Mercy Corps, 10 November 2015.

39 Interview, Farm Africa, 6 November 2015.

40 Interview, Farm Africa, 6 November 2015.

41 Interview, Mercy Corps, 10 November 2015.

42 Interview, Farm Africa, 6 November 2015.

Although in its infancy, Ethiopia's Islamic banking, which is also referred to as interest-free banking, may provide a solution to reach the high numbers of Ethiopian Muslims (Byrne and Anderson, 2015). Globally, Islamic finance is a huge industry and growing rapidly, reaching $2.5 trillion in global assets this year concentrated in the Gulf and South East Asia. Yet most of the millions of pastoralists in Ethiopia and throughout the Horn of Africa have not benefited from this growth, often because of their mobile nature and the limited infrastructure available to serve them in the areas where they live (Anderson, 2015). However, in recent years, the idea of creating infrastructure to support Islamic banking has gained more support, and the National Bank of Ethiopia introduced interest-free banking in Ethiopia in 2008 and then in 2011 issued formal directives on Islamic-compliant finance (Byrne and Anderson, 2015). Mercy Corps has been focusing a large portion of its work on increasing interest-free financial services to the least-served areas of the country, notably pastoralist communities. With support from the US Agency for International Development (USAID), the Somali MFI was launched and was the first provider of interest-free microfinance services in the country – offering loans, savings and money transfers. The Somali MFI has now scaled up to have 16 branches and over 6,000 active clients (Byrne and Anderson, 2015).

> "In recent years, the idea of creating infrastructure to support Islamic banking has gained more support"

Interest-free banking in Ethiopia is not progressing at the same pace as market demand (Byrne and Anderson, 2015)**.** This is because of a lack of knowledge around regulations, with banks

unclear on how to solve legal disputes that arise from interest-free finance. There is a still a gap in knowledge about how to design appropriate products, and Mercy Corps is working to build the capacity of staff to design financial products and how to evaluate the market. The Ethiopian government is also looking to establish an interest-free finance advisory board that will assist the industry to navigate regulations.

Low levels of awareness and financial literacy among potential beneficiaries are also restricting demand.[43] In remote areas, still large numbers of people do not have the information and knowledge about the microfinance services potentially available to them. The culture of saving is also not well developed, and this has become a key constraint preventing increased demand for loans. As such, there is a critical need to create awareness and educate rural communities, particularly around the availability of services, importance of access and basic numeracy training (Gebremichael, 2014).

MFIs in Ethiopia currently lack the technical capabilities and financial support to expand and reach out to more rural households. There is no financial training institute in the higher learning institutions in the country and workers in the financial services sector tend to accumulate skills through experience and not through formal financial/banking training (Zwendu, 2014). High turnover of workers is also experienced in a number of the MFIs, which significantly impacts the quality of the service delivered. The key reasons identified included low salaries and absence of incentive packages (Wale et al., 2013). Any technical or financial support provided to MFIs needs to be sustainable over the longer term and there needs to be careful consideration about the most appropriate systems and mechanisms for

43 Interview, Farm Africa, 6 November 2015.

providing this. One potential option mentioned by a stakeholder interviewed is to link some of the MFIs with commercial banks.[44]

MFIs also need technical support to understand portfolio risk management, particularly around climate risk.[45] For instance, during drought conditions, the body condition and weight of livestock decline, leading to a reduction in their value and a decrease in income for pastoralists. In this situation, the MFI client is unlikely to be able to repay the loan. Important action is needed to support MFIs to effectively manage their portfolios in such situations.[46] This may include the provision of weather forecasting information, which would give foresight to MFIs and allow them to focus on sectors that would be unaffected by a weather-related financial shock.

The regulatory framework and ownership structure of MFIs creates low levels of competition within the market. The ruling political coalition in Ethiopia (the Ethiopian People's Revolutionary Democratic Front) believes government policies should be relatively free from the influence of the private sector to maintain the development path of the country (Gebremichael, 2014). In the financial services sector, the regulatory framework does not allow foreign-owned institutions: currently there are only domestic investors.[47] The ownership structure of MFIs is mixed, with the big MFIs partially owned by regional states, some by NGOs and some by private owners. The four regional government-owned large MFIs (Amhara, Dedebit, Oromia and Omo Credit and Savings institutions) accounted for 75% of the

44 Interview, Farm Africa, 6 November 2015.

45 Interview, Mercy Corps, 10 November 2015.

46 Interview, Mercy Corps, 10 November 2015.

47 Interview, Mercy Corps, 10 November 2015.

total capital, 88% of the savings, 83% of the credit and 83% of the total assets of MFIs at the end of 2011/12 (Zwendu, 2014). Ownership of MFIs by domestic private investors and regional governments is both beneficial and detrimental in the delivery of microfinance services to the rural community. In terms of benefits, it has created access to financial services for people living in rural remote places and promoted socioeconomic development. Conversely, the lack of foreign investment means cross-fertilisation and interaction with new technologies and international best practices are limited, which may restrict innovation and large-scale transnational initiatives within the financial service sector.[48]

Box 4: Farm Africa explores a market- and systems-based approach to provide immediate emergency response and continuity over the longer term

Through BRACED, Farm Africa's work focuses on stimulating markets to build resilience. Taking the situation in Afar as an example, a number of sugar factories produce a huge amount of sugarcane by-products (e.g. tips and molasses), which are currently discarded. These by-products have the potential to be used for animal feed, particularly for pastoralist communities. Farm Africa is currently working with Afar MFIs to consider a programme of technical and financial support for local traders and cooperatives to allow them to access loans from MFIs and link them up with sugar factories to source sugar cane by-products and then sell them through the local market system. In terms of demand, the key question is will pastoralist households be able to go to the market and buy sugarcane by-products? Under the current drought conditions, this is

48 Interview, Mercy Corps, 10 November 2015.

unlikely to be feasible. However, Farm Africa is considering introducing a voucher system to create demand, which can gradually stop once the system becomes self-sufficient.

Source: Interview, Mercy Corps, 10 November 2015.

Mali

The implementation of microfinance products is not always carried out by technically well-trained officers who have detailed knowledge of the local context and with the integration of long-term sustainability objectives (Morvant-Roux, 2008). This is mainly because of the high cost of training and hiring qualified staff, which makes it difficult for MFIs to put in place a robust financial strategy. In an attempt to improve MFIs' expertise, NGOs such as Appui au Développement Autonome have provided technical and development training to MFI officers.[49]

Microfinance providers must consolidate their presence in remote areas and their work on raising awareness and building local trust. They must also acquire skills in the analysis of the capacity of reimbursement from agricultural rural households in the medium term. MFIs also lack knowledge about profitable agricultural operations (information about market prices is not always easily accessible) (Morvant-Roux, 2008). According to a primary source in Mali, MFIs find it difficult to expand their reach in remote areas because decentralising would mean a loss in efficiency.[50] There is currently no local policy to help increase financial services in these particular areas.

49 http://cercle.lu/ong_category/mali/

50 Interview, IRD Mali, 6 November.

In order to increase the rate of MFI loan repayment, broader regulatory actions need to be taken to stabilise the prices of agricultural products. This element is crucial to reduce the volatility of agricultural prices so as to secure farm incomes, as this is the major cause of non-repayment of loans (Morvant-Roux, 2008).

MFIs' current activities set obvious limitations in terms of financial product diversification, and the conditions of service use lack flexibility to suit clients' needs. To date, MFIs have largely been offering savings and loans services and rarely insurance, which is also key to decrease individuals' high exposure to climate risks. The extent of loans is also limited: loans depend on the amount of savings provided. Hence, for low-income customers, small loans cannot address larger sustainable projects. MFIs' portfolios of financing activities are also quite restricted: by enlarging their targeted offering to agricultural, non-agricultural, production and consumption activities, they would decrease recipients' vulnerability exposure via diversification of livelihood means.

Owing to financing constraints, it is very difficult for MFIs to have in place a long-term approach based on the objective of increasing resilience for the population. The Niger area in Mali illustrates the inability to mobilise resources in the medium and long term and consequently the failure to provide higher services (Morvant-Roux, 2008). For instance, MFIs' limited pool of financial resources means members' savings cannot always fund all short- and medium-term actions. The current regulatory framework in Mali does not always allow institutions to capture new resources (including access to bank liquidity).[51]

51 Interview, SNV Mali, 24 November 2015.

MFIs need to ensure the right balance of involvement of different stakeholders to strengthen financial service provision as well as an appropriate compliance regulatory framework for effective services. Initiatives underway are not well coordinated and lessons could be improved if the different financial providers increased communication between themselves (Morvant-Roux, 2008). For example, in the Niger Delta, three MFIs with a different status (Fédération des Caisses Rurales Mutualistes du Delta, CVECA and Nyesigiso) are involved in funding farmers. As savings in this context are a preferred solution, this implies MFIs will benefit greatly from financial intermediation. Indeed, savings collected not only make it possible to secure profits from farmers but also they should especially generate considerable leverage in the credit portfolio. Contrary to received wisdom, the savings are considerable but are undervalued by the banking sector. By building cross-sectoral strategic alliances with other actors, MFIs can foster lasting agriculture financing via notably uncapping the loans to finance larger equipment and therefore strengthening the means of production. As the effectiveness of financial services also depends in part on additional services to improve agricultural production, alliances with NGOs and professional associations of producers would bring training and technical assistance services to loans recipients (Morvant-Roux, 2008).

The current situation in Mali is a lack of coordination between NGOs and MFIs and unclear specific separation of roles, which may decrease the efficiency of traditional MFIs.[52] According to a local stakeholder, actual legislation is such that NGOs are allowed to provide financial services to the population.[53] Sometimes, NGOs' offers are more advantageous than those of their

52 Interview, IRD Mali, 6 November 2015.

53 Interview, IRD Mali, 6 November 2015.

traditional counterparts, which confuses potential recipients and decreases the role of traditional structures. Other issues were attributed to the government's lack of surveillance capacity: there have been multiple cases of fraud in Mali, whereby NGOs or MFIs go away with investors' money or sell unviable products, being unable to reimburse their clients.[54] This is unlikely to increase the population's trust in MFIs.[55]

> "The current situation in Mali is a lack of coordination between NGOs and MFIs and unclear specific separation of roles"

In Mali, the development of Islamic financial services has been slow, despite 95% of the population practising the religion. A recent study (Storck et al., 2013) shows Islamic-compatible services have started to emerge with the technical and awareness-raising support of newly created structures (the Comité National de la Finance Islamique au Mali (CNFIM); Financière Islamique pour le Développement (FID); Société Halal Finance), reflecting the interest of the population.

Myanmar

Microfinance is successfully being used in Myanmar to address poverty by providing services to those who are ineligible for traditional financial services, owing to lack of credit history or assets to borrow against. Farmers typically do not own the land they cultivate, which is provided to them on lease, meaning they lack collateral (ACTED and BWTP, 2010).

54 Interview, SNV Mali, 24 November 2015.

55 Interview, IRD Mali, 6 November 2015.

Previously, farmers borrowed from informal lenders at interests of 10–15% per month. Microfinance forms one type of financial safety net for vulnerable households to address negative coping mechanisms, such as the accumulation of debt from informal/unregulated loan schemes.[56] The provision of loans allows climatically vulnerable groups to diversify or pursue alternative livelihoods and start up alternative small-scale capital ventures.

For the high numbers of agriculturalists in Myanmar, loans build resilience through encouraging both on- and off-farm diversification of livelihoods as a buffer against the potential impacts of climate change on agricultural production and income sources. Farmers who are dependent on one single source of income are more vulnerable to the impacts of extreme weather events and climate change. This problem is compounded by the very low level of financial inclusion in Myanmar, which limits the opportunities available to people in the event of weather- and climate-related disruption.[57] On-farm diversification of livelihoods includes moving from solely crop production (e.g. rice) to livestock (e.g. chickens, pigs and cows). Off-farm diversification includes activities such as construction, whereby loans are used to buy materials and tools, enabling the client to start a small construction company and hire additional workers.

Farmers are also using loans to improve efficiency in working practices, allowing them more time for income-generating activities. Accessing clean water is a key challenge for many rural communities, with lots of farmers spending 40% of

56 Interview, Vision Fund Myanmar, 30 November 2015.

57 Interview, Vision Fund Myanmar, 30 November 2015.

their time getting water.[58] Loans are being used to finance investment in water pumps. This type of large-scale investment frequently involves individuals grouping together and additional financial support from external donors to part-fund the costs of installation. Transportation is another way to improve efficiency, and loans are often used to buy motorbikes, bicycles and boats. These types of investments free up time to enable farmers to concentrate on income-generating activities.

Beyond agriculture, loans potentially address climate risks in other sectors and provide opportunities for investment in new technology. For instance, through the BRACED programme, World Vision and Plan International are exploring the potential to make loans available for structural improvements to housing to better withstand storms, cyclones and heavy winds.[59] Another area is the rehabilitation of coastal zones, with loans being used to provide alternative sources of work for climatically vulnerable fisherman and those engaged in illegal fishing. Other loan options include those to purchase mobile handsets, which can be used as a tool to access early warning systems.

The vast majority of MFIs in Myanmar are commercially oriented. Of the 200 licences granted by the government in 2011, 90% are commercially oriented, with only 10–12 MFIs being socially oriented.[60] Capitalising on the high demand for finance, many profit-orientated MFIs (predominantly foreign investors) have flooded the market and largely concentrated on the capital city – Yangon. These provide quick and easy access for clients looking for instant finance.

58 Interview, Vision Fund Myanmar, 30 November 2015.

59 Interview, Vision Fund Myanmar, 30 November 2015.

60 Interview, Vision Fund Myanmar, 30 November 2015.

The objective of socially oriented MFIs is support the poor in society and to improve their situation, using indicators such as the Progress out of Poverty Index and child well-being. These types of MFI, such as World Vision's Vision Fund, carefully select their clients based on their ability to pay back loans and a solid business model, and then spend time training and building relationships with them.[61] Clients value this support, and as a result Vision Fund has a high retention rate (92%), with clients typically going through eight cycles of loan before they are more self-sufficient and financially secure. Women are a key target audience – 87% of Vision Fund's clients are female – as they tend to be more stable and responsible in the poor economy, and to take care of the children, who are also another key target.

Loans from socially orientated MFIs always go hand-in-hand with education and awareness-raising. This includes educating clients on disaster risk reduction and preparedness, together with financial literacy (e.g. tax, inflation, etc.) and training on business skills (e.g. how to start a business, taking on employees, etc.).[62]

The ultimate target is to move clients from loans to saving products. Savings play a vital role when preparing communities for disasters or other unexpected negative impacts (e.g. personal or national catastrophes). As a result, Vision Fund is developing a series of saving products to support their clients through this important transition.[63]

To enable MFIs to meet the high demand for microfinance, they need more financial support. Unmet demand in Myanmar is estimated to be close to $1 billion (UNCDF, 2012).

61 Interview, Vision Fund Myanmar, 30 November 2015.

62 Interview, Vision Fund Myanmar, 30 November 2015.

63 Interview, Vision Fund Myanmar, 30 November 2015.

MFIs operating in Myanmar are unable to borrow money from international markets (e.g. the US or UK) because of exchange rate instability, which in turn leads to higher likelihood of bankruptcy[64] and higher costs of raising capital. As such, the socially oriented MFIs are heavily dependent on local development money and grants/donations, which up until now have been insufficient to meet the demands and needs of the people of Myanmar.

A key multi-donor fund is the Livelihoods and Food Security Trust Fund (LIFT). This is a five-year fund of $100 million for Myanmar, governed by a donor consortium. Microfinance is included under two of the very broad themes of 'Diversifying income sources' and 'Increasing agricultural production' (ACTED and BWTP, 2010). Through this programme, existing and new microfinance actors have been supported in terms of technical assistance and the build-up of loan portfolios.

In terms of other barriers, in certain regions religion plays a role in the demand for microfinance products.[65] The Muslim-dominated areas close to Bangladesh are hard to reach, as products are not currently tailored to their needs. These religious groups have also not received sufficient support from the government and, as such, tend to be marginalised on several levels.

Insurance

Insurance can provide businesses, farmers and affected households with rapid access to post-disaster liquidity, offering protection to livelihoods. This may be one of the

64 Interview, Vision Fund Myanmar, 30 November 2015.

65 Interview, Vision Fund Myanmar, 30 November 2015.

key determining factors in enabling rapid reconstruction and economic recovery after extreme weather events (World Bank, 2012b). In the absence of traditional insurance mechanisms for disasters, the poor are forced to self-insure, often depleting their savings when disaster strikes.

Weather-index insurance presents a promising alternative to traditional agricultural insurance for many lower-income countries. In contrast with traditional indemnity-based crop insurance, the contracts are index-based, which means the insurer will pay the contractual claim if rainfall falls below a specified level, regardless of crop damage. In other words, index-based insurance is against events that cause loss, not against the loss itself (Tuvey, 2001). Costly in-field assessments of individual farms are not needed to verify damage, which makes insurance more affordable. Furthermore, the pay-out can be set up to occur as soon as the loss-causing event is detected, which helps smallholder farmers stabilise their incomes and recover more quickly from climate-related shocks (AMCEN, 2011; Naidoo et al., 2012) Index insurance has the potential to build the resilience of smallholder farmers, not only by providing a pay-out in bad years to help farmers survive and protect their assets but also by helping unlock opportunities that increase productivity in the non-pay-out years, which might allow them to escape from poverty traps or from the threat of them (Greatrex et al., 2015). For example, insurance might allow farmers to access credit, which they can then use to invest in new agricultural technologies or inputs.

However, there are challenges in developing weather-index insurance markets in lower-income countries. In some cases, when weather data infrastructure is too underdeveloped and information on climate risks is sparse, a suitable index cannot be found. All this means insurance companies find it difficult

to price the risk and set a premium, and therefore no insurance is offered. Furthermore, if the severe risk occurs too frequently, investments in other risk management strategies are likely to yield higher returns (Collier et al., 2009). Experience with weather index insurance markets shows developing these markets involves high start-up costs (Pierro and Desai, 2011). Not only do stakeholders have to design and market products, but also education and capacity-building are needed for local insurance staff, delivery agents, government officials and consumers. Finally, for the insurance scheme to work, the climate risk should be spread among a large number of individuals in order to transfer individual risk to a homogenous collective of individuals (Llewellyn and Chaix, 2007). This too can be particularly difficult in developing countries.

It is important to recognise that, in some cases, insurance may reduce the adaptive capacity of the beneficiaries. For example, if a farmer has limited disposable income and is persuaded to buy into a drought risk policy, then they may have used what little spare income they had. In the eventuality that there is no drought, the premium paid was an opportunity cost. If there is another form of extreme event (e.g. flood, pest, disease) then the farmer paying the drought premium will have less adaptive capacity than their neighbour who saved the money and could afford to buy food.

Ethiopia

In recent years, several micro-insurance schemes have been launched in Ethiopia that deliberately target poor smallholder farmers previously considered uninsurable. This exclusion owed to a combination of poverty, lack of education, data limitations and remoteness. To overcome the liquidity constraint, poor farmers were given the option of paying premiums either in cash

or through insurance-for-work (IFW) programmes (Greatrex et al., 2015). In Ethiopia, the IFW scheme is built into the government Productive Safety Net Programme (PSNP). The best-known weather index insurance scheme is the R4 Rural Resilience Initiative (Box 5).

Box 5: R4 Rural Resilience Initiative

The R4 Rural Resilience Initiative in Ethiopia is one of the most widely cited examples globally of weather index insurance. Launched in 2008 by Swiss Re, Oxfam, the Ethiopian government, a local NGO and other partners, the initiative targets smallholder rain-fed farmers, whose harvests and incomes are already threatened by drought and who are likely to face additional challenges in the face of a changing climate.

The project enables farmers enrolled in the Ethiopia's PSNP to pay for weather risk insurance premiums by contributing their own labour to community projects that help reduce risk, such as irrigation, soil improvement and composting. In the event of a seasonal drought, automatically triggered insurance pay-outs enable R4 Rural Resilience farmers to afford the seeds and inputs necessary to plant in the following season, without having to sell off productive assets to survive. Participation in the insurance scheme increased to 18,000 households in 2012, which equates to approximately 95,000 people (Oxfam America, 2013). Only about 0.4% of Ethiopia's population of around 90 million has insurance, so the R4 Rural Resilience Initiative also serves as an important step towards developing Ethiopia's nascent insurance market (Caring for Climate, 2012).

The R4 Rural Resilience Initiative was known as the Horn of Africa Risk Transfer for Adaptation programme until 2011 when it changed its name and expanded its partnerships to include WFP, with the aim of adapting lessons learnt in Ethiopia to other countries.

Index-based livestock insurance (IBLI) has also been trialled in Ethiopia. Loss of herds during drought can have devastating effects on local communities, pushing many households into severe poverty. IBLI aims to stabilise asset accumulation, enhance economic growth and keep livestock keepers out of poverty traps by insuring them against the loss of their livestock as a result of drought (Greatrex et al., 2015). IBLI was developed by the International Livestock Research Institute, in partnership with Cornell University and the University of California (Davis), and was launched in 2010 in Borana region of southern Ethiopia together with several regions in northern Kenya. Through the BRACED programme, Mercy Corps is exploring the potential to expand this scheme to other areas. It is innovative in that it uses satellite information to understand the weather situation in a particular area, notably forecasts about rain, temperature and soil moisture.[66] It then creates an index that tries to depict the near-term climate situation of the particular area. If the index notes a weather shock is imminent, the insurance company provides compensation to the farmers in advance of the disaster. This is different to current insurance schemes, which provide compensation after the event. Using experiences learnt through IBLI's application in Kenya, the aim is to improve the accuracy of forecasting and index generation to ensure compensation is triggered accurately and at the appropriate time.

66 Interview, Mercy Corps, 10 November 2015.

Micro-insurance schemes are delivering results in Ethiopia. For instance, through the R4 Rural Resilience initiative, insured farmers have increased the amount of savings by an average of 123% compared with the uninsured, tripling their savings from an average amount of 465 birr in 2009 (Greatrex et al., 2015). Insured farmers have also increased the number of oxen they own by 25% since 2009. The evidence also shows the programme benefited vulnerable groups and particularly women farmers. For example, relative to participating male-headed households, female-headed households have increased their investments at a higher rate, taken out more loans, decreased the amount of land they sharecropped, increased their investments in hired labour and increased their total planted land in response to insurance.

It is largely international donors that are driving the expansion of the insurance sector to poor communities.[67] Programmes focus largely on agricultural risk management, particularly weather-related shocks. Currently, donors playing the dominant role include Oxfam America, WFP, the International Labour Organization, the United Nations Development Programme, the International Food Policy Research Institute, Japan International Cooperation Agency and the International Fund for Agricultural Development. There is also a private–public partnership on how to consolidate efforts so as to bring scalable and innovative micro-insurance to the low-income population.

The motivations of private insurers to expand their insurance coverage and offering relate partly to their desire to address their corporate social responsibility and also to position themselves in an expanding market. One stakeholder stated

67 Interview, Nyala Insurance Company, 30 November 2015.

that positioning the company in the rural market would enable it to achieve sustainable growth and profitability.[68]

A number of barriers limit the expansion of insurance services in Ethiopia. These include the following major factors,[69] some of which have been the focus of specific interventions (as explored in more detail below):

1. Agricultural insurance is not a lucrative business, making it challenging to persuade insurers to venture into the market. This explains why most micro-insurance projects are piloted with the active support of donors and development partners.

2. Levels of financial literacy are low among the target audience, particularly among pastoralist communities that have never previously had access to insurance services.[70]

3. Cultural/religious factors are barriers, particularly the Islamic principle that no-one can pay or charge interest.[71]

4. There is a lack of technical skill among insurers in terms of the design and innovation of new micro-insurance products.

5. Limited historic damage data and poor knowledge about weather and climate risks mean insurance companies find it difficult to price the risk and set a premium.

6. There are regulatory problems related to the absence of a legal framework to define delivery channels (MFIs and cooperatives).

68 Interview, Nyala Insurance Company, 30 November 2015.

69 Interview, Nyala Insurance Company, 30 November 2015.

70 Interview, Farm Africa, 6 November 2015.

71 Interview, Farm Africa, 6 November 2015.

7. Lack of local reinsurance company.

8. Premium rates are exorbitant.

Further research, capacity-building and education are an important first step to address some of these barriers. A representative from one private insurer highlighted that market research was being undertaken, in collaboration with donors, to assess demand for micro-insurance products.[72] There is also a need to build the capacity of distribution channels (e.g. MFIs and cooperatives) to improve understanding of micro-insurance products and how they operate. In terms of education, several initiatives have focused on literacy campaigns to promote the importance of micro-insurance in building climate resilience. From engagement activities and assessments undertaken as part of the BRACED programme, Farm Africa has observed that local communities are getting excited and interested in the possibility that this kind of service will come to them.[73] As such, there is high confidence that demand for these services will be there.

The government is also taking action to assist with the development of micro-insurance through legislation in the form of regulatory directives. The current regulatory environment allows for partnership among different institutions; for instance, commercial banks, insurance companies and MFIs can work together on issues that need their cooperative activities.[74] Banks are allowed to downscale and provide microfinance services, and conventional insurance service providers can also provide micro-insurance services. However, a critical business issue still remains: for providers to expand

72 Interview, Nyala Insurance Company, 30 November 2015.

73 Interview, Farm Africa, 6 November 2015.

74 Interview, Central/National Bank of Ethiopia, 3 December 2015.

their services to rural areas by branching out or engaging in small transactions involves high costs and reduces their income. They need separate incentives. The Ethiopian government is currently developing a financial inclusion strategy to tackle all these related challenges.

Insurance providers are also considering the most appropriate models and ways of working to enable them to best serve the market. For instance, there is a drive to build technical capacity for innovation and design of appropriate agricultural micro-insurance products. This may include expanding the use of information technology and digital solutions for micro-insurance. The sector is also exploring ways to align its strategic approach to micro-insurance with donors, development partners, government departments and delivery partners (e.g. MFIs and cooperatives), and increasingly working in partnership with them. For example, through the BRACED programme, Nyala Insurance is partnering with Farm Africa and Lion's Head Global Partner to develop new insurance products, including index-based livestock insurance, for pastoralist communities. While still in the development phase, considering the design of products, pricing, marketing and outreach of insurance facilities, this has the potential to significantly improve the livelihoods and resilience of pastoralist communities currently exposed to climate variability and future climate change.[75]

An additional challenge of reaching pastoralist communities with insurance is that they are highly mobile, which leads to a need for different ways of working. Insurance companies do not have branches in all communities, so as part of the design and development of new products consideration needs to be given to how these services can reach communities in remote

75 Interview, Farm Africa, 6 November 2015.

areas.[76] This is likely to be through market intermediaries, for example MFIs, local traders and cooperatives. As such, there is an action to create stronger links between insurance service providers and these intermediaries. This is starting to develop, as demonstrated by the partnership between Nyala Insurance and DECSI operating in Tigray region of Ethiopia.[77]

Mali

Index-based insurance offers many benefits to farmers in comparison with traditional crop insurance. Traditional insurance provision faces an information asymmetry between insured and insurer parties and is associated with high transactions costs. It often leads to the classic problem of 'adverse selection'[78] and 'moral hazard',[79] both effects explaining why traditional agricultural insurance has struggled to be adopted by both parties (de Bock et al., 2010). Index-based insurance has then the potential to address the aforementioned challenges of incomplete insurance markets by designing products tailored to both users and providers' characteristics (de Bock et al., 2010). Progress has been made in Mali since 2011, where different pilot programmes have been launched by the insurance broker PlaNet Guarantee: one satellite-based index for maize and one based on area yield for cotton, both insuring against drought. PlaNet Guarantee has partnered with Allianz as the local insurer as well as three international reinsurers. The products'

76 Interview, Farm Africa, 6 November 2015.

77 Interview, Institute of Climate and Society, 5 November 2015.

78 When buyers have better information than sellers so the highest-cost consumers end up buying a particular product.

79 The chance that the insured will be more careless and take greater risks because he or she is protected, thus increasing the potential of claims on the provider.

market penetration has shown a positive trend: in 2013, about 2,330 policies were sold, and these were multiplied by 7.5 in the following year. The total product portfolio amounted to $2,477,394 in 2014 (de Bock et al., 2010).

"Demand for insurance owes largely to efforts in raising awareness among farmers and MFIs about the concept and potential benefits of the scheme"

Aimed at Malian cotton producers, an agricultural insurance contract based on an average yields index has shown more benefits to farmers than a weather-based index insurance contract (de Bock et al., 2010). De Bock et al. also point at specifying a dual critical threshold (compared with a unique one) in the contract for the yield-based insurance in order to restrain the premium cost while increasing intervention from the insurer. Indeed, if the threshold is too high, the cost of the premium might discourage farmers from purchasing the product. On the other hand, if it is too low, the frequency of indemnity is very low. It is thus important to design a contract that incorporates two levels of critical thresholds so as to better meet the needs of the farmers. The first level is relatively high (where it equals to 90% of the average yield of the district) and results in partial compensation. When the relatively low second level is reached (where it equals to 80% of the average yield of the district), full compensation is paid to the farmers as agreed. The study shows that the average yield index is preferable to the other two weather indexes as it covers 70% of the annual variation in yields for each village, where the most relevant climatic indices (based on satellite images) cover only 64% of these variations.

One important factor for the success of innovative index-based insurance products is to clearly identify the product's distribution channels. This can be through producer cooperatives and BNDA or be spread via individual contracts with the support of local MFIs, such as the multi-partnership between the MFI Soro Yiriwaso, the producer cooperative COPAM and the insurance company PlaNet Guarantee.[80] It is also important to develop a communication strategy about the usefulness of the product to facilitate understanding and make information more accessible to farmers (de Bock et al., 2010).

User acceptance and understanding of the product has been crucial in the development of index-based insurance in Mali. Demand for insurance owes largely to efforts in raising awareness among farmers and MFIs about the concept and potential benefits of the scheme. According to a local source in Mali, insurance is paramount to build safety nets for the population. For individuals and households, low crop productivity is prone to pandemic famine (Hartell and Skees, 2009). For companies, the irregular supply of agricultural products signifies that they cannot comply with any contractual commitment, are likely to increase their debt ratio and are more financially exposed to unexpected shocks.

Collecting data and continuously monitoring changes of climatic conditions is of utmost importance to the quality of insurance indexes. In the current Malian cotton context, the innovative product has not yet taken into account changes in the frequency and magnitude of climatic factors in order to adjust the insurance product accordingly (de Bock et al., 2010).

80 Interview, SNV Mali, 24 November 2015.

In addition, the quality of weather infrastructure in Mali should be improved (Hartell and Skees, 2009). While it appears the country is endowed with a significant number of weather stations, very few are properly maintained, hence there is a role for international development partners and donors in supporting technology transfer and maintenance. In Mali's major productive regions such as in the south of Bamako, there are only four synoptic stations, limiting the accuracy of the index insurance.[81]

At the moment, single rainfall-based index insurance products still omit other factors and could decrease the efficiency of the service compared with multiple complex index-based products. For instance, a negative trend in yields of cotton has been observed in recent years, not related to weather events: soil erosion, poor soil quality and poor water infiltration and retention could be at the origin of the observed changes but remain uncaptured by the single crop yields-based index (which only correlates rainfall amounts with average crop yields). This phenomenon is likely to influence the probability of payment of insurance contracts. These observations were confirmed by primary sources from Mali and suggest much work is needed, notably to retrieve data related to soil characteristics in order to increase the robustness and accuracy of the product (de Bock et al., 2010). A complex index also poses other challenges in terms of ease of understanding by local entities and clarity of the contract for smallholders (Hartell and Skees, 2009).

Even though index-based insurance products are context-specific, lessons learnt can be drawn from the design of a yield-based index insurance scheme in the Malian cotton farming industry. This product could be replicated in other

81 Interview, DC Consulting Microfinance (Mal), 18 November 2015.

sectors or countries or even to address other climatic risks such as flooding or pest invasion. In this respect, a conducive regulatory and legal framework is required, bearing in mind the different geographical areas. Market penetration also depends on obtaining approvals for the new product from a national insurance regulatory body, such as the Regional Commission of Insurance Control for West Africa (Hartell and Skees, 2009). In Mali, drought insurance is unlikely to cover all farmers' needs. In fact, 260 community resilience plans mention an array of climate-related risks and uncertainties: irregular, erratic, insufficient rainfall, drought, frequent floods, strong winds, crop pests, etc.[82] In order to effectively cover farmers experiencing simultaneous disasters as well as to protect farmers with different crop types, the insurance industry will have to adapt to local and individual conditions, making the range of products available more timely to develop and more complicated to their users.

Myanmar

Insurance and risk mitigation instruments are not currently prevalent in Myanmar's financial market, and only a handful of insurance companies exist. For decades, the only provider of insurance was the state-owned and run Myanmar Insurance. In 2012, the government legalised domestic private insurers; however, the industry remains hampered by a lack of technical expertise and products tailored to meet the needs of the market (Frontier Myanmar, 2015).

82 Interview, IRD Mali, 6 November 2015.

Although the government no longer holds a monopoly, the insurance industry remains highly regulated and uncompetitive.[83] The government limits the types of coverage private insurers can provide, and they are legally barred from setting their own premiums. Having the same premiums across the board makes it difficult for private insurers to differentiate their products from those of competitors.

Micro-insurance offers one solution to manage the risks facing Myanmar's poorest; however, to date, such schemes have not yet been rolled out at any meaningful scale.[84] For these products to be viable, they would generally need to be bundled with other financial services – like loans – as the premiums on them, and therefore margins for the providers, are likely to be low. Micro-insurance is definitely seen as forming part of the suite of products MFIs can deploy to minimise impact of disasters.

A number of international firms are planning to introduce weather index-based insurance, but a number of challenges are likely to remain. A Japanese insurance firm, Sompo Japan Nipponkoa, plans to soon introduce index-based products in cooperation with Myanmar partners (Frontier Myanmar, 2015). Weather index-based systems may offer a way to provide farmers with protection where they currently have none, and could be the most efficient way for insurers to accurately and efficiently assess damage. However, implementing such schemes is likely to take time, as farmers are currently unfamiliar with the concept of insurance and may distrust the perception that insurance

83 Interview, Vision Fund Myanmar, 30 November 2015.

84 Interview, Vision Fund Myanmar, 30 November 2015.

is driven by profit.[85] To address this concern, Sompo Japan Nipponkoa intends to adopt a no-loss/no-profit approach in pricing (Myanmar Times, 2009).

> "Micro-insurance is definitely seen as forming part of the suite of products MFIs can deploy to minimise impact of disasters"

The other key challenge is the lack of reliable datasets of both weather and agricultural yields. Insurers use meteorological data to determine the severity of damage to crops, and use these data to calculate pay-outs to farmers. In Myanmar, both coverage of ground weather stations and availability of satellite data are currently limited;[86] without this detail, the design of weather index-based insurance products will be flawed, as the compensation may not accurately reflect the actual loss incurred.

Village savings and loan associations

VSLAs are a self-selected group of people (usually unbanked) who pool their money into a fund from which members can borrow. The money is paid back with interest, causing the fund to grow. The activities of the group run in cycles of one year, after which the accumulated savings and the loan profits are distributed back to members.[87] The purpose of a VSLA is to

85 Interview, Vision Fund Myanmar, 30 November 2015.

86 Interview, Vision Fund Myanmar, 30 November 2015.

87 www.vsla.net/aboutus/vslmodel

provide simple savings and loan facilities in a community that does not have easy access to traditional financial services.

There are several potential ways in which VSLAs can promote climate resilience. First, the loans households receive can be invested in measures to promote resilience, for instance to support or develop new resilient livelihoods, carry out housing improvements and purchase equipment to receive climate/risk information (e.g. mobile phones). As such, similarly to microfinance, VSLAs can allow communities to diversify their livelihood or invest additional resources in their current practices to increase efficiency and improve resilience. Second, VSLAs also provide potential sources of social support, self-organisation and networks during disturbances, including weather- and climate-related shocks. They can also prompt a release of funds through predetermined triggers, helping vulnerable communities cope with and recover from disaster events (Bastagli and Harman, 2015). However, it is important to recognise that VSLAs would have limited benefits in the context of covariate shocks (i.e. when many households in the same locality suffer similar shocks).

Ethiopia

Through a number of donor- and NGO-lead initiatives, VSLAs have been established rapidly in Ethiopia. For instance, Mennonite Economic Development Associates (MEDA) formed 50 VSLAs in one year (2011) (MEDA, 2014), including the Addis Alem VSLA (see Box 6). MEDA attributes this to the simple, non-bureaucratic and low-cost approach to forming savings groups. Typically, donor and NGO involvement ends after one year and the groups operate independently. Among MEDA-supported initiatives, 98% of VSLAs have agreed to continue saving autonomously, ensuring a sustainable impact.

Box 6: How VSLAs work in practice – Addis Alem VSLA, Ethiopia

In the rural areas of Amhara, rice farmers live a hand-to-mouth existence. Having enough money to afford inputs for farming, school and household expenditures, particularly before harvest time, is a significant challenge. Farmers are often forced to sell rice during harvest season when prices are low, which endangers their livelihood and hinders their income potential.

In 2011, a small collection of rice farmers came together and, with the assistance of MEDA, formed a group known as Addis Alem VSLA. MEDA provided training to the group on topics (e.g. saving, credit, managing risk, resolving conflict) and the necessary materials to start saving (e.g. a savings box with two locks, 13 passbooks, four plastic plates, a bookkeeping ledger).

The VSLA collectively agreed to each save 3 birr and 1 birr weekly for the regular savings and social fund, respectively. Regular savings are to be used towards small loans to members and investment, while the social fund is used for emergency purposes. After one year of weekly saving, Addis Alem accumulated 2,000 birr in regular savings and 547 birr in the social fund.

Using their accumulated savings, the group decided to invest 2,000 birr into two plots of land. They planted rice and expect the harvest to generate 15,000 birr in earnings, including the subsequent year's collected savings. Addis Alem plans to store the rice for up to six months and sell the crop when the price of rice is high. Farmers have the confidence to store their rice because the risk is shared between members and the business is an additional stream of income. In addition, members have realised other benefits from group saving, including a reduction

in community disputes, improvements in social life and renewed interest in MFIs.

The most enduring impact of Addis Alem is how it has changed members' perception of saving. Before VSLA, members never saved but now each member understands the importance and necessity of saving. They have experienced how saving positively impacts their farm, family and future. Consequently, the group plans to continue saving and investing in the coming years, as articulated by one of the VSLA members:

> *'In the future, we hope to increase our rice production and own milling equipment so that when our children grow up they will have something to develop our business with. Our children will see how we saved and they will learn from our experiences and be able to expand our business further.'*

Source: MEDA (2014).

Unfortunately, in times of extreme climate variability, the financial security VSLAs provide is gradually eroded. Taking the current El Niño-driven drought conditions in Ethiopia as an example, women's groups that had been making good progress in recent years through their participation in VSLAs are now running into problems (CARE, 2015). The land they recently began cultivating, planting crops like maize and sorghum, has been rendered infertile by the drought. Goats and cows have been weakened to the extent that they no longer produce milk, and many have already died. This highlights the fragility of small, self-managed community-based schemes and the presence of thresholds beyond which the accumulated savings are no longer sufficient.

Continuous saving and growth of VSLA funds leads to accounts being created at local MFIs, which potentially provides additional safety nets and security for the VSLA members. For instance, following continuous saving for two years, the Enyesh VSLA fund reached an amount greater than what was needed for credit to members, leading them to open a savings account at the local MFI (MEDA, 2012). This linkage increases their credit access for larger investments with greater return. Through the BRACED programme, Farm Africa plans to support the creation of a number of VSLAs and link them with MFIs.[88]

Mali

The benefits of VSLAs (called *tontines* in Mali) are undermined by weak management, transparency and malpractice, even though it is recognised that VSLAs can promote financial inclusion in rural communities, as they tend to be the solely financial structure available in many villages. They also provide intangible assets like social networks to help communities survive intensive shocks. According to a study in three regions of Mali, women trust their neighbours more than MFIs or NGOs. However, these community associations tend to be poorly organised, often lack transparency, are subject to financial misuse and are limited in the flexibility they can offer to their members (BARA, 2013).

Anecdotal evidence suggests internal conflicts among *tontine* members is growing in Mali, which could put in danger the financial sustainability of these informal groups (MaliWeb.net, 2015). Indeed, some women do not hesitate to engage in several *tontines* at the same time, even though their financial means do not allow them to do this. They invest a portion of their

88 Interview, Farm Africa, 6 November 2015.

condiments or money intended for other purposes and create conflicts at home. As social conventions force them to pay into the *tontine*, they may have no other choice than to fall into debt (Bamada.net, 2015).

To help address these shortfalls, programmes such as SfC, carried out by CARE, Plan International and World Vision, offer management training as well as financial literacy courses to illiterate villagers. As an example, SfC has been used in nearly half of the villages of Mali to increase financial inclusion (Ashe, 2011). The funds are divided among members in proportion to the amount each has saved during the annual cycle and redistributed between the planting and the harvest season. The pay-out is often used to buy seeds, to make a larger investment in trading and agriculture or to pay school fees. These groups collectively manage more than $5 million (about $300 per group) mobilised entirely through member savings. Advantages include simplicity, low cost, profit accumulation to members and positive externalities to other groups yet to be trained. A testimony from a woman in a village in the southwest of Mali explained she had started a small breeding commerce thanks to SfC, which had allowed her to be financially independent and to support her family (Guindou, 2014). She is one of the 28 members of the Benkadi association that benefited from the SfC programme (Kone, 2014).

The lack of aggregated data on the funds' uses restrains the opportunity of enhancing their services, although donors have recently undertaken data collection. For instance, the Institute de Recherche pour le Développement (IRD) has been conducting village surveys and inventories in order to identify the major causes of vulnerability, including the ranking of climatic stresses and shocks in relation to the livelihoods of 264,000 people in

Mali.[89] Mapping the villagers' coping strategies and livelihood revenue streams will help in designing stronger community-based disaster risk management plans as well as targeting VSLA funds to effective resilient activities.[90]

> "Mapping the villagers' coping strategies and livelihood revenue streams will help in designing stronger community-based disaster risk management plans"

VSLA coupled with the SfC programme cannot provide larger loans yet, and offers a limited range of services. These schemes alone are unlikely to lift group members out of poverty and address crucial issues such as lack of infrastructure and declining soil fertility. A more diversified choice of products and higher loans will be necessary. This will require that the village clubs be combined with another type of financial instrument such as mobile banking (BARA, 2013).

The e-*tontine* as the next step to leverage VSLAs' financing capacities? The e-*tontine* is a very recent concept that associates non-traditional financial structures with mobile banking. Electronic monetary exchanges could facilitate loan up-scaling by pooling resources from several VSLAs. The concept originated from Côte d'Ivoire (from an unnamed inventor) and was awarded the 2015 African Social Entrepreneur Prize by Orange, and strongly hopes to take this promising idea to market (StarAfrica.com, 2015).

89 Interview, IRD Mali, 6 November 2015.

90 ODI literature confidential. Dropbox BRACED-IRD PDG Dissemination Document 27082014.

Myanmar

In Myanmar, donors and international NGOs have created many village-based savings and loan organisations. According to Myanmar Agricultural Development Bank, in 2012, there were 12,000 of them serving 1.4 million people (Seward, 2012). For example, using the VSLA model first developed by CARE in Niger, CARE Myanmar has piloted a scheme in Southern Chin state in 10 villages (ACTED and BWTP, 2010). This scheme is based on a number of core principles: (1) no external money is provided to the group; (2) group members are self-selected; (3) existence of an emergency fund to which all group members contribute and which is given as a grant in case of need from a member; and (4) setting of timeframe for the group, after which savings and earnings are distributed according to the number of shares bought – typically this is nine months to one year (ACTED and BWTP, 2010).

The multi-donor LIFT has also supported the establishment of VSLAs in the Tan Lan region of Myanmar. The programme has reached 3,331 beneficiaries, mainly women (nearly 90%), who have saved MMK 103,496,400 in 171 saving and loan groups. Together, they borrowed MMK 151,562,700, with 100% of this borrowed money being returned and including interest (LIFT, 2015). The rate of return on savings is high (~17%). This scheme, and others, demonstrate that community-based financial organisations can provide valuable savings opportunities, which will provide important financial safety nets during times of hardship, potentially driven by climate variability and future climate change.

Mobile banking

Mobile or channel banking refers to financial transactions conducted over a mobile device and can include internet banking, a card payment system, mobile banking and point of sales. Mobile banking has the potential to reach more people, at a lower cost, and with increased convenience than traditional 'brick and mortar' banking services that rely on fixed branches. For clients, this will bring the transaction cost (transport, time, convenience, etc.) to nearly zero and give most efficient and effective financial services (Zwendu, 2014). With the rapid global expansion of mobile technology, mobile banking is helping vast numbers of previously excluded people access financial services.[91]

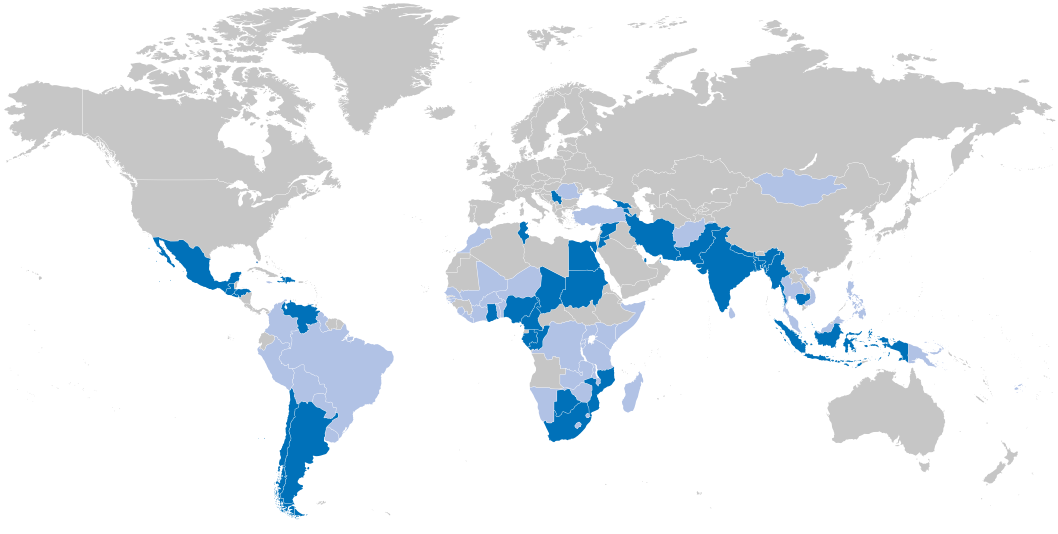
The existence or absence of an enabling regulatory environment has a dramatic impact on the development of the mobile banking markets and on financial inclusion (di Castri, 2015). This is accurately reflected in the maturity of the mobile banking market in Mali and Myanmar: in Mali, where there is an enabling regulatory approach, penetration is high; conversely, in Myanmar, where there is a non-enabling regulatory environment, mobile banking is non-existent (Figure 1). (Although Ethiopia was not covered in this assessment, it is likely to fall within the category of non-enabling regulatory environment, and, as such, the mobile banking market is underdeveloped.) Enabling regulation is critical to unleashing market potential because it affects the provider's ability to build a functional distribution network to increase financial access and customer adoption and use of the service (di Castri, 2015). Experience from other countries, for example Kenya, has also shown the need for

91 www.microfinancegateway.org/what-is-microfinance

all relevant government departments (e.g. central bank and ministries of finance, communications, planning and economic development) to be involved in developing the policy framework and the importance of ensuring close dialogue with the private sector (Nehru, 2015).

Mobile banking can allow clients to become more resilient to climate-related shocks, through reductions in transaction costs (transport, time, convenience, etc.) that allow them to spend more of their time undertaking income-generating activities.

Figure 1: Mobile banking markets by regulatory approach (December 2014). Of the 89 markets where mobile money is live, only 47 have an enabling regulatory approach (including Mali); in the other 42 (including Myanmar), regulatory barriers still exist



Enabling regulatory approach (47 countries)

Non-enabling regulatory approach (42 countries)

Source: di Castri (2015).

Ethiopia

Mobile banking in Ethiopia has not developed as rapidly as elsewhere in Africa. This is partly because of very low mobile phone penetration[92] and problems with national information technology, telecoms and energy infrastructure (Zwendu, 2014). Despite various efforts, there are serious continuous and frequent breakdowns in mobile phone communications and energy. One of the reasons cited for poor capacity, utilisation and management of the telecommunications and energy sectors is lack of competition owing to the government-owned nature of these sectors. Mobile banking providers (e.g. BelCash and M-BIRR) also tend to focus on cities or key towns, because of profitability, risk aversion and other interests.[93] To reach financially excluded and climatically vulnerable communities in rural areas, network and infrastructure issues need addressing. If these structural and regulatory barriers were removed, it is likely that demand for mobile banking services would be high.[94]

A number of initiatives are being developed to address the lack of diversified financial products, including expanding the outreach of mobile banking. The Ethiopian government is working on the potential for mobile technology to improve financial inclusion and has set a target to reach 80% of the adult population.[95] Other actors are also involved: for instance, Mercy Corps through the BRACED programme is looking to provide technical support to MFIs to develop additional products to

92 Interview, Central/National Bank of Ethiopia, 3 December 2015.

93 Interview, Mercy Corps, 10 November 2015.

94 Interview, Farm Africa, 6 November 2015.

95 Interview, Central/National Bank of Ethiopia, 3 December 2015.

address the needs of the communities.[96] A component of this work includes using mobile technology as a platform to access other information, for example meteorological data.[97] This would allow pastoralist communities to anticipate changing climate conditions and to adapt their practices accordingly. As part of the same initiative, coverage of weather stations is being expanded, with 30 being installed in Afar, Somali and Southern Nations, Nationalities and Peoples' regions.

Mali

Mobile banking has shown rapid market growth in Mali and adoption rates in rural areas are higher than the national average.[98] Mobile banking can play an important role in decreasing the number of unbanked in Mali. Secured transfers and simplicity of use means vulnerable populations have widely accepted digital services. According to a local Malian stakeholder, the long-lasting effects of the 2008 crisis and the recurrent jihadist and banditry events have affected already vulnerable populations.[99] With growing insecurity, bank offices have been forced to close in the centre and northern part of the country. Mobile banking have helped reconnect individuals to financial services, even while populations have had to migrate to other parts of the country. Indeed, having a mobile phone is the only requirement for access to mobile banking services; the client does not need to have a regular banking account. This allows customers to deposit, transfer and withdraw money, pay for goods at certain retail partners and pay bills without having a bank account.

96 Interview, Mercy Corps, 10 November 2015.

97 Interview, Farm Africa, 6 November 2015.

98 http://datatopics.worldbank.org/financialinclusion/

99 Interview IRD Mali, 6 November 2015.

As with all new technology, mobile banking creates new challenges and needs to be accompanied by appropriate legislation. The impacts of mobile transfers on banks have been twofold: these reduce the amount of money circulating in the banking sector and also create a loss in commission received by commercial banks (Thomas, 2014). In addition, mobile users using services from informal unregistered companies are left unprotected. In the event of malpractice, clients have no legal means for compensation. More generally, informal mobile banking transfers put currency stability at risk as well as creating favourable conditions for money laundering. According to the managing director of BNDA, this is an opportunity to design flexible and responsive regulation, ensuring the safety of operations and safeguarding the interests of customers (MaliActu.net, 2015).

> "Mobile banking can play an important role in decreasing the number of unbanked in Mali"

Mobile banking providers in Mali benefit from a strong distribution network as well as an enabling regulatory framework. In an attempt to grow their target market by joining forces, mobile companies and commercial banks have partnered. For instance, Orange Money, the biggest mobile banking company in Mali (in terms of market share) has partnered with banks (BNDA, BICIM, Ecobank) to allow bank customers to transfer money from their Orange Money electronic wallet to their bank account and vice versa: access of local services through a network of authorised distributors or to a remote client with

no easy access to conventional counters.[100] Orange Money had first to obtain the status of electronic money institution, entailing the right to issue electronic money (aBamako.com, 2015).

Mobile banking technology alone is unlikely to have a significant impact in terms of improving financial inclusion without tackling wider development issues. In particular, inadequate infrastructure, such as lack of electricity and mobile network coverage outside populated areas, represents a major barrier to the expansion of mobile banking within the most vulnerable populations (Sawadogo, 2015). In addition, financial inclusion through mobile banking will be constrained by Mali's low adult literacy rate (34% in 2011) and[101] high poverty rate (Mali's poverty headcount ratio at $2 a day purchasing power parity represented nearly 80% of the population in 2010).[102] Relatively high mobile service prices also mean the most vulnerable population groups, which are generally also the poorest, cannot afford to use mobile banking services. In addition, mobile banking does not offer any insurance or training services, crucial to increase the population's adaptive capacity.[103] Mobile banking coupled with other traditional financial providers such as VSLAs or MFIs, however, has the potential to increase its outreach among the most vulnerable population groups and potentially make a contribution to building climate resilience.

100 www.sab2i.com/fr/temoignages-client/temoignages/la-bnda-adopte-l-offre-de-mobile-banking-de-sab

101 http://data.worldbank.org/indicator/SE.ADT.LITR.ZS

102 www.indexmundi.com/facts/mali/poverty-headcount-ratio

103 www.indexmundi.com/facts/mali/poverty-headcount-ratio

Myanmar

Although mobile phone penetration has increased rapidly in recent years, structural barriers still need to be tackled. The emergence of two large telecoms providers in 2013 – Ooredoo and Telenor – has opened up the potential for mobile technologies to play an increasing role in financial services, including payments and insurance. However, for such schemes to be practical in Myanmar, the necessary telecoms infrastructure will need to be significantly improved, which will take time (Frontier Myanmar, 2015).

3. SUPPORTING THE GROWTH OF FINANCIAL SERVICES

IMAGE: ASIAN DEVELOPMENT BANK

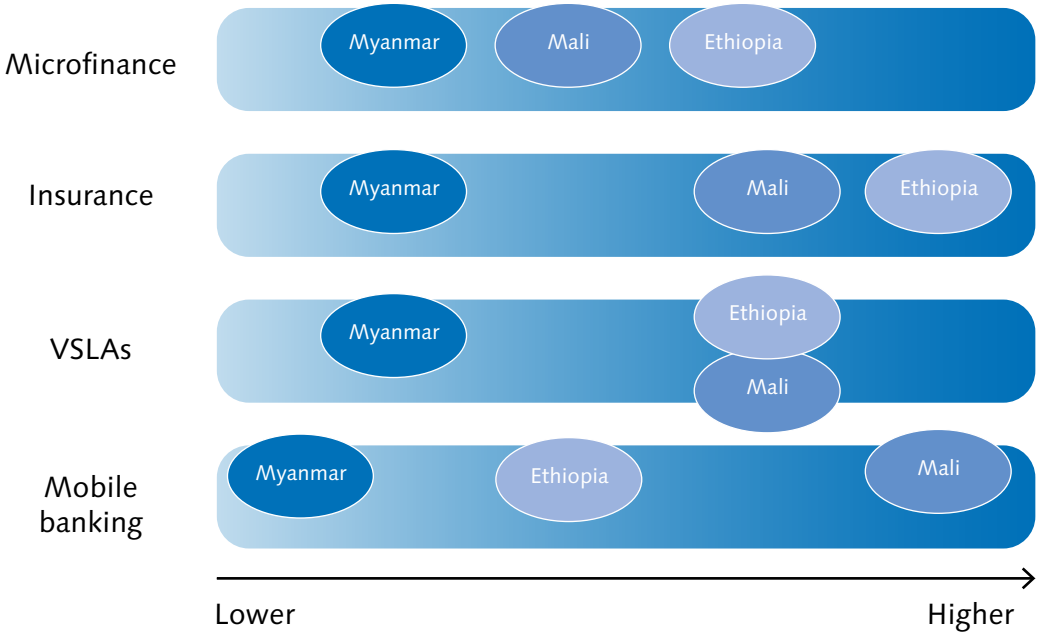
There are a number of promising financial initiatives developing and expanding across the three countries to address the dual challenges of access to financial services for rural communities and their inherent vulnerability to climate change. This section provides a discussion of the lessons learnt across the three focus countries, specifically focusing on the first two research questions posed at the start of this report:

1. What is the availability and use of financial services?
2. How can financial services contribute to building climate resilience in terms of managing climate-related risks and exploiting climate-related opportunities?

Availability and use of financial services and products

Across the three countries, the use of microfinance, insurance, VSLAs and mobile banking varies significantly. This is depicted in Figure 2, which is based on a subjective assessment by the authors of their use *relative* to each other (between countries, not financial products). Furthermore, an assessment of 'high' does not mean this service is widely used and could not benefit from further expansion. In summary, microfinance is relatively well developed across the three countries, although Myanmar is perhaps lagging. This is not because of demand factors; rather, supply from MFIs predominately focuses currently on commercial objectives. Insurance provision is higher in Ethiopia and Mali, compared with Myanmar, largely because Myanmar has only recently been opened up to commercial markets and regulation is still lacking. VSLAs are relatively active across the three countries, although Mali and Ethiopia have a longer history of these informal cooperatives, particularly SACCOs in Ethiopia. Mobile banking is most advanced in Mali, given the conducive regulatory environment and competitive nature of the market. In Ethiopia, the nationalised nature of telecoms, together with infrastructure issues, is restricting growth, as is the case in Myanmar.

Figure 2: Relative use of microfinance, insurance, VSLAs and mobile banking in Ethiopia, Mali and Myanmar



Source: Literature review, insights gained through interviews with in-country stakeholders and expert judgement.

Use of these services and products is constrained by a number of barriers, which vary across the three countries. Table 1 provides an overview of the significance of barriers,[104] with the severity or 'height' of the barrier colour-coded: red represents a significant barrier; orange a moderate barrier; and green a minor barrier. Barriers can relate to the following factors:

- availability of information among beneficiaries, for instance whether they are financially literate and have previous experiences of using the products

104 Again, this is based on a subjective assessment by the authors, reflecting our learning through literature review and interviews as part of this study.

- cultural and religious context, for example the constraints Sharia laws place on demand for interest-based products and services
- technological and infrastructure-based issues, for example the coverage and sophistication of weather and agricultural datasets, for use in weather-index based insurance
- financial factors, particularly the level of dependence on international donor funds to support the delivery of products and services, compared with more widely available credit through commercial, market-orientated mechanisms
- policy and regulatory environment, for instance the level of competition within sectors owing to nationalisation or privatisation and
- institutional and capacity-based factors among financial service providers, for example access to trained and skilled professionals

Growth potential and role of these services in building climate resilience is dependent on the removal of barriers to create a more conducive enabling environment. In some cases, barriers may be so significant or 'insurmountable' (as marked by an asterisk in Table 1) without considerable structural changes (e.g. in the regulatory and institutional environment, and physical infrastructure), investment or support, they may ultimately constrain the potential for financial services to expand and meet the needs of the climatically vulnerable and financially excluded. There is also a need to develop alternative solutions, bearing in mind the social and religious context. In Ethiopia, a significant barrier relates to religious factors, which required the development of Sharia-compliant products for the pastoralists in predominantly Islamic areas. In Mali, the development of

Islamic financial services has been slow, despite 95% of the population practising the religion. A recent study shows Islamic-compatible services have started to emerge, with the technical and awareness-raising support of newly created structures (namely, CNFIM, FID and Société Halal Finance), reflecting the interest of the population (Storck et al., 2013). For Myanmar, the availability of finance, particularly for socially oriented MFIs, is preventing the meeting of financial inclusion and resilience-building objectives for the vast numbers currently living in poverty and potentially exposed to severe climate risks in the future. Across all three countries, there is also a need for significant investment in technology and infrastructure, particularly meteorological stations or satellite datasets in Mali and Myanmar and telecoms networks in Ethiopia and Myanmar.

Table 1: Overview of barriers restricting growth of microfinance, insurance, VSLAs and mobile banking in Ethiopia, Mali and Myanmar

SERVICE/ PRODUCT	INFORMATIONAL	CULTURAL AND RELIGIOUS	TECHNOLOGICAL AND INFRASTRUCTURE -BASED	FINANCIAL	POLICY AND REGULATORY	INSTITUTIONAL AND CAPACITY-BASED
Microfinance						
Ethiopia						
Mali						
Myanmar						
Insurance						
Ethiopia						
Mali						
Myanmar						

SERVICE/ PRODUCT	INFORMATIONAL	CULTURAL AND RELIGIOUS	TECHNOLOGICAL AND INFRASTRUCTURE -BASED	FINANCIAL	POLICY AND REGULATORY	INSTITUTIONAL AND CAPACITY-BASED
VSLAs						
Ethiopia						
Mali						
Myanmar						
Mobile banking						
Ethiopia						
Mali						
Myanmar						

Note: = significant barrier = moderate barrier = minor barrier

Source: Based on literature review and expert judgement.

Role of financial services in building climate resilience

The BRACED programme defines resilience as the 'ability to anticipate, avoid, plan for, cope with, recover from and adapt to (climate related) shocks and stresses' (DFID, 2014). Outcomes from BRACED projects are understood to be a set of interrelated resilience capacities – the capacity to adapt to, anticipate and absorb climate extremes and disasters (the 3As). The financial products and services explored through this study have been mapped against the 3As framework (see Table 2).

Table 2: Authors' assessment of the ability of microfinance, insurance, VSLAs and mobile banking to address anticipatory, absorptive and adaptive capacity (3As of resilience)

	ANTICIPATORY CAPACITY	ABSORPTIVE CAPACITY	ADAPTIVE CAPACITY
Microfinance		✓	✓
Insurance	✓	✓	✓
VSLAs		✓	✓
Mobile banking			✓

Anticipatory capacity is the ability of social systems to anticipate and reduce the impact of climate variability and extremes through preparedness and planning (Bahadur et al., 2015). In terms of the financial products considered in this study, weather index insurance, when partnered with early warning systems or when it is structured in such a way as to provide compensation in advance of the disaster (see Section 3.2.1), allows communities to undertake vital planning and preparedness activities to manage disaster risk. Anticipatory capacity also relates to the degree of 'self-organisation' to tackle climate extremes and disasters, particularly through the generation, distribution and uptake of information on the risk of climate extremes and disasters. Education and awareness-raising are frequently seen as an important supporting activity that should be delivered alongside financial products and services. Each product explored in this study improves anticipatory capacity indirectly through these supporting activities.

Absorptive capacity refers to the ability of social systems, using available skills and resources, to face and manage adverse conditions, emergencies or disasters (Bahadur et al., 2015). With respect to financial services, this specifically relates

to the ability of communities to access and deploy tangible assets, such as savings. VSLAs, insurance and microfinance all meet this objective. Absorptive capacity can also cover intangible assets like social networks to help communities survive intensive shocks and maintain levels of well-being (Levine et al., 2011). Again, VSLAs provide communities with these important social networks.

Adaptive capacity refers to the ability to take deliberate and planned decisions even when conditions have changed or are about to change (Bahadur et al., 2015). All the financial services explored in this study aim to build assets and increase the incomes of vulnerable communities as a way of enhancing their adaptive capacity. For instance, microfinance and VSLAs allow communities to diversify their livelihood or invest additional resources in their current practices to increase efficiency and improve resilience (see Section 3.1.3). Insurance can provide businesses, farmers and affected households with rapid access to post-disaster liquidity, offering protection to livelihoods. Mobile banking, through reductions in transaction cost (transport, time, convenience, etc.), allows clients to spend more of their time undertaking income-generating activities, which makes them more resilient to climate-related shocks.

4. RECOMMENDATIONS

IMAGE:
JOSEP CASTELL

Governments and international development partners can take a variety of actions to support the development of financial services in a way that builds climate resilience. This section covers the third research question posed at the start of this report: How can policy-makers support the development of financial services to build climate resilience? It is important to recognise that there is no one solution that addresses the multiple challenges of financial inclusion. A comprehensive set of measures will be required, both the supply and demand sides of the financial system, and their relevance and adequacy will be context-specific (i.e. varying across geographical locations).

Saving and borrowing help people adapt to changes and cope with shocks (contributing to the absorptive and adaptive capacities elements of the 3As approach), but are not always accessible for the most vulnerable population. However, to cope with large shocks that affect many people, savings or borrowing (through MFIs, VSLAs or mobile banking) may not be adequate. Instead, a number of recent initiatives have focused on the design of index-based weather insurance to increase financial inclusion among farmers, focusing on drought risk (Hartell and Skees, 2009). When partnered with early warning systems or when it is structured in such a way as to provide compensation in advance of the disaster, this can provide protection against large shocks and contribute to building anticipatory capability through preparedness and planning (corresponding to the final element of the 3As approach). However, it is important to recognise that, in some cases, insurance may reduce adaptive capacity. For example, if a farmer has limited disposable income and is persuaded to buy into a drought risk policy, then they may have used what little spare income they had. In the eventuality there is no drought, the premium paid was an opportunity cost. If there is another form of extreme event (e.g. flood, pest, disease), then the farmer paying the drought premium will have less adaptive capacity than their neighbour who saved the money and could afford to buy food.

Strengthening the financial infrastructure

Strengthening the financial sector infrastructure is critical to provide the enabling environment required to improve financial inclusion and depth. Existing literature points out to a number of potential actions (World Bank, 2016):

- Removing regulatory and legal barriers that may hinder the growth of the financial services sector, while improving the investment risk profile and the attractiveness of the country to private sector investment in the financial services sector. This is particularly true for Ethiopia and Myanmar. The opening up of the telecoms sector may also facilitate growth of mobile banking services. Again, this is particularly relevant for Ethiopia and Myanmar.

- Reducing costs and improving trust in the banking system (including payment and security settlement systems and public credit registries). Lack of trust among potential clients, particularly the unbanked, was mentioned as an issue across all three countries. Collateral registries improve competition in the financial sector, by enabling both banks and non-bank financial institutions to offer secured loans. The lack of a collateral registry was specifically mentioned as a barrier excluding small entrepreneurs from Ethiopia's financial services sector.

- Improving physical access for the most vulnerable (rural inhabitants, dependent on agriculture and natural resources for their livelihood) to financial instruments by using the postal network, and improving infrastructure to host financial agents and facilitate transport (roads and public transit). As shown in Ethiopia and Myanmar, wider coverage by mobile phone networks can also make financial instruments accessible virtually, by using cellular banking and electronic payment technologies. This will require significant investment in telecoms networks.

- Enhancing competition, protection and flexibility. Governments can help keep service costs low by ensuring fair competition and consumer protection, or by requiring

the introduction of low-cost bank accounts for vulnerable populations. For instance, closure of the Ethiopian system to foreign companies also means a missed opportunity in terms of capital injection, foreign exchange access and banking technology and skills (World Bank, 2016). As shown in Mali, the emergence of mobile banking services offered by unregistered companies has exposed poor people to the potential of fraud and abuse, underscoring the need for adequate and accessible consumer protection schemes. The establishment of financial ombudsmen can also contribute to resolving disputes in consumer finance.

"The emergence of mobile banking services offered by unregistered companies has exposed poor people to the potential of fraud and abuse"

Engaging with domestic financial service providers and telecoms companies

Governments, with the support of international development partners and donors, should engage with domestic financial services providers. This would enable the market to expand and be scaled up at an affordable cost and provide products that promote a risk management ethic, while also building the climate resilience of the most vulnerable population. In particular, weather index or micro-insurance schemes supported with early warning systems or structured in such a way as to provide compensation in advance of the disaster should be expanded. There is much to be learnt from the experience accumulated

under the R4 Rural Resilience and IBLI schemes in Ethiopia and other best practice country initiatives.

It is important to exploit the unique competences the private sector can contribute in building climate resilience through the development of new goods and services in the financial and information and communication technology sectors. For instance, in the mobile banking sector, further research is needed to develop applications tailored to specific users' needs, and investments are needed to expand mobile/telecoms network coverage. This is particularly relevant in Ethiopia, where the nationalised nature of the telecoms sector is limiting competition and growth. In Myanmar, despite the absence of international private sector actors, significant investment in infrastructure is needed. There is also a crucial need to consider religious, gender and cultural considerations when developing financial products, as demonstrated in Ethiopia with Sharia-compliant products for pastoralists in predominantly Islamic areas.

Improving capacity, financial literacy and trust in the financial system among vulnerable groups

Governments, NGOs and service providers have a role to play in addressing low levels of financial literacy and limited experience of financial services among vulnerable groups. Many people in rural communities save and make financial transactions in cash. They are more likely to use family networks and friends to borrow from rather than financial institutions. They also may have no or limited familiarity with buying insurance products. These factors limit the ability to build up their assets, establish or further develop a business, increase their wealth and access funds in an emergency situation. It is

therefore recommended that governments, working with NGOs and nascent financial sector service companies, collaborate to build the capacity, financial literacy and trust of vulnerable and disadvantaged groups. This could include training on disaster risk reduction and preparedness and business skills (e.g. how to start a business, taking on employees, etc.). They should be cognisant of social and gender considerations, as well as working with religious communities to explore ways in which financial services can be developed that are consistent with religious beliefs and values. It is important not to 'reinvent the wheel' and focus should be placed on building on and scaling up existing initiatives led by socially oriented MFIs and the SfC programme carried out by CARE, Plan International and World Vision.

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Appendix 1: Stakeholders interviewed

	NAME	ROLE/ORGANISATION	COUNTRY
1.	Amanuel Abraha	KMEL, Associate Professor in Geography, Director, Institute of Climate and Society, Mekelle University	Ethiopia
2.	Wubeshet Woldemariam	Farm Africa – IP (Chief of Party, BRACED Project)	Ethiopia
3.	Yigrem Kassa	Mercy-Corps – IP (Deputy Chief of Party, BRACED Project)	Ethiopia
4.	Solomon Zegeye	Underwriting Manager, Nyala Insurance	Ethiopia
5.	Abate Mitiku	Director of Micro-finance Institutions Supervision Directorate at Central/National Bank of Ethiopia	Ethiopia
6.	Jeremy Stone	Plan International	Myanmar
7.	Bhushan Shrestha	Plan International	Myanmar
8.	Prem Lall	World Vision, BRACED PM	Myanmar
9.	Rommel Caringal	CEO Vision Fund Myanmar, World Vision	Myanmar
10.	Guerol Michael Sari	COO Vision Fund Myanmar, World Vision	Myanmar
11.	Aung Zaw Minn	Vision Fund Myanmar, World Vision	Myanmar
12.	Souleymane Diarra	IRD – IP	Mali
13.	Frederic Sidibe	SNV Mali, Executive Director Agribusiness (AGRIBUS-MALI)	Mali
14.	Dede Coulibaly	CEO of DC Consulting and Training Manager for MFIs (KONDO JIGIMA)	Mali
15.	Nicola Giordano	CARE UK – IP	Niger
16.	Moussa Na Abou	KMEL-CARE & AFL AfricaAdapt Knowledge Sharing Network Coordinator	Niger

Appendix 2: Interview guide

Part 1: Climate impacts your country faces

1. In your country, what are the main weather and climate-related issues facing (1) individuals and households; and (2) small businesses? Are these issues particularly focused in one or more geographic location?

2. If you could pick one or two areas where resilience-building efforts should be focused, what would these be? *(e.g. improving water security for agriculture, supporting income-generating activities for women)*

Part 2: Details on the current structure of the financial services sector in your country

3. What does the financial services sector looks like in your country? Who are the key providers of financial services in the country (commercial banks/private sectors, government, NGOs, civil society etc.)? Where are they located?

4. Would you say there is a lack of financial inclusion in your country? If so, for who? *(e.g. for a particular gender, activities, resources or locations)*

5. What are the key gaps in the financial services sector? Are the gaps mostly relating to the supply/provision of financial services *(e.g. lack of affordability for loans/insurance)*? Or the demand of financial services *(e.g. lack of financial literacy, religious/gender aspects)*? Or both?

6. In your opinion, what are the key barriers restricting the access and use of financial services? *(e.g. geographical, cultural, institutional, informational, gender, religious)*

7. How could these barriers be overcome? Who has a role in addressing these barriers? *(e.g. government, commercial banks/private sector, NGOs, international donors)*

Part 3: Specific initiatives or financial products

8. Are you aware of any specific initiatives or financial products that address weather or climate-related risks? *(e.g. in the context of Ethiopia, Farm Africa is working on mobile banking; in Mali, IRD is working on warrantage and loan-saving schemes based on traditional, indigenous approaches)*

9. Who are the targeted beneficiaries? [Why? How many? What is the geographical focus? Why?]

10. How has the product been developed? What are the drivers that led to its development (regulatory/policy, social, financial/business etc.)?

11. Is this initiative being led by government, the private sector, civil society or communities? Who are the key stakeholders involved in making this available to the market? What is the involvement of the private sector to date? What about local government?

12. At what phase of development and market penetration is the product at?

13. Can you identify any barriers hindering its development (cultural, religious, financial, gender, etc.)?

14. What are the next steps for its development and market uptake? In your opinion, could the product be replicated in other countries?

15. How can this product contribute to building climate resilience for the recipients? [This could be directly or indirectly.] How does it increase recipients' capacity to absorb, adapt and anticipate climate shocks?

16. How can this product contribute to building climate resilience for the providers? [This could be directly or indirectly.] How does it increase providers' capacity to absorb, adapt and anticipate climate shocks?

17. Looking beyond this product or initiative, do you have ideas on how financial inclusion and climate resilience could be improved by other means? *(e.g. would a programme to enhance the engagement of SMEs and local financial intermediaries be a solution?)* In other words, what is missing in the bigger picture?

Close

18. Any final concluding remarks or comments?

BRACED aims to build the resilience of more than 5 million vulnerable people against climate extremes and disasters. It does so through a three year, UK Government funded programme, which supports 108 organisations, working in 15 consortiums, across 13 countries in East Africa, the Sahel and Southeast Asia. Uniquely, BRACED also has a Knowledge Manager consortium.

The Knowledge Manager consortium is led by the Overseas Development Institute and includes the Red Cross Red Crescent Climate Centre, the Asian Disaster Preparedness Centre, ENDA Energie, ITAD, Thompson Reuters Foundation and the University of Nairobi.

The BRACED Knowledge Manager generates evidence and learning on resilience and adaptation in partnership with the BRACED projects and the wider resilience community. It gathers robust evidence of what works to strengthen resilience to climate extremes and disasters, and initiates and supports processes to ensure that evidence is put into use in policy and programmes. The Knowledge Manager also fosters partnerships to amplify the impact of new evidence and learning, in order to significantly improve levels of resilience in poor and vulnerable countries and communities around the world.

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