

Mainstreaming lessons from adaptive agriculture in the ASALs



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INTRODUCTION

Arid and Semi-Arid Lands (ASALs) cover 16% of the world's land mass and are home to one billion people¹. ASALs are a key feature of sub-Saharan Africa, and in countries like Kenya occupy around 80% of the national land mass. ASALs are defined by their aridity, with consistently high temperatures and low rainfall. With a propensity for drought, they are acutely vulnerable to climate shocks and impacts, and are classified as climate change 'hotspots' – areas where there is a "strong climate signal and many vulnerable people"².

Contrary to popular belief, ASALs contribute significantly to the economies in which they are located, and can be vibrant and growing areas. In Kenya for example, 10% of GDP relates to livestock husbandry (a key ASAL livelihood), in which 50% of the workforce are engaged³. Indeed, in a truly 'resilient world' ASALs should be integrated and thriving within national and international economic, social and environmental systems⁴, and there are myriad compelling rationales for focusing on and investing in the private sector in ASALs.

However, ASAL-based agribusinesses are especially vulnerable to climate shocks and, as yet, funding has not incentivised new businesses to move into these regions. This is most likely because evidence proving commercial viability amid the challenges of operating in ASALs is still not sufficiently robust.

With investment, the private sector can deliver adaptation and resilience

benefits through activities that address specific climate-related risks, enhance livelihood diversification, and strengthen the resilience of natural resources. However, innovative ways of de-risking business activities in ASALs are now urgently needed.

The African Enterprise Challenge Fund (AECF) aims to drive investment in ASALs across sub-Saharan Africa by de-risking the effects of erratic or insufficient rainfall. To help achieve this goal, AECF collaborated with a team from Land, Trees and Sustainability Africa (LTS), now called NIRAS Africa, to identify the key success factors in mobilising the private sector within these marginal but high-potential environments.

¹ Collaborative Adaptation Research Initiative in Africa and Asia (CARIAA) for Pathways to Resilience in Semi-arid Economies (PRISE) research project, 2017, Challenging the myths around semi-arid lands.

² De Souza et al, 2015, Vulnerability to climate change in three hot spots in Africa and Asia: key issues for policy-relevant adaptation and resilience-building research.

³ Collaborative Adaptation Research Initiative in Africa and Asia (CARIAA), 2018, How can we achieve the SDGs in marginal semi-arid regions?

⁴ Ludi et al, 2018, Unlocking climate-resilient economic development in drylands: pathways to a resilient world.

ABOUT THIS REPORT

This report was commissioned between August 2018 and March 2019, and conducted jointly by AECF and NIRAS. The objective of the study was to assess how best to mobilise the private sector within the ASALs of the sub-Saharan, with a view to guiding “future investments in the ASALs, both through specific funding windows and more generally”⁵.

Following a review of AECF’s Renewable Energy and Climate Adaptation Technologies (REACT) projects, AECF and NIRAS established terms of reference (TORs) which helped to frame a set of evaluation questions the study was to address:

- Have AECF’s portfolio projects in the ASALs been, or are they likely to be, successful in meeting AECF’s objectives?
- What has been the role of the regulatory environment?
- To what extent has the necessary physical infrastructure been present?
- Are local knowledge and connections into the local social infrastructure important for ultimate success?
- To what extent has AECF been able to (or is it likely to) instigate transformative change in the ASAL through its investments?

- Has AECF been additional in its investments?
- How has moving into the ASALs as a result of the AECF’s funding affected the overall business performance?
- How should AECF design future interventions in the ASALs?

Methodology

The methodology entailed a kick-off meeting, literature review, interviews with AECF project staff, key informant interviews and project field visits.

Based on criteria developed during the inception phase and in discussion with AECF, NIRAS selected seven projects from the REACT portfolio for review: Takaful Insurance, Equator Kenya Limited (EKL), Bell Industries, Rehabilitation of Arid Environments (RAE), Dryland Seed Limited (DSL), Vetcare, and Eco Fuels Kenya Limited (EFK). For the seven projects, the review was conducted mainly through project documents, interviews with AECF project managers, and interviews with project managers from the companies.

Field visits were conducted for five of the seven selected projects: EKL, Bell Industries, RAE, DSL, and EFK. The field visits, which included interviews and focus group discussions, took place between 18th January and 22nd February 2019.

⁵ From the original TORs, in Annex 7

This publication is also accompanied by a summary document, which can be accessed at www.aecfafrica.org/knowledge-hub

AECF and NIRAS hope you enjoy this report.

ABOUT AECF

AECF is a development institution which supports businesses to innovate, create jobs and leverage investments to produce or establish resilience and sustainable incomes in rural and marginalised communities in Africa.

Launched in 2008, AECF has invested in 292 businesses across more than 40 value chains and 26 countries in sub-Saharan Africa. AECF focuses specifically on agribusiness, renewable energy and climate technologies, while also addressing the cross-cutting themes of gender, youth and fragile contexts. In just over a decade, AECF has impacted more than 27.7 million lives, created close to 24,000 jobs, and leveraged over US \$740 million in matching funds⁶. AECF is headquartered in Kenya, with offices in Côte d'Ivoire and Tanzania.

AECF aims to alleviate poverty in Africa by unlocking the power of the private sector. AECF's strategy is to provide early and growth-stage renewable energy and agricultural businesses with:

- **Catalytic funding**

AECF works to bridge the finance gap for those firms that need significant capital but are not yet large or profitable enough to benefit from commercial finance. AECF's main financing mechanisms are repayable grants and loans. Recently, AECF has launched its own results-based finance scheme in Kenya (still in pilot phase), and is considering other forms of catalytic finance.

- **Advisory support**

AECF provides technical assistance to private sector firms to help them scale. This assistance is provided through both internal AECF expertise and external consultancy support.

- **Market linkages**

AECF helps its investees to access commercial finance through AECF Connect. The program introduces potential investors to AECF investees, helping more advanced companies in the AECF portfolio to scale and grow.

⁶ Please note, all figures in this paragraph are peak numbers

AECF in the ASALs

Within ASALs, AECF aims to provide funding to the private sector to open up market access and enable poor rural farmers to engage profitably in market activities.

To date, AECF-funded investments in ASALs have focussed mainly on de-risking the effects of erratic or insufficient rainfall. These investments encompass infrastructure to increase water availability or improve the efficiency of its use, new drought-tolerant crops and seeds, novel market interventions to mitigate the effects of drought, compensatory instruments to replace lost income, and livestock insurance and livestock off-take businesses within pastoralist communities.

organisation to bring principles of transparency and sustainability to its assignments around the world, leading to better outcomes for the communities with whom it works.

About NIRAS Africa

NIRAS Africa has maintained a continuous and growing presence in Africa for the better part of 50 years. Today, NIRAS has a regional head office in Kenya and country offices in Ethiopia, Malawi, Mozambique, Tanzania, and Zambia, as well as representatives in Bénin, Burkina Faso and Uganda. This strong commitment to the continent, supported by local presence, allows NIRAS to ensure the best possible project implementation from inception to completion. It draws directly on its experience as a Nordic

CHAPTER 1

THE PRIVATE SECTOR AND CLIMATE CHANGE ADAPTATION

Climate change represents a material and cascading risk to the private sector, with profound implications across supply chains and vulnerable communities. At the same time, companies have the capacity to be powerful agents of climate resilience if properly equipped with a sound diagnosis of risk and tailored strategies for enhancing adaptive capacity⁷. Indeed, there is a clear and growing expectation and need for the private sector to invest in the financing of climate adaptation and mitigation, particularly in the ASALs.

The economic impact of natural hazards grew from US\$ 10 billion per annum in 1975 to almost US\$ 400 billion in 2011, while a 2013 estimation suggests that to ‘climate-proof’ the Millennium Development Goals (now the Sustainable Development Goals) in Africa alone would have cost an estimated US\$ 100 billion a year for a decade⁸. The pressure and necessity for businesses to be involved in financing climate resilience is therefore significant.

While governments and the public sector have the biggest role to play in addressing climate change mitigation and adaptation, literature indicates that the private sector makes a critical contribution to driving countries’ growth, development and climate resilience. Vital to the development of ASALs, “there is a growing expectation that SMEs, and the private sector at large, will play an increasingly important role in climate change adaptation in the next 10 years”⁹.

Paradoxically, of the private sector organisations operating in ASALs, Micro, Small and Medium Enterprises, especially agricultural ones, are both most vulnerable to climate risks and best positioned to take advantage of climate-related business opportunities. Despite this scenario, agribusiness and climate adaptation financing has focussed on multinational corporations and organisations large enough to absorb concessional financing arrangements. Few financing programmes have effectively and systematically targeted the private sector. Furthermore, the ‘language and style’ of outreach has not been tailored to business, remaining couched in development terminology and concepts¹⁰.

Successful private sector engagement in adaptation will catalyse greater investment in vulnerability reduction. This, in turn will accelerate the replication of climate-resilient technologies and services in core development sectors, especially in developing countries where investment in long-lived infrastructure is growing rapidly¹¹. Table 1 (see page 8) shows the key factors driving private sector adaptation.

However, barriers to private sector engagement in climate change adaptation and resilience building have been well documented. They include lack of appropriate information and knowledge, insufficient resources, low awareness of risks and inadequate expertise. Other factors that restrict the private sector’s ability and willingness to adapt to climate change include

⁷ Cameron, E; Harris, S; Prattico, E. 2018. “Resilient Business, Resilient World: A Research Framework for Private-Sector Leadership on Climate Adaptation.” Report. BSR, San Francisco.

^{8 9 10} PWC for DFID, 2013, Stimulating private sector engagement and investment in building disaster resilience and climate change adaptation: Recommendations for public finance support.

¹¹ Bonizella Biagini and Alan Millerb, 2013, Engaging the Private Sector in Adaptation to Climate Change in Developing Countries: Importance, Status, and Challenges

Table 1. Key factors driving private sector adaptation

Factors	
Internal Factors	<ul style="list-style-type: none"> - Presence of a climate change champion within the business - Access to resources including data, knowledge and information - Experience of climatic impacts or awareness of risks
External Factors	<ul style="list-style-type: none"> - Legal and regulatory drivers - Appropriate policies and incentive structures to engage private sector in climate change adaptation - Market drivers

lack of economic incentives, low institutional capacity and poor business environments ¹².

In addition to AECF, various funds, including Growth, Enterprise, Employment and Livelihoods and Root Capital, are actively trying to address these challenges. These efforts are fuelled by a belief that the private sector can become more engaged and effective in responding to climate change by increasing awareness of the significance of climate issues and the need for robust responses, participating in national and international adaptation efforts, and developing products and services that help reduce the costs and impacts of climate change.

Indeed, a review of the AECF REACT activities in this study indicates that the private sector can deliver adaptation and resilience benefits under the five categories highlighted in Table 2 (see page 9) ¹³.

The AECF REACT portfolio business interventions can be categorised into actions that are ‘good development practice’, those that provide ‘incremental adaptation’, and those that drive ‘transformational adaptation’. Incremental adaptation actions preserve existing systems in the face of climate change by expanding the ‘coping range’ of those systems ¹⁴. Transformational adaptation, meanwhile, as defined by the Inter-governmental Panel for Climate Change (IPCC), refers to adaptation that “changes the fundamental attributes of a

system in response to climate and its effects”.

Within the AECF REACT portfolio, Takaful Insurance is providing weather-based index livestock insurance for pastoralist communities in ASALs. This action, which attempts to manage drought risk, constitutes ‘good development practice’.

Equator Kenya is helping farmers in ASAL areas to overcome the challenge of low rainfall by growing Bird’s Eye Chillies with the use of irrigation kits. Growing chillies via irrigation, as a form of ‘incremental adaptation’, enables local farmers to increase harvests and incomes.

Meanwhile, Tosheka Textiles is working with farmers to produce silk using eri silkworms which, as a total shift from local livelihood options (livestock farming), represents transformational adaptation.

¹² Crick F. et al, 2016, Enabling private sector adaptation in developing countries and their semi-arid regions – case studies of Senegal and Kenya. Centre for Climate Change Economics and Policy Working Paper No. 291. Grantham Research Institute on Climate Change and the Environment Working Paper No. 258.

^{13 14} Adaptation and Resilience Learning from The Kenya StARCK+ Programme, Nick Brooks, January 2017

Table 2. Categories of activity via which AECF REACT activities might deliver adaptation and resilience benefits

Category	Example AECF REACT Projects and Activities	Nature of Resilience/Adaptation Benefits
Capacity Building: <i>activities that lay the foundation for adaptation and improved resilience</i>	<ul style="list-style-type: none"> • Training • Awareness creation • Supporting/establishing community groups • Bell Industries, Ecofuels, Takaful, Equator Kenya Ltd, Dryland Seeds, Bulsho TV 	<ul style="list-style-type: none"> • Indirect/downstream
Addressing specific climate-related risks: <i>associated with the clearest pathways to demonstrable, direct adaptation and resilience benefits</i>	<ul style="list-style-type: none"> • Promotion and adoption of indigenous/drought-tolerant crops • Diversification to more resilient crop growing • Livestock insurance, including weather-index based insurance using weather and climate information • Takaful, Dryland Seeds, Equator Kenya, Ecofuels and Tawakal 	<ul style="list-style-type: none"> • Direct
Livelihood diversification: <i>activities that may promote adaptation and enhance resilience</i>	<ul style="list-style-type: none"> • Piloting new livelihood options • Increasing number/diversity of crops and income streams • Diversification into non-agricultural activities • Substituting existing activities with those that are more productive/profitable • Value addition e.g. processing • Ecofuels, Equator Kenya, Tosheka Textiles, Zam Zam and SBI 	<ul style="list-style-type: none"> • Indirect/downstream
Livelihood strengthening: <i>activities that may promote adaptation and enhance resilience</i>	<ul style="list-style-type: none"> • Linking producers to processors, distributors • Commercialisation of existing products • Other mechanisms to improve access to markets • Value addition (e.g. on-farm processing) • Improvements to post-harvest storage • Short-term support during periods of stress (cash, animals, feed, seed, etc.) • Bell Industries, Zam Zam, SBI, Tawakal and Ecofuels 	<ul style="list-style-type: none"> • Direct and indirect
Rehabilitation of natural resources: <i>may confer resilience benefits on human populations by making the natural systems in which they are embedded, and on which they depend, more resilient to climate stresses and shocks</i>	<ul style="list-style-type: none"> • Tree planting/reforestation • Establishment of protected areas • Riverbank rehabilitation/protection • Rehabilitation of water sources • Pasture management • Soil and water conservation • Crop rotation, fallowing • Ecofuels and RAE 	<ul style="list-style-type: none"> • Direct and indirect

CHAPTER 2

KEY FINDINGS

Evaluation Question 1: Have AECF's portfolio projects been, or are they likely to be, successful in meeting AECF's objectives?

Context: individual business success factors in ASALs

Achieving AECF's objectives of market system change in ASALs can be driven either by successful criteria for individual investments, or catalysing systemic change. With this in mind, there are a number of critical factors that set the context through which to review the past or potential success of AECF's portfolio projects.

It is critical to present, characterise and encourage climate resilience and ASALs as a private sector opportunity to prospective investees, shifting the discourse away from problems and challenges. As suggested above, this can be done through using private sector terminology, not just presenting adaptation as a cost to be saved or a programme to be involved in. At a policy level, targeting investments in key sectors, integrating the SDGs with climate plans and activities, and building connections to global and national markets, can foster this sense of opportunity.¹⁵

Successful investments and programmes in ASALs and climate-adaptive agribusiness tailor support and financing modalities to the investee/business. Investing in strong understanding of funding and sector 'entry points',¹⁶ and accounting for the informality of certain economic activities (especially of women-led cooperatives), and human

mobility within them, must inform a portfolio approach.¹⁷

Investing time and effort in mapping critical ASAL value chains, and the bottlenecks within them, is a fast track to identifying successful and catalytic interventions and investments. "Identifying and developing climate-resilient production systems and value chains"¹⁸ should be done in concert with private sector organisations themselves.

Another approach focuses on specific, identifiable climate hazards or threats, which helps to maximise the chances of demonstrable success in mitigation. Screening interventions thoroughly for this criterion is one approach,¹⁹ while the Collaborative Adaptation Research Initiative in Africa and Asia (CARIAA) recommends the Value Chain Analysis for Resilience in Drylands (VC-ARID) methodology. VC-ARID involves simultaneously identifying the most pertinent risks in a sector, investing in the mitigation of these risk, while seeking transformation of the relevant value chain.²⁰

^{15 16} Ludi et al, 2018, Unlocking climate-resilient economic development in drylands: pathways to a resilient world.

¹⁷ Gannon et al, 2018, Supporting private adaptation to climate change in semi-arid lands in developing countries.

^{18 19} Brooks B. for DFID, 2017, Adaptation and Resilience Learning from the Kenya Starck+ Programme.

²⁰ Collaborative Adaptation Research Initiative in Africa and Asia (CARIAA), 2018, How can we achieve the SDGs in marginal semi-arid regions?

The literature points to a correlation between active and genuine moves towards adaptation being made by businesses that have experienced some form of climate set-back or disaster.²¹ Segmentation of investment portfolio and pipeline according to climate risk awareness and experience may drive positive adaptation and wider ‘climate-resilient economic development’ through the AECF portfolio.

The literature on climate-smart business in ASALs – in particular the Kenyan drylands – highlights a number of sectors in which investment opportunities and gaps have been identified. Three stand out: climate information services, access to finance, and climate-smart rural infrastructure. Climate information services ought to be producer-focussed,²² high-quality, up-to-date, and tailored to ASAL socioeconomic and governance contexts.²³ Financial service provision ought to be linked with these services²⁴, tailored to dryland context²⁵ and enterprise size,²⁶ and might include climate-mitigatory insurance.²⁷ Climate-proof rural infrastructure is both an opportunity in itself and addresses a key value-chain bottleneck.²⁸

Specific to agribusiness, low external-input sustainable agriculture and agroforestry approaches have proved successful in generating climate-resilient economic growth in ASALs.²⁹ These approaches ought to “build on local knowledge of climate vulnerability and responses”, not necessarily reinventing the wheel.³⁰

Evaluation of AECF’s portfolio investments in this context

The AECF portfolio in the ASALs is focused on agribusiness and adaptation to climate change technologies, with businesses operating across product and value-chain development, capacity

building and training, insurance, marketing and distribution. Its aim is to enhance adaptive agriculture in ASALs, while the businesses selected are also expected to address a wide range of vulnerabilities in ASAL communities. The findings show that the companies utilised their grants mainly to address drought risk, enabling households to diversify their income streams and survive the drought that occurred between 2016 and 2017. In some cases, beneficiaries were able to establish businesses from incremental incomes generated through working with the companies.

Contribution to AECF objectives by projects

The section below outlines AECF’s objectives and how the portfolio projects were able to succeed against the first two of these (the third objective is covered under Evaluation Question 5).

²¹ Crick F, 2016, Enabling private sector adaptation in developing countries and their semi-arid regions – case studies of Senegal and Kenya. Centre for Climate Change Economics and Policy Working Paper No. 291.

²² Ludi E. et al, 2018, Unlocking climate-resilient economic development in drylands: pathways to a resilient world.

²³ Zervogel G. et al, 2016, Lessons from semi-arid regions on how to adapt to climate change.

²⁴ ²⁵ Ludi E. et al, 2018, Unlocking climate-resilient economic development in drylands: pathways to a resilient world.

²⁶ Crick F, 2016, Enabling private sector adaptation in developing countries and their semi-arid regions – case studies of Senegal and Kenya. Centre for Climate Change Economics and Policy Working Paper No. 291.

²⁷ ²⁸ PWC for DFID, 2013, Stimulating private sector engagement and investment in building disaster resilience and climate change adaptation Recommendations for public finance support.

²⁹ Purdew R., 2008, Sustainable agriculture in the semi-arid tropics: Agroforestry and the suitability of bamboo.

³⁰ Zervogel G. et al, 2016, Lessons from semi-arid regions on how to adapt to climate change.

AECF Objective 1: To establish a robust, flexible and transparent mechanism to attract, appraise and competitively select innovative private sector-driven projects that benefit the rural poor.

AECF REACT's programme was well developed to competitively draw in, identify and select private sector companies working in specific focus areas to achieve development and climate change adaptation impacts.

A robust phased approach enabled the competitive shortlisting of relevant private sector businesses. The process was transparent, as the competition was advertised through various communication channels including AECF's website and social media platforms. Businesses also had the opportunity to review and then refine a concept note into a final business plan, with feedback interactions from the AECF team.

The selection criteria included the ability to match funds, targeted focus areas, development impact, past financial performance, innovation, shareholding and key personnel and additionality. Those companies with a mix of foreign and local stakeholders were able to access the export markets and research products needed to diversify ASAL value chains.

Past financial performance was especially important. The companies were expected to present their turnover, gross and net profit, capital expenditure and debts. This allowed for the selection of profitable or commercially viable businesses and projects only.

As per the evidence above, AECF was able to meet its first objective by establishing a well-developed, clear and easily understandable

competitive application process. The only missing element was a selection criterion assessing companies' potential to address climate risk through weather and climate information.

AECF Objective 2: To demonstrate the commercial viability of new business models and technologies in agribusiness and financial services that benefit millions of Africa's rural poor.

Four out of the five businesses reviewed – Dryland Seeds, EKL, Bell Industries and RAE – reported a profit they would not have gained without AECF funding. Looking at profitability as a key indicator of commercial viability, this means that the selected businesses are able to succeed in the ASALs and therefore meet this AECF objective. This is due to a range of factors including **low labour intensity approaches, the use of simple technology, the use of drought-tolerant varieties and access to innovative de-risking instruments**.

Evaluation Question 2: What has been the role of the regulatory environment?

Context: regulatory environment

A strong enabling environment is deemed critical to any programme seeking to catalyse market systems change. Florence Crick's 'framework of factors' for an enabling environment include "institutional arrangements, regulatory framework and policies, economic and financial incentives, data and information, information and communication technology (ICT), knowledge capacity, development and training, infrastructure and markets".³¹ This evaluation

³¹ Crick F, 2016, Enabling private sector adaptation in developing countries and their semi-arid regions – case studies of Senegal and Kenya. Centre for Climate Change Economics and Policy Working Paper No. 291.

question focusses on institutional and regulatory frameworks, which have been identified as key features associated with sustainable, private sector-led growth in the context of adaptation.³² The regulatory environment in this case is linked to political capital assets.

Regulatory conditions must be right to encourage and incentivise private sector investment. The correct legal frameworks and policies must also be omnipresent through all levels of government,³³ including the correct incentive structures for the private sector,³⁴ and include diverse stakeholders in their formulation.³⁵ At national and supra-national levels, international agencies have the potential to help mainstream-enabling policies,³⁶ which in turn must transcend national boundaries, and link with policies and plans targeting key sectors and SDGs.³⁷

In Kenya specifically, institutional and regulatory arrangements operate at national and county government levels. With AECF-funded companies operating at the county level, their operations are dependent on the local government environment as well as national government policies and institutions. Institutions and agencies that can influence their operations include the Kenya Private Sector Alliance (KEPSA), Ministry of Industry, Trade and Cooperatives, and the Micro-Enterprises Support Programme Trust (MESPT), among others.

Evaluation of AECF's portfolio in this context

With respect to AECF projects, enabling environments in the ASALs have been mixed. In the advancement of their business models, companies have been facilitated by either national or county governments in various ways. Positive examples include:

At national level:

- The Takaful project has established partnerships with national government and has received subsidies from the Kenya Livestock Insurance Programme. This has enhanced the reach of its insurance products to beneficiaries.
- In 2017, the Government of Kenya through NEMA placed a ban on the use of plastic bags across the country. As the bags produced by Bell Industries are made of plastic, this would have proved disastrous for the company. To manage this problem, the company sought an exemption which they received, allowing them to operate. They will seek to renew the exemption annually.
- RAE has obtained certification for grass seeds. Their grass seed is an indigenous species of high quality, and as a result of the certification they are able to sell it widely within the country and export to Somalia.

At county level:

- EKL has engaged local chiefs in the process of contracting outgrowers. The local chiefs sign the contracts together with EKL, and farmers breaching their contracts can be held accountable by law. This has had a positive effect on the contractual transactions between the company and the farmers.

³² Bowen A., Cochrane S. and Fankhauser S. 2012. Climate change, adaptation and economic growth. *Climatic Change* 113(2): 95–106.

³³ Mikkelsen L. for DFID, 2018, Private Sector Engagement in Adaptation Resilience Learning from the StARCK+ Programme 2013–2018.

³⁴ Crick F., 2016, Enabling private sector adaptation in developing countries and their semi-arid regions – case studies of Senegal and Kenya. Centre for Climate Change Economics and Policy Working Paper No. 291.

³⁵ Zier vogel G. et al, 2016, Lessons from semi-arid regions on how to adapt to climate change.

³⁶ De Souza et al., 2015, Vulnerability to climate change in three hot spots in Africa and Asia: key issues for policy-relevant adaptation and resilience-building research.

³⁷ Ludi E. et al, 2018, Unlocking climate-resilient economic development in drylands: pathways to a resilient world.

- EFK always uses the local administration to raise awareness of croton tree growing, organic fertiliser and nut collection among local communities. EFK is now seen as an important development player at grassroots level, and was recently asked to join the Laikipia Stakeholder's Forum as a key County Government partner.

Some companies have encountered weak regulatory environments and challenges in ASALs. Examples of challenges include:

- For RAE, due to the remoteness of the geographical area in which the company operates, the authorities and regulatory structures are not very well established. This has affected their business in many ways, including individual buyers and companies purchasing grass seeds from their outgrowers at higher prices and breaching contracts. At national level they have lost seed supply tenders to suppliers with no certification, while county governments present stiff competition in the purchase of seed and cumbersome tendering processes.
- Companies working in fragile states and those emerging from conflict or political unrest face additional challenges as a result of inadequate or non-existent policies. These include unfair competition from unregistered organisations selling counterfeit products, inappropriate taxation and licensing procedures, a lack of governing bodies and/or associations supporting the business community, and unfair competition between local businesses and government interventions.³⁸ VetCare has experienced all these challenges, negatively affecting the business. It has therefore changed its business model and now targets aid agencies as customers.

- Companies that have had to comply with food safety certifications include ZamZam and Somaliland Beverages Industries (SBI). ZamZam manufactured peanut bars in Somaliland, using peanuts sourced and imported from Sudan. Since the two countries are fragile, the regulatory authorities are not as well established and functional as in politically stable states. SBI planned to process guava pulp from locally sourced fruit, but faced similar regulatory challenges and was unable to procure enough fruit locally.

- For smallholder farmers to increase production and yields, they often rely on input subsidies for seeds and chemical fertiliser. However, organic fertilisers are not subsidised by government, and these tend to be more expensive than chemical fertilisers. Smallholder farmers are therefore inclined to purchase the latter irrespective of the damage caused to the environment and contribution to Green House Gases (GHGs). Organic fertiliser producers have failed to lobby for subsidies or tax rebates and are therefore struggling to sell their products. This in turn suggests limited appreciation of the potential benefits of organic fertiliser, and a lack of will to pay premium prices. This negatively affects sales and penetration and leads to **maladaptation**.^{39 40}

³⁸ AU/IBAR. Private veterinary practice in pastoralist areas of eastern Africa: Report of a regional workshop held in Nakuru, Kenya, 6-9 August 2003. African Union/Interafrican Bureau for Animal Resources: Nairobi, Kenya.

³⁹ <https://www.mdpi.com/2073-445X/8/5/81/pdf>

⁴⁰ Maladaptation is a process that results in increased vulnerability to climate variability and change, directly or indirectly, and/or significantly undermines capacities or opportunities for present and future adaptation (Magnan, 2014). <https://journals.openedition.org/sapiens/1680>

Devolved Climate Change Adaptation Finance and its effects on the business environment

How has the recent evolution of the county-level regulatory environment and the influence of the County Adaptation Fund on climate change thinking in Isiolo, Garissa, Wajir, Kitui and Makueni affected the business environment?

The Climate Change Act, 2016 provides the legal and institutional framework for climate change mitigation and adaptation. Kenya's Nationally Determined Contribution (NDC), 2015, identifies key priority adaptation actions, including those specific to the private sector, enhancing adaptive capacity and resilience of the informal private sector, and creating an enabling environment for the resilience of private sector investment (Government of Kenya, 2015).⁴¹

Climate change is acknowledged in the County Integrated Development Plans (CIDPs) of all counties where AECF companies are located, and county governments have indicated their commitment to work with different stakeholders. For example, in Kilifi County several projects are being implemented by the Ministry of Agriculture, Livestock, Fisheries and Irrigation in collaboration with NGOs including World Food Programme (WFP), Kenya Red Cross Society (KRCS) and World Vision. EKL has been collaborating with these projects including Agriculture Sector Development Programme (ASDSP)⁴². The government distributed diesel generators, while World Vision is distributing large plastic bags that farmers can use to trap water for irrigation.

The County Climate Change Fund (CCCF) is currently being implemented in counties where the selected AECF businesses are **not** located, to ensure that the poorest people benefit from

interventions financed with the fund. However, the Council of Governors has directed that all counties establish climate change units and set aside funds for climate change to fund resilience activities and enhance absorptive capacity at community level. It is too early to gauge its impact of this on businesses, but companies should monitor the frameworks that are unfolding under this directive to tap into opportunities.

In the five counties where the CCCF was rolled out, the target recipient institutions are ward adaptation committees. These comprise community members and technical government officers located at the ward level and are registered as community-based organisations. In counties that have enacted legislation on climate change and created a County Climate Fund, such as in Wajir, the fund targets the climate proofing of public goods in the ASALs. The private sector is therefore only seen as a contractor to implement the interventions procured by the public sector.

⁴¹ Crick F. et al, 2016, Enabling private sector adaptation in developing countries and their semi-arid regions – case studies of Senegal and Kenya. Centre for Climate Change Economics and Policy Working Paper No. 291. Grantham Research Institute on Climate Change and the Environment. Working Paper No. 258.

⁴² The ASDSP programme Phase 1 ended but there is a new phase that is just about to start. The programme is being implemented across all 47 Counties.

Evaluation Question 3: To what extent has the necessary physical infrastructure been present?

Context: physical infrastructure

Physical and human capital infrastructure is integral in creating the enabling environment for climate-smart private sector investment in ASALs. Common deficiencies that must be targeted include water, roads, electricity, transportation and technology/telecommunications.⁴³

This can be seen either in the context of creating enabling conditions for resilient business growth and private sector-led development, or as investment opportunities given the latent demand for observable improved physical infrastructure.

Most ASAL areas in Kenya and Somalia lack the physical infrastructure required to enable sector growth and investment. However, the private sector still has the potential to drive local development, encourage innovation and build community resilience in marginal areas. In Kenya, the national and county governments are trying to improve infrastructure through longer-term projects such as Vision 2030 and short-term cycles like the CIDPs.

Evaluation of the AECF's portfolio in this context

Physical infrastructure⁴⁴ is important in trade and marketing of agribusinesses and has an impact on overall business performance. All projects reviewed reported poor access roads in the areas where they work. However, this challenge was often considered in project design, with companies proposing adequate solutions. This suggests that companies can find solutions, even though this is likely to lead to increasing operational costs to businesses

and the need to sell at higher prices.

When EFK realised that the road infrastructure in some counties was impacting the delivery of nuts to the processing plant, it decided to outsource transportation to contractors who know the rough terrain. Despite having to bear the transport costs, the resulting 10-fold increase in the volume of collected nuts achieved important economies of scale. RAE and EKL both collect produce from farmers and have central collection points within the outgrowers' fields. Their vehicles can also cope with bad roads during the dry and wet seasons. They therefore bear the burden of transport, incentivising farmers to continue supplying produce in all seasons. The low-cost productivity achieved by businesses in ASALs reduces transaction costs and enables higher profits despite transportation costs.

In the cases of EKL and RAE, which produce high-value export products, transportation costs can be borne in the selling price, enabling the companies still to generate adequate profits.

However, not all companies were able to address the infrastructure challenge successfully. For example, Mara Beef purchased cattle in Masai Mara and transported them to their farm, before transporting processed beef to supermarkets in Nairobi. However, the poor transport infrastructure drastically increased their costs, and this factor contributed to the company's closure.

⁴³ Anne Cussac - Université Paris, 2008, Is there development potential in arid and semi-arid lands (ASALs)?, and Crick F., 2016, Enabling private sector adaptation in developing countries and their semi-arid regions – case studies of Senegal and Kenya. Centre for Climate Change Economics and Policy Working Paper No. 291.

⁴⁴ This includes roads, communication, water and electricity.

Nevertheless, many companies in Kenya and Somalia indicated that the physical transport infrastructure has improved. More roads are being constructed in Kenya, which will improve access to markets and encourage investment. In Somalia, Tawakal indicated roads are being constructed in some districts. Of particular interest was one under construction close to the project site that would enable project beneficiaries to access more social services.

Specific to **water infrastructure**, EKL applied for AECF funds for drip irrigation kits to address the inadequate water infrastructure in the counties where they operate, Lamu, Tana River, Kwale and Kilifi. The company provides farmers with drip irrigation kits at a subsidised rate of Kshs 5,000. Since these will only be effective if adequate water sources are available, the company is working alongside the Department of Agriculture and development partners to provide more viable sources of water. These include purchasing large water tanks, drilling boreholes, lining water ponds and purchasing drip irrigation kits with larger water tanks. In EKL's case, adequate water infrastructure is pivotal to business performance.

With regards to **communication infrastructure**, the mobile network is very poor in some areas. In Baringo, there are certain times when there is no network at all. Despite this, a large proportion of the population own cell phones, making it easier to communicate and make mobile transactions when the network is stable.

Financial services to producers have also been facilitated by mobile money transfer services such as Mpesa. Takaful Insurance and EKL have used the mobile platform successfully to handle insurance payouts to livestock farmers in very remote areas.

In Somalia, as ZamZam had no access to a reliable electricity supply, it used generators.

When one of these malfunctioned in 2017, production stopped.

Although infrastructure in the ASALs is a challenge that can affect business performance, an agribusiness company that develops mitigating action during the design phase is able to remain in business. A company that does not consider or underestimates the impact of poor infrastructure on its business performance is likely to fail.

Evaluation Question 4: Are local knowledge and connections into the local social infrastructure important for ultimate success?

Context: social infrastructure

While local knowledge and connections are key success factors for successful and catalytic private sector ASAL interventions, deficiencies often exist in the human capital required to drive the growth of private enterprise. These include a lack of skilled labour and low managerial and technical capacity and skills.

Evaluation of the AECF's portfolio in this context

Examples from AECF's portfolio indicate that investing in local social infrastructure is crucial for success. Encouraging trust, consistent communication and relationship building are strategies in which all reviewed projects invested.

To tap into the social infrastructure, all reviewed companies are located within the communities where they work and employ local staff from those communities, enhancing ownership by the communities. Employees can therefore positively influence company decisions, and company interventions are more

strategically aligned and responsive to the needs of the communities. These businesses also use awareness-raising campaigns, formal and informal training, capacity building and consistent community engagement to enhance business performance:

- Takaful has optimised strong pastoral networks, using local community gatekeepers, religious leaders and other influential community members/leaders to increase the uptake of their livestock insurance products.
- Two RAE staff members have lived and worked in the community for over 35 years. This has helped the company to establish trust with the community, which manages and rehabilitates communal fields to allow grazing during the dry season. Farmers are engaged successfully in planting, harvesting and selling grass seed. RAE's research into social infrastructure, combined with many years of community experience, enables them to understand social and cultural norms, practices and power relations, meaning they can effectively navigate and address issues without undermining or overpowering communities.
- Bell Industries has encouraged consistent and frequent engagement of agro-pastoralists through local training and capacity building for local communities and beneficiaries, so encouraging the use of the company's PICS bags by households.
- EKL recruits and pays for field assistants from the community and this has established the high production of chillies consistently. The field assistant reports to the production manager and can provide feedback from farmers to the company.

An example where investment in social infrastructure did not improve business

performance was Mara Beef. Despite capacity-building efforts among local communities, livestock supplies fell as communities decided to keep their livestock due to its socio-cultural importance.

Effective community penetration is required for private sector interventions to be successful in the ASALs, because communities are important value-chain players as suppliers, enablers and consumers of agribusiness products. This can only be done by optimising social infrastructure to drive enhanced business performance.

Evaluation Question 5: How far has AECF been able to, or is likely to, instigate transformative change in the ASALs through its investments?

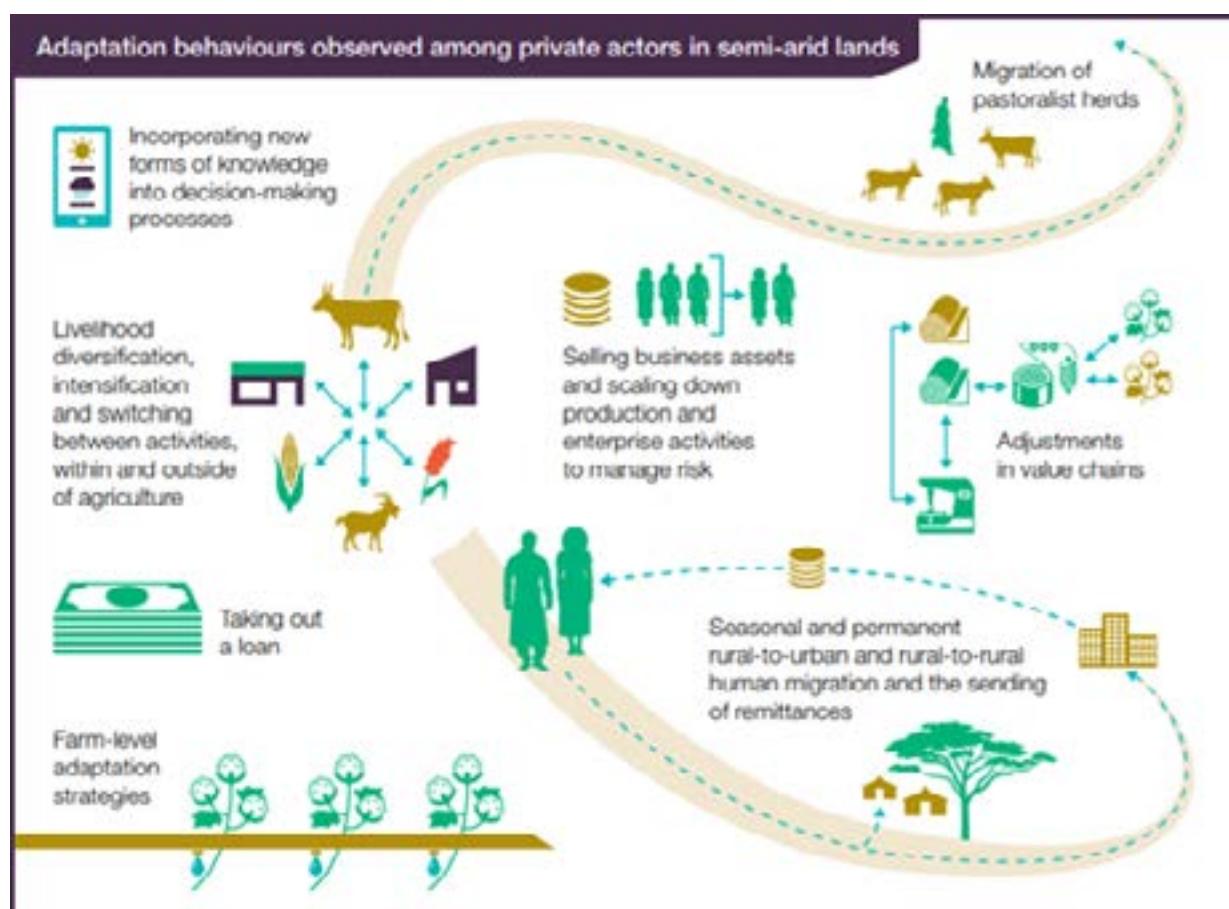
Context: systemic and transformative change

Contemporary definitions of systemic change have implications defining success in development of ASALs. As Cunningham and Jenal wrote, "Systemic change in a market system is characterised by improvements in the quality, value, or extent of economic opportunities for people, achieved while the institutional landscape remains adaptable to future challenges. It is fundamentally an evolutionary process involving variation, selection and amplification of solutions to complex problems."⁴⁵ Specific to the ASALs, the Pathways to Resilience in Semi-arid Economies (PRISE) research project has mapped adaptation behaviour in the ASALs market system (Figure 1).⁴⁶

⁴⁵ Cunningham and Jenal, 2016, Rethinking systemic change: economic evolution and institutions.

⁴⁶ Gannon et al, 2018, Supporting private adaptation to climate change in semi-arid lands in developing countries.

Figure 1: Adaptation behaviours observed among private actors in semi-arid lands



The evidence suggests that a narrow ‘programmes approach’ is not sufficient to address complex, multifaceted problems or instigate systemic change in ASALs.

PRISE is particularly critical of ‘project-based’ approaches.⁴⁷ The complexity of varying governmental incentives at particular levels points to the need for a broader systemic approach.⁴⁸ ‘Piecemeal’ and ‘maladaptive’ outcomes are a threat to a closed interventions programming approach.⁴⁹ Rather, a ‘holistic and integrated approach’⁵⁰ (focused on systemic change) is advocated - including by the StARCK+ reviews - to address needs and opportunities at different levels.⁵¹

The 2017 review of the StARCK+ Programme neatly summed up this call in its recommendation to ‘Promote mixed

approaches that support the creation of enabling environments through governance mechanisms, the development of climate-resilient value chains by the private sector, and wider capacity development and adaptation actions through conventional project approaches.’⁵²

⁴⁷ Ludi E. et al, 2018, Unlocking climate-resilient economic development in drylands: pathways to a resilient world.

⁴⁸ De Souza et al, 2015, Vulnerability to climate change in three hot spots in Africa and Asia: key issues for policy-relevant adaptation and resilience-building research.

⁴⁹ Collaborative Adaptation Research Initiative in Africa and Asia (CARIAA), 2018, How can we achieve the SDGs in marginal semi-arid regions?

⁵⁰ Ludi E. et al, 2018, Unlocking climate-resilient economic development in drylands: pathways to a resilient world.

⁵¹ Mikkelsen L. for DFID, 2018, Private Sector Engagement in Adaptation Resilience Learning from the StARCK+ Programme 2013–2018.

⁵² Brooks B. for DFID, 2017, Adaptation and Resilience Learning from the Kenya StARCK+ Programme.

Access to markets is a major failure identified in the literature across ASALs.⁵³ PRISE advocates the addressing of barriers to market access as central to driving ‘climate-resilient economic development’ (CRED) in ASALs, including ensuring that income generated through ASAL business is reinvested there.⁵⁴

The literature on ASALs and the role of the private sector in climate-risk mitigation is also clear on the need for transformative change. Transformative change is linked to systemic change and incorporates all three dimensions of sustainable development (economic, social and environmental). Economically, it constitutes a shift in the whole economy and not just single sectors/value chains. The social aspect of transformative change necessitates a greater role for labour in national income calculations. Environmental inclusion in transformative change again looks at the impacts on the whole economy of a defined area.⁵⁵

Systemic change that AECF aims to catalyse⁵⁶

AECF provides funding to the private sector to find innovative and profitable ways of improving market access and function for the rural poor. Therefore, in the context of AECF, change must be pro-poor. AECF measures five types of systemic change resulting from the success of an AECF project:

1. Copying of the business model by other businesses: replication of the grantee’s business model by others.

2. Crowding in: other businesses enter a sector or value chain due to improved incentives and business environments.

3. Copying successful practice: households not engaged with the AECF project adopt project behaviours and/or technologies.

4. Changes in the business regulatory environment: changes in laws and regulations, or in their implementation.

5. Changes in factor markets: shifts in the availability of land, labour, capital, financial services and information.

Evaluation of the AECF’s portfolio in this context

Triggering transformative and systematic change takes time. The businesses reviewed showed that some aspects of change can be achieved quickly while others take longer. Evidence was found on copying business models, successful practices and changes in factor markets. However, evidence of crowding in and changes in regulatory environment has not been found to date.

Transformative change

• Copying of the business model by other businesses: Systemic change is being triggered through an increasing number of organisations competing with similar products and business models. Bell Industries, for example, has seen six companies selling similar crop storage bags and offering them for lower prices, albeit lower quality. This replication allows for market growth. Another example is Dryland seeds, which has been selling better-quality, drought-resistant seeds that enhance production. It has noted that bigger

⁵³ Mikkelsen L. for DFID, 2018, Private Sector Engagement in Adaptation Resilience Learning from the StARCK+ Programme 2013–2018; Crick F., 2016, Enabling private sector adaptation in developing countries and their semi-arid regions – case studies of Senegal and Kenya. Centre for Climate Change Economics and Policy Working Paper No. 291.

⁵⁴ Ludi E. et al, 2018, Unlocking climate-resilient economic development in drylands: pathways to a resilient world.

⁵⁵ S. Islam and K. Iversen, 2018, From “Structural Change” to “Transformative Change”: Rationale and Implications.

⁵⁶ AECF Funding and Innovation for Business in Africa, 2016, Learning Paper, Market systems change in challenging environments: case study of the AECF Zimbabwe Window.

companies such as Kenya Seed Company Limited and SeedCo are offering similar products, hence increasing competition. The Sharia-compliant Index-based livestock insurance provided by Takaful Insurance is likely to attract other companies to provide similar products.

- **Crowding in:** This study was not able to establish whether AECF projects had influenced crowding in. This usually takes time and it means that other factors, such as government spending/investment, lead to an expansion of economic activity which in turn incentivises the private sector to increase capital investment and employment⁵⁷. The reviewed companies have been working with county governments, so that their activities with communities are facilitated and contractual agreements with outgrowers are enforced. The companies were not yet at the stage where their success had influenced the national or county governments to increase their spending in the ASALs, or in the value chains that the companies had invested in. For an increase in capital and/or employment to happen, the companies would need to influence the county governments by first being acknowledged as key players in the counties they operate in. The only company that had officially achieved this was EFK, which has been invited to be part of the Laikipia County Stakeholder Forum. With EFK sitting at the table with county government officials and stakeholders they may, in future, be able to encourage more spending by the county government to enhance the expansion of the Croton nut value chain as more companies are incentivised to invest in the sector/value chain.
- **Copying successful practice:** Evidence from the study shows that rural households not directly engaged with three of the AECF projects are copying project beneficiaries,

RAE, EKL and Mara Beef. Some RAE community members outside the project have begun demarcating parcels of land, growing and storing grass, and others are even buying grass. This is a significant shift from the cultural practice of moving cattle in search of pasture during the dry period. The grass grown by the non-beneficiaries is not certified like that from RAE, but it is cheaper and readily available. RAE does not buy this grass, due to its low quality, but other pastoralists and organisations working with them are buying it. One of the beneficiaries whose land was visited during the study also mentioned that pastoralists and livestock keepers from other areas are coming to buy his grass, a practice that was not common in the past.

Extension workers interviewed from EKL indicated that community members who are not part of the project have begun growing chillies on their farms. While there is increased demand from farmers to be recruited into the outgrower schemes, the company only recruits a specific number of farmers every cycle. Evidence from Mara Beef also shows that pastoralists and other livestock keepers who were not part of the project have adopted livestock-fattening practices, with more households sustaining their herds even during the drought periods. However, due to these practices, beneficiaries were able to sustain their herds year-round and no longer needed to sell them to the company. With a drastic reduction in sales from beneficiaries and non-beneficiaries alike, the company no longer had enough produce to meet market demand.

Depending on the target community, copying successful practice can be an enabling factor or, as in the case of Mara Beef, a disabling one.

⁵⁷ <https://www.tutor2u.net/economics/topics/crowding-in>

- **Changes in business regulatory environment:**

There was no evidence to suggest that AECF-supported businesses had influenced the regulatory environment, either at a county or national level. To influence the regulatory environment significantly, a business has to be a major player in the value chain and/or county. These businesses had not yet reached that level. It can also take several years to reach a position to influence regulations or government policies, and none of the businesses had this type of influence at the time of the study.

- **Changes in factor markets:** AECF-funded

companies have had some success in influencing the availability of inputs and access to financial services and information.

With regards to inputs, RAE and EKL are providing seeds and tractors on credit to farmers. They recover the money at harvest when the companies buy the produce.

Discussions with EKL also indicated that factors other than availability of produce can cause companies to provide input to farmers. These include seed quality, as this helps them with traceability.

EFK and Takaful are also making changes in ASAL-based communities' access to financial services and information. For example, EFK has delivered public-awareness campaigns on the importance of agroforestry, the Croton tree and taking a zero-waste approach. These are improving household incomes, promoting agroforestry and establishing micro-economies through paying agents via Mpesa for collecting Croton nuts. These efforts contribute to enhanced climate change mitigation and other environmental benefits.

Takaful has also improved community access to financial and insurance services by using social infrastructure to provide better information. This is helping pastoralists enhance their ability to adapt to drought,

which is likely to increase future demand for insurance products and financial services.

Transformative adaptation

Although the projects are in the early stages of instigating transformative change, some have already made great progress towards transformational adaptation. The Intergovernmental Panel on Climate Change (IPCC) defines transformational adaptation as adaptation that "Changes the fundamental attributes of a system in response to climate and its effects". It contrasts this with incremental adaptation consisting of "Actions where the central aim is to maintain the essence and integrity of a system or process at a given site".⁵⁸

The StARCK+ learning paper identified that two of the AECF projects have the capacity for transformational adaptation.⁵⁹ "EKL and Tosheka Textiles provide new livelihood activities (chilli cultivation and silk production respectively) that are resilient to drought, and that can replace or augment historical livelihood activities that are becoming less secure as the climate becomes drier. The linking of chilli and silk production to value chains through the purchase of these products by Equator and Tosheka respectively provides an additional income stream that might compensate for a decline in reliability of other livelihood activities as drought risk increases. This might be described in terms of incremental adaptation. However, there is also the potential for adaptation through these activities to be transformational if they replace other activities or make them redundant, and if production of chillies and silk is carried out

⁵⁸ IPCC (2014). Climate change 2014: Impacts, adaptation, and vulnerability. Contribution of Working

⁵⁹ Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. IPCC, Geneva, Switzerland.

at sufficient scale to significantly improve households' economic wellbeing despite worsening climatic conditions." The Tosheka textiles's project however, was unable to meet its development targets due to poor levels of adoption from households, lack of markets and cash flow problems.

The RAE project also has the capacity for transformation adaptation. This gave pastoralists in the target communities access to fodder throughout the year, so they do not need to migrate their livestock in search of pasture in dry seasons. They generate income selling grass seed to RAE and fodder to pastoralists from other areas. The grass species being grown is indigenous and well suited to drylands. Planting grass together with trees is slowly rehabilitating the land. Additionally, studies show that "grasslands and rangelands are more resilient carbon sinks than forests. Unlike forests, grasslands sequester most of their carbon underground, while forests store it mostly in woody biomass and leaves. When wildfires cause trees to go up in flames, the burned carbon they formerly stored is released back to the atmosphere. When fire burns grasslands, however, the carbon fixed underground tends to stay in the roots and soil, making them more adaptive to climate change".⁶⁰ The intervention therefore has potential to make a positive environmental impact.

Takaful Insurance and Tosheka Textiles also have capacity for transformational adaptation. The insurance products provided by Takaful are designed to enhance the resilience of pastoral livelihoods by enabling pastoralists to maintain their herds during droughts through improved access to animal feed. Tosheka Textiles outgrowers, meanwhile, use eri caterpillars to produce silk. This is more climate-resilient than cotton production and generates regular and additional income for farming households.

Despite the company not meeting its targets, there is potential for silk production to be scaled up as long as there is a market for the product (Brooks, 2017).

Evaluation Question 6: Has AECF been additional in its investments?

Context: additionality

Additionality is the net positive difference expected to result from a donor-business partnership. It defines the extent to which activities (and associated results) are larger in scale, at a higher quality, take place quicker, take place at a different location, or take place at all as a result of a donor intervention. Additionality can also be defined as achieving benefits that would not have been achieved without the investment, in the areas of public gain, sustained change in how market systems operate and the provision of benefits beyond the life of the funding.⁶¹ For the learning purposes of this report, the input-output-behavioural dimensions of additionality are pertinent.⁶²

The understanding of transformative change has a number of implications for AECF and the anticipated additionality of its investments. Early findings from STARCK+ indicate that "most adaptation is in the form of ancillary benefits from general resilience or livelihood interventions". This vindicates the role of climate-focused interventions in seeking to catalyse transformative change,

⁶⁰ <https://phys.org/news/2018-07-grasslands-reliable-carbon-trees.html#jCp>

⁶¹ https://www.enterprise-development.org/wp-content/uploads/DCED_Demonstrating-Additionality_final.pdf

⁶² <http://www.oecd.org/innovation/policyplatform/48136975.pdf>. Input additionality explores the balance between supplementation (additional) and substitution (non-additional) of market or firm level inputs. Output additionality focuses on outputs stimulated by interventions, and behavioural additionality concerns the potential attribution of systemic behaviour change amongst target beneficiaries to interventions.

as is the case of AECF.⁶³ Furthermore, PRISE's conceptualisation of climate-resistant economic development (CRED) as a critical outcome of extensive research on best practice for ASAL development vindicates an approach focused on transformative change. It highlights the necessity of economic viability, climate resilience and being socially acceptable as fundamental to adaptation strategies.⁶⁴ The context reviewed was limited in terms of specific evidence supporting the relative additionality of ASAL investments versus investing elsewhere. However, given the limited infrastructure discussed above in the ASALs context – and specifically in the case of the paucity of finance, where “the formal banking system still reaches only a small proportion of the population” –⁶⁵ the potential additionality obtainable through interventions is considered high.

According to AECF, the Fund is considered additional if it enables a project to achieve results that it would otherwise have been unable to achieve. Additionality is defined as:⁶⁶

- **Faster:** Through AECF funding, the investment has happened faster, transformational change has come sooner, and the business has been enabled to attract additional investments.
- **Bigger:** The funding has enabled the company to achieve and scale development impact and enhance market systems development.
- **Wider scope:** The funding has enabled the company to expand the scope of goods or services geographically, or to different groups of beneficiaries to increase the development impact and participation.
- **More inclusive:** Using the fund, the company can access people closer to the bottom

of the pyramid than it could otherwise do, enhancing the benefit to very poor people. The fund has cushioned the businesses against operating in risky environments.

The AECF funding to the reviewed companies from the ASAL portfolio has been additional according to AECF's definition:

Faster

Evidence shows that AECF funding enabled the intervention at EFK to happen more quickly. After receiving the grant from AECF in 2015, the volume of nuts grew from 459 to 886 tonnes in 2016 and to 2,975 tonnes in 2017. The grant has also been instrumental in bringing in other investors, such as Springfield, for matching funds. The purchase of a larger drier using the AECF funding has enabled EFK to increase production volumes of chillies. With the old drier, EFK would dry up to 70 tonnes of chillies in 72 hours. However, the company is now drying more than 100 tonnes in 32 hours, while using less energy and water.

Bigger

Market systems development (MSD)⁶⁷ seeks to “improve the lives of the poor – stimulating growth and expanding access – so that they function more efficiently and sustainably for poor women and men”.⁶⁸ MSD interventions seek to reduce poverty by enhancing the ways in which poor people interact with markets.

⁶³ Brooks B. for DFID, 2017, Adaptation and Resilience Learning from the Kenya StARCK+ Programme.

⁶⁴ Ludi E. et al, 2018, Unlocking climate-resilient economic development in drylands: pathways to a resilient world.

⁶⁵ Republic of Kenya: Office of the Prime Minister, 2012, Vision 2030 Development Strategy for Northern Kenya and other Arid Lands, p.59.

⁶⁶ AECF Term Sheets

⁶⁷ Also known as ‘Making markets work for the Poor’.

⁶⁸ The Springfield Centre (2015) The Operational Guide for the Making Markets Work for the Poor (M4P) Approach, 2nd edition funded by SDC & DFID

The study identified four companies that have been able to catalyse MSD through AECF funding. EKL, Tosheka Textiles and Kilifi Moringa Estates work with farmers in outgrower schemes, and EFK uses agents to collect nuts from individual collectors.

The companies using the outgrower schemes have enhanced MSD through contractual agreements with small-scale farmers that give them access to credit in the form of inputs, secure markets for their produce, technical support in the form of extension advice and services, and higher net returns. The benefits that farmers have gained from the schemes have enabled them to improve their livelihoods.

Through the AECF intervention, there is now commercial value attached to the indigenous Croton nuts crop that EFK buys and processes. All the beneficiaries interviewed said they had benefited from the extra source of income collecting Croton nuts brought them, especially when other income sources were absent in the dry season. This income has helped them take care of their daily needs until the wet season when more casual labour opportunities are available. Others have been able to buy assets, such as motorbikes, and start small businesses such as salons where they have employed people who were previously jobless. Additionally, community members including elderly and disabled people are now earning an income from nut collection.

MSD has also been catalysed by EKL, with interviewees stating that their outgrower contracts assure them that EKL will collect their chillies once every week and payments will be made at the end of the month. They can therefore use these contracts as guarantees for fees for their children's education and to take soft loans from table banking groups. One interviewee mentioned that he spends just two days on his farm and can engage in additional

work during the rest of the week.

Wider scope

The AECF funding has enabled companies to increase their geographical coverage and reach more beneficiaries than originally anticipated:

- EFK began its operations in Laikipia and neighbouring counties in central Kenya. Operations have now expanded into the Rift Valley in Nakuru and Bomet counties, and are also expanding to Samburu, Narok and Makueni.
- RAE is expanding the geographic scope of its interventions to increase development impact and participation. Evidence from the study shows that households that are not beneficiaries of the four projects are copying what beneficiaries are doing and seeking opportunities to be engaged in the interventions. Interviewees from RAE mentioned that more and more livestock keepers are appreciating that they can generate income from selling grass. The phrase '*nyasi ni pesa*'⁶⁹ is now commonly used in the area. More people are fencing off land to grow grass, while others are coming from other areas within the county and the neighbouring counties of Turkana and West Pokot to buy grass from RAE beneficiaries.
- At EKL, interviewees indicated that community members were initially sceptical when they started growing chillies because it is not a staple food crop. However, with time non-beneficiaries have witnessed the high returns that are possible, and more households have begun growing chillies. This has expanded the scope of the company, which recruits farmers from across the county during seed distribution in mid-February.

⁶⁹ Swahili for 'grass is money'.

More inclusive

All the projects reviewed use AECF funds to access people closer to the bottom of the pyramid, so enhancing the benefits to the poorest people. There is evidence from all the projects in the AECF ASAL portfolio showing how the poor are benefiting financially and technically. Other vulnerable groups, such as the elderly and the disabled, have also benefitted – from working with EFK, for example, as they are able to collect and deliver nuts to agents.

The fund has also enabled some companies to cushion their businesses against operating in risky environments. Kilifi Moringa Estates and EFK have both been able to do this through the diversification and addition to value of their products. Kilifi Moringa Estates buys Moringa Oleifera (drumstick trees) from farmers and processes products including oils, teas, infusions, health and nutritional supplements, and press-cakes for biofuels and water purification. EFK buys Croton nuts to process fertiliser, oil, vinegar and animal feeds, and is looking into the production of cosmetic oil for export. In this way the companies generate revenue from different income streams, de-risking the value chain.

RAE has been able to cushion itself from operating in a risky environment by registering as a limited company. It was formerly a trust and relied entirely on donor money. Now it can generate profit from its products, enabling it to run a profitable business while receiving funds from donors for the research and development component of the business.

Evaluation Question 7: How has moving into the ASALs as a result of the AECF's funding affected overall business performance?

The businesses reviewed in this study were **already operating in the ASALs**. The funding has not yet incentivised new businesses to move into the ASALs, most probably because evidence proving commercial viability amidst all the ASAL challenges is still not robust. Nevertheless, we have outlined how the business performance of the AECF grantees has been affected by ASAL conditions.

Funding companies that were already operating in the ASALs was an added advantage for AECF, since the businesses already knew how to operate there despite the challenges. For example, RAE has been working in the ASALs for over 35 years, providing a safe and trusted entity for AECF to invest in. Meanwhile, businesses such as RAE, Takaful Insurance and EFK have successfully cushioned themselves against ASAL-related challenges, because the fund has enabled them to scale up and diversify their business activities.

Companies have experienced the continuing challenges of building resilience to climate shocks, as well as political and security issues and poor physical infrastructure. The devastating drought of 2016–2017 was given as a key reason for EKL's disappointing business performance. Drought and insecurity were also cited as challenges for RAE. However, its proposed business model to improve fodder management was designed to reduce resource-based conflict, showing a potential alignment between business performance and ASAL-specific development challenges.

As well as drought, ASALs also suffer from other weather extremes such as excess precipitation due to climate variability, which affects indigenous plant species like Croton. For EFK, excess rains during the long rainy season of April-May 2018 caused a significant drop in nut collection. The nuts were attacked by a worm when they were still in the trees, so by the time they dropped they could not be used for processing (see Photo below). The nut volumes delivered to EFK from the ASALs and from the high-potential areas dropped by more than 50% compared to 2017, affecting the company's overall business performance.



Croton nuts attacked by worms due to heavy rainfall in 2018

Despite such challenges, the most commonly cited positive effect on business performance was **an increase in volume or output** of the primary product or service, with growth of up to 300% measured over the lifecycle of the grant. Dryland Seeds reported a five-fold increase in production, and EFK significantly scaled up the production and services of Croton nut processing, tree planting and extension work. This increased the company's Croton nut processing tonnage from 459MT in 2015 to 2,975MT in 2017, a more than six-fold increase. The company's increased drying capacity mentioned above, from 70 tonnes in 72 hours to over 100 tonnes in 32 hours, has increased demand for chillies from outgrowers and expanded EFK's markets to Italy and South Korea.

AECF funding was also seen as significant in increasing **cash flow, liquidity and assets**,

although the companies were regularly described as "on the road to profitability and commercial viability". At Takaful Insurance and Dryland Seeds, grant money was likely to be used to stem losses. At EFK, the payment of collectors and agents on time was significant in facilitating the procurement of Croton nuts.

This was balanced however, by some evidence of increased operational costs driven by deepening focus in the ASALs, especially in logistics and business development in disparate geographies. Investment in fixed assets – such as the driers and irrigation kits at EKL, the warehouse at Dryland Seeds, additional processing equipment at EFK, the abattoir at Mara Beef and factory and equipment at SBI – was a common use of the grant to build potential productive capacity.

The ability of companies to attract additional financing (whether commercial, concessional or grants) was generally improved by the AECF funding. However, Dryland Seeds was not open to commercial capital. At EKL, it was felt that the access to the AECF funding actually reduced the ability to attract commercial capital, due to other funders being discouraged by the predominance of the grant. However, RAE used the AECF funding to transform from a charitable organisation into a limited company, thereby opening potential commercial and concessional finance. The grant also enabled EFK to attract another investor to increase their matching funds.

AECF funding also demonstrably improved the effectiveness of companies' marketing and awareness raising. This has had benefits on the **demand side**. At Takaful Insurance, for example, the marketing focus of the grant put the company on track to meet its volume target of 10,000 policies sold during the lifetime of the grant. Similarly, EFK successfully attracted new external agents who are becoming effective

marketers for the company. However, skilled **human capital** remained a challenge despite the funding – RAE particularly noted a high turnover of personnel due to the challenges of attracting and retaining skilled people to work in the ASALs. Tawakal also had challenges with human capital and proposed internal controls such as a human resource policy.

Has the company put in place gender considerations that have enabled women and vulnerable populations to benefit from the business? If yes, which have been successful and can be replicated by AECF? If no, what has been the main challenge?

Unlike larger and more formal private enterprises, SMEs have the potential to integrate women and other marginalised groups. The large and formal private sector in developing countries and Sub-Saharan Africa has failed to harness the full economic potential of women. Most female entrepreneurs are confined to micro-enterprises with limited growth potential and to the informal sector (Bardasi et al, 2007; Nkakleu et al, 2013; OIT, 2016). Bardasi et al (2007) found that in Kenya less than 10% of enterprises within the manufacturing sector and with more than 10 employees were owned by women.

Although male-and female-owned enterprises face very similar constraints in their business environment, some constraints, including crime and corruption and access to finance affect women-owned enterprises more severely. In addition, women face significant barriers to entry into entrepreneurship. This is because they tend to concentrate in only a few sectors, typically those such as agriculture and processing that require less capital, as well as in the informal sector (Bardasi et al, 2007).⁷⁰

Evaluation of AECF's portfolio in this context

Gender inclusion

None of the five companies visited during the study had considered gender issues in the project design, and none had specific interventions and/or activities targeting different genders. Rather, they targeted individuals, irrespective of gender, with the aim of making profits.

However, over time, all the businesses **reported working with more women than men** because of their central role in agriculture. 80% of the chilli farmers with whom EKL works are women, especially younger women in their 20s and 30s. 80% of the nut collectors that EFK works with are women and those aged between 18 and 35. Since 2016, 82% of the fields RAE works with are managed by women. Across all the communities visited in the Rift Valley, coastal and eastern areas, women prepare the land, plant, weed and harvest. Men are mainly involved in moving produce from the farm to the house, storage and selling. Gender roles have recently changed even further, with men now working away from their homes, in employment/casual labour in towns and cities. This leaves women with all the farming responsibilities.

Gender roles are more defined in ASAL communities especially around interventions targeting livestock. Livestock generally belong to men, with women taking care of them, grazing and milking. All decisions regarding sale and purchase are made by men. Takaful Insurance therefore targets men directly on purchasing insurance and making payouts. RAE, on the other hand, has managed to work with both men and women. The men are interested in the grass as livestock forage,

⁷⁰ Crick et al, 2016, Enabling private sector adaptation in developing countries and their semi-arid regions – case studies of Senegal and Kenya. Centre for Climate Change Economics and Policy Working Paper No. 29. Grantham Research Institute on Climate Change and the Environment Working Paper No. 258.

while women are interested in the grass. This is because they harvest and sell the seeds to RAE, as well as having access to fodder that is closer to the homesteads. Decisions regarding communal fields are also undertaken by both men and women, due to their different interests. A group comprising men and women has been fattening livestock in the communal fields since 1994. In 2018, the group fattened and sold 14 cattle. VetCare targeted women both as community-based animal health workers (CAHWs) and as clients of veterinary services. As CAHWs, women were trained and provided with drugs to provide services. As consumers, they were informed about the services and where to access them.

Young people are also increasingly engaged in farming. A large variety of initiatives, including those of the Kenyan government, are putting efforts into persuading more young people to view agriculture as a business and to become 'agripreneurs'. Although more young people are becoming active in the agricultural sector,⁷¹ they are primarily interested in crops that grow over short durations and have higher returns, such as horticultural crops. They are not interested in 'dirty' or physically demanding work. This explains their high engagement in chilli production in Malindi for EKL and Croton-nut collection for EFK. While conducting the study in Malindi, the team saw several greenhouses being managed by youth groups with support from NGOs and government agencies.

Gender performance

The companies report that **women are early adopters**. They are interested in practices and technologies that make farming less labour intensive and improve productivity. The productivity of staple food crops such as maize and beans has drastically reduced. Two women farmers interviewed in Malindi said pests

attacking their maize were not responding to pesticides. Maize production also requires more water and fertiliser than other crops, meaning production is affected if there is climate variability and change coupled with poor land use and degradation. Farming staple food crops has therefore become expensive and non-profitable for many small holder farmers. In some seasons, women have been unable to produce enough maize from their farms for subsistence, causing them to turn to chilli farming. They are now able to generate enough income to buy other staple food crops, to pay for their children's education and the family's health care. From just a quarter of an acre, they can harvest 30–50 Kgs of chillies every week during the rainy season, which they sell at 60 Kshs per kg to EKL. The company then pays the farmers through the farmer groups at the end of the month via their mobile phones.

The companies also reported that women are **patient, hardworking and more likely to try new technologies and/or practices several times before giving up**. Men and young people, on the other hand, are less likely to try practices continuously before moving on to the next new/improved technology.

Women also tend to be **loyal and easy to work with**. Three of the five companies provide credit facilities to the farmers they work with. EFK provides cash advances to agents, and RAE provides a tractor to the farmers on credit, so they can prepare the fields and plant grass. EKL, meanwhile, provides cash loans to farmers to hire labour for picking chillies. This credit is then deducted from payments made for produce. Women are more likely than men to remain loyal to the companies, to supply produce consistently, and to pay credit on time. In situations where women are unable to supply produce or service the loans in good time, they are more likely to explain the situation to the company. Men, on the other

⁷¹ Alphaxard Gitau & Yannicke Goris, (2016). Youth inclusiveness in agricultural transformation the case of Kenya

hand, tend to disappear, causing the companies to have to seek them out.

More men than women are likely to breach their contracts, especially when they are offered more money for their produce. In Baringo, these offers are usually one-offs that occur when there is demand for grass seed in north-eastern Kenya. RAE has experienced several such cases, forcing them to take legal measures against the farmers. This is not to say that the companies do not provide credit facilities to men: it does so for individuals who have worked with them for a long time and proven their loyalty.

Gender integration in company operations

While undertaking the AECF interventions, all the companies have increasingly adopted some gender integration in their operations:

- **Gender disaggregated data:** All five companies visited during the study said they collect gender disaggregated data. This includes data on the number of men and women that have attended training sessions, received inputs and participated in activities. This data is not necessarily reported to AECF, but the companies keep it for their own records. The reporting template for AECF only requires companies to provide data on the gender of heads of households.

- **Gender policies:** EKL has a gender policy. This outlines the company's commitment to providing a secure and enabling environment that is both gender sensitive to its employees and the farmers they work with, and aligns with relevant gender-equality legislation at national, regional and international levels. The policy promotes equality by recognising the role of men and women as equal players in their families, communities and society. The

team found no other company with a similar gender policy.

- **Gender training:** Some of the companies' personnel have received gender training. EKL has had a gender-training session for staff members, who use the knowledge to integrate gender into the annual training they administer to farmers. The content of farmer training differs between companies. In some companies, including EKL, training has been formalised into a curriculum and is integrated into annual farmer-training sessions. The curriculum comprises seven modules including content on household relations and their effects on production and household income, gender roles and power relations. For other companies, such as RAE, the training is informal with field officers taking opportunities while interacting with communities to discuss gender roles and household relations. RAE has undertaken several gender studies among the communities it works with. Management is well versed in gender issues and is incorporating this knowledge and skills into the company's activities and daily engagement with the farmers.

- **Incentives:** Two of the five companies have put structures and processes in place to incentivise the different groups they work with. EKL promotes farmers who have done exceptionally well in chilli farming to the level of field assistant, irrespective of gender. The assistants work under the supervision of the field officers, providing advice and support to other farmers. They receive some remuneration from the company. EFK conducts an annual agent meeting where a ceremony is held to reward the most improved agents for supplying high volumes and high-quality nuts.

Gender targeted resources

Targeted interventions for different groups, including women, young people, children and those with disabilities (PWDs), require financial resources, trained personnel and time. The companies indicated that they currently do not have enough funds to conduct targeted activities for different groups. EFK, however, has managed to engage women, young people and children in different activities. Women and young people collect nuts, women are the most prominent in planting trees and using organic fertiliser, while children collect nuts especially on weekends and holidays. The children are paid per kilo, and one female agent keeps the money on their behalf, buying books, uniforms and shoes for them when needed. The agent also rewards the children who perform the best in school to incentivise others. While involving children in work is admirable, care must be taken to ensure that they are not exploited, and child labour is not perpetuated.

Gender-related challenges

Cultural norms and patriarchy are the main challenges faced by the companies for gender inclusion and adoption of agricultural technologies and practices. In some areas, women are responsible for farming while men carry out the sales of produce and make all decisions regarding the income from sales. Therefore, in situations where companies would rather work with women and young people, they are forced to engage men as well. For example, 82% of the fields that RAE works with are managed by women. However, the community is largely polygamous, and in such arrangements the women will manage their individual plots and even have individual contracts with the company. However, their husbands get involved in decision making on how the income generated is spent in the household.

80% of the farmers with whom EKL works are women, organised in groups. EKL mentioned that some women-only groups have a male chairperson, who is not involved in farming but plays a major role in making decisions about profits generated. The field officers from EKL stated that they also had cases where women have provided their husbands' cell phone numbers for payment. The husbands have received the payment, not told them and spent it on themselves. This lack of transparency has led to women seeking payment from the company. These factors result in a lack of direct benefits for the women and young people, which may translate into a decline in their willingness to adopt technologies and engage in interventions. However, at EFK, the money is paid to the agent or collector who delivers the produce directly to the factory, so avoiding the issue of money going to men and not to the women who do the work.

Findings from the study also show that companies do not have separate gender budgets for their activities, nor do they employ personnel with gender expertise. This may limit the impact they have on gender. However, it does not devalue the achievements they have already made in the area.

In conclusion, AECF has catalysed gender considerations in the various businesses to an extent that has led to different gender groups benefitting and improved business performance where gender roles have been taken into consideration.

Other important findings

The review team also came across findings that, while they did not fit under the terms of reference evaluation questions, are important in the design and implementation of the next adaptation funding competition for ASAL-based companies:

Adaptation and resilience knowledge in AECF-and ASAL-based businesses

The review found that climate change adaptation and resilience knowledge is limited among the studied companies. The reviewers needed to explain the meanings of adaptation and resilience to the companies in order to solicit the right answers from the questions asked. While the businesses understand climatic risks, because they have experienced their impacts at some point, this knowledge is limited to how they can avoid income losses during a climate shock. It does not help to ensure that the entire value chain becomes resilient. A study conducted in Kenya also revealed barriers that affect adaptation by private sector organisations impacted by climate shocks. These include a lack of information and capacity to assess and manage climate risk within private supply chains, and a limited understanding of the potential commercial opportunities that arise through climate action⁷².

For example, in this study, livestock (Mara Beef, Tawakal, VetCare) and crop-based (ZamZam, Tosheka) businesses alike were negatively affected by the 201–2017 drought. For Mara Beef, the drought led to less livestock being delivered by the local community, which coupled with other factors to result in the company's closure. Vetcare experienced several problems in 2017, due to the high mortality rates of small ruminants in Somalia during the drought. Coupled with the influx of subsidised veterinary medicine into the country and a ban on exports to the Middle East, this led to a change in business model whereby VetCare focused on providing veterinary medicine to aid agencies. For Tawakal, the supply of shoats for fattening declined as a result of the drought, and this also led to the closure of the company. For Tosheka, due to the change

in rainfall patterns and extended dry periods, the groups have faced challenges in sourcing feed for the silkworms. The result is that some groups are no longer part of the supply chain and the project is struggling to meet its targets. For ZamZam, extreme weather events and other factors led to poor peanut harvests. The company had to import peanuts, which was not sustainable and ultimately led to its closure.

In addition, although AECF staff members can offer companies the necessary support on business targets and performance, their knowledge of climate-proofing businesses and value chains for the long-term resilience and sustainability of ASAL-based businesses is limited.

Measuring and reporting of adaptation benefits by AECF-and ASAL-based businesses

As a result of limited knowledge regarding climate change adaptation, the Monitoring and Evaluation (M&E) systems used by AECF and the businesses do not adequately capture the climate change adaptation benefits derived from business activities. Businesses report on turnover, income, profits, number of jobs, sales etc. However, businesses rarely recognise, measure or report beneficiaries' changes in adaptive capacity.

Research by BSR⁷³ defines a resilient business as one that will be able to anticipate, absorb, accommodate, and rapidly recover from climate events in its own operations and throughout its value chain. It will further contribute to resilient societies, which means moderating harm to socio-ecological systems and enabling people, an economy, and natural systems to rebound quickly in the face of adversity. In addition, the research proposes that the components, known as 'capital assets', together enhance the adaptive capacity of the

⁷² <https://cdkn.org/wp-content/uploads/2015/04/Climate-Change-and-the-Private-Sector.pdf>

⁷³ Cameron, E.; Harris, S.; Pratico, E. 2018. "Resilient Business, Resilient World: A Research Framework for Private-Sector Leadership on Climate Adaptation." Report. BSR, San Francisco.

company and enable greater adaptive capacity across the supply chain and within vulnerable communities.

According to research commissioned by Zurich Insurance group, these capital assets represent the critical properties needed to cope with climate impacts. Specifically, they consist of human, financial, social, natural, physical and political capital, and are considered the key building blocks of resilience. Literature from the Overseas Development Institute (ODI) further asserts that companies can use capital assets as a good measure for resilience building. Table 3 (page 34) below, adapted from “Resilient Business, Resilient World: A Research Framework for Private-Sector Leadership on Climate Adaptation,” illustrates how the capital assets can contribute to building resilience.

Business management in ASAL-based companies

ASAL-based companies and value chains are more at risk of climate shocks than those in high-potential areas. The impact of shocks is felt most by the people at the bottom of the pyramid, who form an important part of agribusiness value chains. Further to this, attracting highly skilled personnel to work in the ASALs may also be a challenge due to poor infrastructure and services. The companies reviewed are at different levels of maturity, and some are working in less established sectors. Others (such as RAE) are also establishing new systems and processes due to a change in their legal status. As such, some businesses are finding challenges in business planning and financial management, implementation and reporting.

Interviews with the project managers at AECF confirmed that AECF provides financial management support to the projects through a technical assistance fund established in

2017. This support includes an organisation assessment, training and/or hiring staff. Companies can apply for support to develop their businesses. It is demand driven, and AECF can either provide the fund to the company or hire a consultant to support them. However, only two companies have applied for and received the funds, Bell Industries for marketing and Liquid Lever for marketing and financial management.

There may therefore be a need to highlight the existence of this fund to ASAL-based companies so that they can improve their business operations where there are challenges, such as a lack of knowledge and measurement regarding adaptation and resilience.

Factors contributing to the success and failure of ASAL-based businesses

There are different motivating factors for companies working in the ASALs. Evidence from the AECF portfolio suggests that the companies are aware of the potential inherent in the ASALs and are ready to make long-term investments. For example, RAE owns and manages communal land of over 80 acres, in addition to other plots. From a business angle, labour and land are cheap in these areas, and competition is low. Low population also makes it easier for businesses to specialise in one activity, thereby increasing economies of scale and making it possible for them to cover transport and transaction costs, and make reasonable profit margins in the long run. In many cases, companies such as RAE, EFK and Takaful are also the pioneers in the different value chains, giving them a great opportunity to provide evidence of profitable businesses in the ASALs.

Table 3. Capital Assets and Climate Resilience

Capital Asset	Contribution to Climate Resilience
Human – skills and knowledge of available human resources, particularly in the workforce.	A company might enhance human capital by investing in skills and training for the workforce in order to cultivate agents of broader household and community resilience.
Financial – volume of available financial resources and access to financial goods and services	It concerns both the mobilisation of increased financial flows in support of resilience and critical expansion of financial services to frontline sectors, companies and communities.
Social – strong relationships, collaborations, and bonds of mutual support and cooperation that are essential for addressing a systematic global challenge like climate change	When reciprocal claims for support can be made within communities in times of stress, this adds considerably to adaptive capacity. Activities and businesses that strengthen social bonds and aid the spread of ideas and resources are considered extremely important elements of social capital.
Natural – full range of services provided by biodiversity and ecosystems services including land and water	For example, wetlands are vital to climate resilience as they protect upland areas, including valuable residential and commercial property, from flooding due to sea level rise and storms. They further prevent coastline erosion due to their ability to absorb the energy created by ocean currents.
Physical – infrastructure, equipment, facilities, logistics, communications, utilities, and even genetic agricultural resources	Physical capital is vital in securing communities against extreme weather events that are increasing in intensity and frequency. Flood defences are increasingly common in low-lying states and coastal regions. Climate proofing of infrastructure is recommended in locations experiencing stronger storms. Moreover, investments in roads and bridges and stronger protections for utility services are vital for ensuring continued links across supply chains and between workers, employers, and consumers in the aftermath of climate-related events.
Political – access to decision-making to shape policy environments that enable resilience	Just as climate change undermines the realisation of human rights, the strengthening of human rights is arguably the most important intervention to enhance resilience. Access to information enables vulnerable populations to anticipate climate-related events and take preventative action. Being more considered in decision making enables marginalised communities to shape public policy in a manner that considers and addresses their specific vulnerabilities. And access to justice enables communities to hold both the public and private sectors accountable for failures to build resilience in a proportional manner.

The biggest motivation is that they can run sustainable businesses in these areas in different value chains in collaboration with rural communities whose livelihoods benefit from good business performance. For example, RAE only sell indigenous species of grass seeds found in the ASALs. The company is also interested in the welfare of the community and has done much research on rehabilitating environments to ensure the sustainability of their product. Over the years, they have also introduced their communities through training to several interventions, including land reclamation and planting grass and trees.

EFK also targets an ASAL-indigenous product, the Croton nut. Through its supply chain, made up of thousands of households and agents, the company runs a business that is also enhancing the livelihoods of households while promoting agroforestry and climate change mitigation.

A more robust study could have compared companies operating in the ASALs with those operating outside the ASALs, comprehensively interrogating the failure and success factors. However, the findings here are based only on the common trends seen across a small part of the AECF-REACT portfolio.

Success factors

This review found **eight factors that led to the success** of ASAL companies in the AECF-REACT portfolio as summarised below:

a) Established presence in the ASALs: all the companies reviewed were already present in the ASAL areas before they received the AECF grant. As such, they understood and/or experienced climate shocks and have found ways of mitigating against them. Some, such as EFL, have widened their geographical scope so that when

nut volumes are low in one area affected by drought, they can still get nuts from an area where production is higher, as drought is unlikely to affect the 17 counties simultaneously.

b) Solutions around limited physical infrastructure:

All the successful ASAL companies reviewed – EKL, RAE, EFK and Takaful – had solutions for how to address the limited physical infrastructure (roads, communication, water and electricity) and still generate income. EKL collect produce from farmers, even using motorbikes, when the roads are not in good condition. EFK has outsourced transport to collection agents, who hire transport from local providers familiar with the terrain. In this way, delivery of raw materials to the company and products to markets assured.

c) Low labour intensity activities: Business activities that were not labour intensive and/ or used simple technology were found to be successful, because local communities did not feel overburdened – especially if the activity was new. For example, for EKL the use of simple drip irrigation kits, where a farmer only needs to water once a week, was easily adopted by the local community. So was the collection of nuts by the local community, as anybody from children to the elderly and the disabled could pick the nuts. This led to huge volumes of nuts being delivered to EFK in 2017.

d) Optimising social infrastructure and gender roles:

The companies that have succeeded have optimised the use of social infrastructure. These include Takaful (using religious leaders and elders), EFK (using local community agents), RAE and EKL (both using different gender roles). Optimising the social infrastructure, including the use of traditional and modern gender roles, means

that people at the bottom of the pyramid are involved in the value chain. This leads to enhanced ownership and improves business performance.

e) Investing in indigenous/drought-tolerant crops:

One common trait shared by the successful crop-based ASAL businesses was that they based their business model on indigenous/drought-tolerant crops. Their value chains optimised the use, value addition and certification of the crop products, which led to enhanced business performance. Examples include EFK, using the Croton nut for oil, vinegar and fertiliser, RAE, using indigenous grass seed to rehabilitate grazing lands having had the seeds certified, EKL, using chillies, which are largely drought tolerant, and Dryland Seeds, promoting the production and sale of drought-tolerant maize varieties.

f) De-risking the value chain:

The use of de-risking instruments and strategies is also a common trend across the successful companies. De-risking livestock production using Sharia Index-based livestock insurance has enabled Takaful Insurance to meet its targets and win several awards. Dryland Seeds is also considering the introduction of crop insurance for its farmers to de-risk the value chain and create incentives for the farmers to continue

Additionally, having a mix of foreign-based and local owners in the businesses has its advantages. Foreign-based owners, such as those of EFK, EKL and RAE, can access markets, matching capital and market research globally. This is not to say that locally owned ASAL-based companies should not be funded, but in order to tap into an export market, foreign-based ties are beneficial.

Another de-risking mechanism was seen in those companies that have diversified their products for the export market. EFK and RAE invested in research development and have used the findings to refine their products for the export market, and their supply chains and other business strategies for better business performance. For a company like EFK, having a research department has ensured that it can always try out new product lines in order to diversify the revenue base. The company also partners with universities and research institutions so that research findings are robust, supporting informed decisions on business management and performance. With diversification, the risk of business failure is likely to decrease if other success factors outlined in this section are implemented.

g) Using county government structures and other stakeholders to facilitate operations:

EKL and EFK have both used county government structures to enhance their business operations and performance. EKL is partnering with organisations including the Ministry of Agriculture (MoA), KRCS, World Vision and Caritas, who can provide inputs and technologies to the farmers. EFK is partnering with county administrations to mobilise the community for awareness sensitisation events. This has led to increased tree-planting efforts by farmers and other public institutions, including schools. EFK has also partnered with Kijabe Forest Trust, Hombe Community Forestry Association, schools and a number of community-based organisations. These partnerships have helped it surpass by 18,277 the target of planting 50,000 trees.

h) Optimising the use of an enabling regulatory environment: Bell Industries, EFK and Takaful are examples of companies that have used an enabling policy environment to enhance their business performance. In 2017, the Government of Kenya, through NEMA, placed a ban on the use of plastic bags across the country. As the bags produced by Bell are made of plastic, this would have proved disastrous for the company. To manage this problem, the company sought an exemption which they received, which has allowed it to continue operating. Takaful took advantage of the relatively new index-based livestock insurance concept that was being promoted by the national government, research institutions and insurance companies. It managed to produce a product for pastoralists belonging to the Muslim faith. The Sharia livestock insurance product became successful, and Takaful managed to get it subsided by the Kenya Livestock Insurance Programme, thereby reaching more beneficiaries. EFK took advantage of the government policy which states that farmers need to set aside 10% of their farms to plant trees. This assisted them in the massive roll-out of Croton tree planting in the ASALs.

Failure factors

Despite such successes, some AECF-funded companies experienced challenges to the extent of closure or the need to change business model. The review found four factors that contributed to the failure of AECF-funded businesses:

a) Climate risk: The drought of 2016–2017 affected some value chains to the extent that companies were unable to meet market demand, ultimately leading to their closure. Examples include Mara Beef, VetCare, Tosheka and Tawakal. As discussed, the

development of a business model that incorporates drought risk in value-chain analysis is very important for the survival of ASAL-based businesses. The capacity of ASAL-based businesses to conduct climate risk assessments must therefore be underscored.

b) Disabling regulatory environment: RAE and VetCare are examples of companies struggling with a disabling regulatory environment that has affected their sales. RAE is facing unfair competition from the county governments themselves, leading to a loss of revenues. VetCare had to change its business model due to a lack of regulation in veterinary drug taxes and licenses which led to unfair competition.

c) Challenges in physical infrastructure: ASAL-based businesses experience challenges in physical infrastructure (roads, communication, water and electricity). While some have managed to generate additional income to overcome these challenges, others were unable to do so and had to close. An example is ZamZam, whose closure was due to a lack of consistent power supply as well as insufficient peanut supplies due to drought.

d) Challenges with social infrastructure: ASAL areas have strong social pastoral/agropastoral societies, who usually form part of livestock or crop value chains. For a business to survive, it is therefore important to understand and tap into the social infrastructure effectively. This requires a comprehensive understanding of the culture of the communities. For example, it is well documented that pastoralists view their livestock as a ‘living bank’ that fulfils economic, food security and social/cultural functions⁷⁴.

⁷⁴ Nyairki et.al (2009). Land-Use Change and Livestock Production Challenges in an Integrated System: The Masai-Mara Ecosystem Kenya

Therefore, when investing in a livestock value chain based on a pastoralist community, the sustainability of livestock supply from a community that is deeply attached to its livestock must be factored into the business model. Mara Beef had to close its operations because the local community, after fattening their cows, decided not to sell them to the company in order to survive the drought period.

e) Unstable governance regimes: Companies with value chains in fragile countries such as Somalia and Southern Sudan are more likely to be negatively affected by lack of infrastructure, regulations. They are therefore more likely to experience unfair competition in addition to climate risk. VetCare, ZamZam and Tawakal are examples from the portfolio. These conditions affected their income streams, making it difficult for them to operate.

Evaluation Question 8: How should AECF design future interventions in the ASALs?

This section presents recommendations that might influence future intervention design by AECF should the Fund intend to continue investing in ASAL-based companies. Further investment by AECF can provide more robust evidence that ASAL-based companies can promote pro-poor systematic change and build the resilience of the local communities that form an important part of the agribusiness value chain. These recommendations are based on the success and failure factors as described throughout the report.

The overall recommendation is that **AECF should continue to fund businesses already established in ASAL areas**. As these are committed, they already have established

networks and possess coping mechanisms for climate shocks. Furthermore, this initial targeted funding phase has provided evidence of success.

Other recommendations are divided into recommendations for the design of the next adaptation call and implementation phases:

Design of the AECF adaptation call and selection process

Hold a pre-call awareness meeting with potential grantees in targeted ASAL areas

This awareness meeting would sensitise potential bidders to factors including climate change risk assessments, adaptation benefits, resilience and de-risking investments in the ASALs. This meeting should also highlight the need for incorporating financial and business models that take the challenges of physical infrastructure and extreme events into consideration. External technical expertise in climate-finance modelling may be required for this. These pre-call meetings should also be attended by AECF staff to increase their knowledge on climate change adaptation. This would enable them to provide guidance on climate change adaptation to the selected businesses during implementation.

Climate risk assessments

Incorporating climate risk assessment should be a **mandatory requirement before grants are awarded to businesses**. Many reviewed businesses described drought as a key reason for failure to achieve their targets. With drought being an ever-prevalent risk in the ASALs, it is crucial that project design incorporates climate risk and vulnerability assessments that support the achievement of targets **despite the risk**. This would ensure that the businesses integrate or make decisions with the specific aim of climate change adaptation/resilience, rather

than opting for the ‘business as usual’ scenario. AECF’s technical assistance fund can be used to hire external assistance to help businesses carry out climate risk assessments and develop appropriate adaptation actions through the use of weather and climate information. Adaptation actions should take into consideration success factors including low labour intensity, simple technologies, and optimisation of the social infrastructure.

A key lesson from Brooks⁷⁵ was that screening initiatives to determine whether they identify and address specific climate change impacts could make their adaptation interventions more effective. Figure 2 below illustrates the basic steps involved in completing a climate risk assessment.

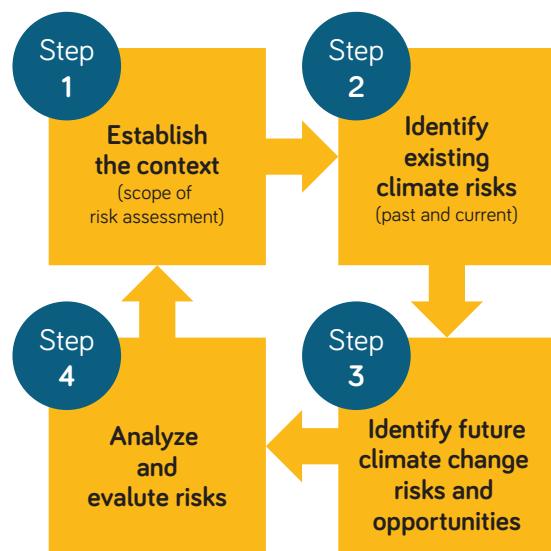


Figure 2: Climate Risk Assessment Steps

Assess the adaptive capacity of businesses

The capacity of SMEs to adapt is based on five key characteristics: the firm’s asset base (its capacity to use its pre-existing assets to adapt to impacts), the institutional environment it operates in (and its capacity to shape access to adaptation capital and assets), the information available to it (that can allow it to respond adequately to climate change), the capacity

for it to innovate, and the flexibility of SME governance systems (which can determine how quickly or well SMEs can adapt).⁷⁶

The AECF REACT team can use the characteristics above to determine and assess if businesses are able to implement climate change adaptation during the selection stage. A screening tool like the one in Table 4 (see page 40) can be used is an example.

Social infrastructure

Before a grant is provided by AECF, there may be need for potential companies to provide evidence that they understand the social infrastructure of the geographical area they are working in. They may also be required to show how they will optimise it to sustain their business models, to ensure that their businesses are resilient and that communities gain adaptation benefits that will ensure the value chain’s sustainability.

Physical infrastructure

Companies should provide evidence showing they have incorporated the challenges of physical infrastructure in their operations and financial models before a grant is approved.

Regulatory environment

The selection panel should encourage the provision of evidence on any private-public partnerships (PPP) with local governments, and this should be given additional weight. As seen in the evidence collected, a disabling regulatory environment can negatively impact businesses. An effective PPP can also assist in long-term systematic change. This is because the business will be able to influence policies/regulations if they are seen as important players, helping to achieve resilient development impact in the geographical areas where they operate.

⁷⁵ Adaptation and Resilience Learning from The Kenya StARCK+ Programme, Nick Brooks, January 2017

⁷⁶ A. Lemma, M-A Jouanjean, E. Darko, 2015, Climate change, private sector and value chains: Constraints and adaptation strategies,

Table 4. Capital Assets and Climate Resilience

Characteristics	Screening Questions	Response
Asset Base	Does the business have assets/finance available to allow it to respond to evolving circumstances such as unpredictable climate shocks?	
Institutions	Is there an appropriate institutional environment that allows fair access to key assets and capitals?	
Knowledge and Information	Does the business have the ability to collect, analyse and disseminate knowledge and information to support adaptation/resilience-building activities?	
Innovation	Does the business explore and use niche solutions to take advantage of new opportunities presented by climate change challenges?	
Flexible forward-looking decision making and governance	Can the business anticipate, incorporate and respond to change in regard to its governance structures and future planning?	

De-risking measures

Before AECF awards grants, ASAL-based companies should carry out a comprehensive risk analysis that looks at both internal and external factors and identifies/maps risks throughout the entire value chain. Those companies that can demonstrate de-risking strategies/plans to mitigate climate risks and other ASAL challenges, and are aware of the risk of maladaptation, should be prioritised for funding.

Adaptation reporting

Most companies had limited understanding of adaptation and resilience. If companies are awarded grants after passing through the

screening process, and having attended the preconference call, proposal templates should include a section on the adaptation indicators that they need to report on. This will help make companies more cognisant of the issues and more likely to focus on meeting adaptation targets as well as the more familiar financial targets.

Implementation of grants

Measurement of adaptation by AECF

To enhance AECF's objectives around climate change adaptation, the Fund can use capital assets to track its progress towards meeting objectives on climate resilience for the private

sector that also benefit local communities. Table 3 presents the capital assets as well as short-, medium- and long-term indicators that can be used to track progress in making different assets resilient to climate change. In the ideal context, AECF would be able to enhance the resilience of all capital assets, although achieving this is difficult. It is therefore recommended that the Fund should determine the most crucial assets that will enable the integration of climate-change adaptation and resilience building within the Fund and across its agribusiness portfolio.

Accessibility of technical assistance fund

AECF needs to encourage ASAL-based companies to apply for any technical support required early enough to forestall business management and reporting issues that may make it harder to achieve adaptation benefits. This should probably take place through more frequent field visits and mentorship by AECF staff.

Include adaptation measures during field-visit checklists

Field visits by AECF staff should not only assess progress towards targets as set out in the business proposal. They should also include an assessment of whether companies are implementing adaptation interventions for the businesses and for the communities they rely on to provide their value chain.

Incorporate adaptation measurement in business proposals

The design of business proposals should incorporate measurement of climate change adaptation benefits. AECF can use capital assets as metrics to measure climate resilience and so calibrate the Fund's objectives in making progress in this key area. Businesses can

also measure the results of their activities on adaptation.

Hold lesson-learning events for ASAL businesses

Events could be held at least once a year for businesses to share their experiences on how they are implementing adaptation actions and addressing physical, social, regulatory and other challenges. This forum can also be used to exchange information on innovative adaptation technologies, and on how to measure and reporting on adaptation benefits. In addition, technical expertise can be called in to offer businesses more guidance on adaptation and resilience.

Adjust the reporting template to include adaptation benefits

The adaptation indicators proposed by the businesses in their proposals should be measured and reported on. AECF's reporting template should therefore be adjusted to include adaptation measurement and reporting.

CHAPTER 3

LESSONS LEARNED

Lessons for use by AECF have been distilled from the findings of this study. These are derived from the findings on the key success and failure factors of agribusinesses in the ASALs:

Lesson 1: Knowledge of ASAL challenges is essential for business success

Investing in businesses that are already established in the ASALs has a higher chance of success than investing in new businesses that are not conversant with ASAL challenges.

Lesson 2: Investment in the ASALs for the private sector can lead to transformative adaptation.

Even though businesses had limited knowledge on adaptation and resilience, they have provided communities with development and adaptation benefits. A key benefit derived across six of the seven businesses is the increase in additional sources of income, enhancing communities' adaptive capacity during the drought period, allowing them to purchase food and water, access medical services, pay for schooling and withstand shock.

Lesson 3: Investment in ASAL businesses can demonstrate additionality.

Evidence has shown that businesses can achieve results faster, have a wider scope and be more inclusive. However, more investment

is required in the businesses that have demonstrated additionality for these gains to be sustained and impactful in the long term.

Lesson 4: Adaptation is a long process and adaptation benefits may not be observable during the lifetime of the funding period.

The businesses are funded for a period of between three and five years, which may not be adequate to achieve adaptation. Furthermore, any adaptation targets need to be measurable for AECF to prove that it has contributed towards resilient businesses. It is therefore important to determine how most effectively to measure potential adaptation benefits over a shorter project time frame.

Lesson 5: It is possible to demonstrate elements of transformative and systemic change in a project's time frame.

Evidence has shown that copying business models and successful practices can take place during a project cycle. However, other systemic change factors such as crowding in, changes in the business regulatory environment and in factor markets, take much longer, especially if the businesses have not yet demonstrated impact that can attract other businesses into the value chain. Additionally, for a business to have influence in the regulatory environment, it needs to be recognised as a key player by government authorities and other stakeholders in the value chain. This is not a short-term process.

Lesson 6: Soft investment in the ASALs, in the form of training, awareness creation and community engagement, is key for business success.

All companies reviewed have invested in community engagement, laying the foundations for their businesses. Evidence from the study emphasised the premium that is placed on trust in business transactions in the ASALs. Companies that have worked in the communities over long periods understand those communities, who in turn trust them and are more willing to engage in interventions. Additionally, the companies have employed staff from the target communities and provide various forms of incentives to smallholder farmers. This in turn enhances community participation. Such investments will challenge and confront cultural norms to achieve transformational change and should therefore be well resourced during project design. AECF should allow businesses to set aside a certain percentage of funds received for awareness raising and community engagement activities.

Lesson 7: Limited physical, regulatory and sub-optimisation of social infrastructure can adversely affect business performance.

ASAL areas in Kenya have been marginalised for many years because of legislation that supported government investments in high-productive areas. This has affected the regulatory framework and infrastructure in the ASAL areas. The regulatory framework is not well established, with lax taxation, licencing and standard procedures. Such environments may

create opportunities for contraband products that negatively affect the market for legitimate products. The road and communication infrastructure in the ASALs is generally poor, and illiteracy levels are high. These factors have implications for the time required for businesses to achieve impacts and need to be included in the project design.

Lesson 8: De-risking value chains is a useful strategy that can enhance adaptation benefits for businesses and communities in the long run.

Using insurance or diversification of products through market research has helped some ASAL businesses to succeed despite all the challenges they experience in a dynamic environment.

Lesson 9: Participation and engagement of different gender groups in an agribusiness value chain in the ASALs is affected/influenced by socio-cultural norms including gender roles.

Understanding gender roles and how businesses can capitalise on them can therefore enhance business performance.

CHAPTER 4

CONCLUSION

The regulatory environment in the ASALs is changing, with the development of an ASAL policy and establishment of climate change units in all ASAL counties. The government and development aid agencies are investing more financial and technical resources in the ASALs, as can be seen through the World Bank's Kenya Support to Devolution Programme and DFID's Deepening Democracy Programme. These additional investments will eventually result in better roads, communication systems, market systems and overall service delivery. This will have a positive impact on agribusinesses in the long term, making this an attractive opportunity for AECF to invest in businesses in Kenya's ASALs.

Despite the challenges in the physical and social infrastructure and regulatory environment, evidence in this report has shown that ASAL businesses have the potential to become commercially viable due, among other factors, to:

- the accessibility of cheap land and labour
- optimising indigenous crop/livestock value chains which can withstand climate shocks
- effective use of social infrastructure and gender roles that enhance business performance
- use of simple technologies
- use of non-labour-intense approaches
- use of de-risking strategies.

Evidence has also shown that these and other qualities have enabled some companies to make profit **and have led to the beginning of transformative adaptation**. This study has also provided evidence of **AECF's additionality with businesses, as companies** have attracted additional funding, with benefits including:

- change happening faster
- market systems development
- expansion of geographical scope
- investments becoming more inclusive
- people at the bottom of the pyramid benefitting.

Evidence of **systemic change** has also been shown, with the copying of business models and successful practices. There is as yet no evidence on crowding in or changes to the business regulatory environment. However, some success is visible with changes in factor markets and additional investment in businesses that have demonstrated additionality. If it is possible to build on the gains achieved by the successful businesses, then likely long-term outcomes include attracting businesses to the value chain and being recognised as key players by local governments and other stakeholders.

⁷⁷ http://www.environment.go.ke/wp-content/uploads/2018/08/The_Kenya_Climate_Change_Act_2016.pdf

⁷⁸ <http://projects.worldbank.org/P149129?lang=en>

⁷⁹ <https://www.dai.com/our-work/projects/kenya-deepening-democracy-programme-ddp>

CHAPTER 5 - CASE STUDIES

Joseph Chelanga, farmer from RAE

Joseph has been working with RAE for over 10 years. He has grown trees around his field and homestead and grass on four acres of land. He has done his field in such a way that he has trenches that trap water during the rains which is good for the grass. His field is fenced and he doesn't allow any livestock inside, even his own livestock. He cuts the grass and sells it in bundles at 10 Kshs each and people come from Kampi, Loruk and Msalabani to buy the grass, especially during the dry season. During the drought in 2017, many people came to his field to buy grass. He makes between 70,000 Kshs and 80,000 Kshs in a year from sales. He is well known in the area and his field is used as an example many times.

He doesn't have a problem with water because there are several water points in the area; a borehole, water pan and a dam where the livestock can get water. The borehole was dug by Diocese of Nakuru and the government donated the pump and solar system.

He sells the seed to RAE and because of the good relationship that he has formed with RAE, they even give him an advance to harvest and then deduct the money from his payment. The interventions that he receives from RAE are the same: access to a tractor for ploughing, seeds at subsidised prices, extension services and a market for his grass seed. The benefits he generates however, have increased because he now understands the trade better.

He mainly uses the money from the sales to pay fees for his children. He mentioned that he was able to take his son through high school and college with the sales, and his son is now a teacher. He is also paying fees for his other children. In the past, he really used to struggle with paying fees for his children.



Picture of Joseph and the bundle of grass he sells

CASE STUDIES

Amos Masha Luganje, farmer from EKL

Amos was one of the pioneers of chilli farming in his area. He started working with the intervention in 2014. Before that, he was growing maize which was difficult with the extended dry periods. With maize he also had to deal with brokers who bought green and not dry maize and extorted them with the prices. For chillies he is assured of the market with EKL and the prices are stable. For the maize he also used to grow up to one acre, and with chillies he is only growing half an acre and is earning a lot more.

He has been receiving the same services and products from EKL since joining in 2014, training, seeds and extension services. Sometimes, the farmers receive advice and information from the company through text messages. In the past EKL used to provide him with fertilizer, herbicides and pesticides on credit and recover the money from his payments at the end of the month. However, this has stopped. The field officers now only give him advice and recommendations he has to purchase for himself from agro-vets in the area. He received a drip irrigation kit at a subsidised price but is not necessarily using it. His farm is located near the river and he irrigates using a diesel fuel pump that he hires. He prefers this method as he does it once and then doesn't have to do it again. It also takes a shorter period. He is aware of the negative effects of irrigating in this way, but he still opts to do it.

The main shocks are drought and floods. The crop doesn't require a lot of water and so even during the dry season he only needs to put some water on the crop to revive it. During the extremely dry periods he can pour water once every three weeks. It also doesn't require a lot

of tending so he spends, on average, two full days at the farm and the rest of the time he uses to do other things. With time, he has also noticed new infections and rodents that are affecting the crop.

The main challenge that he has with the crop is that he doesn't use it for anything else other than to supply to EKL. So, when they don't come for the crop on time, it depreciates and goes to waste (whether he has picked it from the farm or not). When picking the crop, it causes irritation and results in itching. A lot of people complain about this and so sometimes it is hard to get people to help him pick the crop.

He has generated several benefits from the crop. He used to be employed away from home and didn't spend a lot of time with his family. But now he is self-employed (farming), spends adequate time with his family and is earning even more. On average he picks between 30 and 77 Kgs every week and sells at between 60 and 70 Kshs/kg. He has used the money to take his children to school and access health services. He has bought cattle and earns an income from the sale of milk. He has built an iron sheet roof house.

He works on the farm with his wife, but the land is his (family land). They have no title deed, but this has never been a problem. He is the one who holds the contract with the company, is paid for the produce and attends the trainings.

The only additional support he requires from the company is credit in order to increase his productivity. He would use the money to pay more people to pick the produce and to start growing the crop on another piece of land that he owns, and to hire the fuel pump for irrigation.

The only challenges he has faced in working with the company is that there are instances where the farmers have not produced enough for a shipment and so the company delays picking up the produce. This happens because sometime people plant at different times and so the produce is not ready at the same time. In such instances, the produce has spoiled since there is nowhere else to take it. There are also instances where they have received late payment for their produce due to challenges that the company has had in receiving payment from clients or problems with the produce (standards etc).

Picture of Amos in his farm





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