CLIMATE-SMART AGRICULTURE

INDEX-BASED LIVESTOCK INSURANCE AS AN INNOVATIVE TOOL AGAINST DROUGHT LOSS

Good Practices and Impact Analysis from Northern Kenya

CTA

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Good Practices and Impact Analysis from Northern Kenya

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Acronyms

ACP	African, Caribbean and Pacific Group of States
ASALs	Arid and Semi-Arid Lands
BASIS	Broadening Access and Strengthening Input Market
DFID	Department for International Development
EU	European Union
HSNP	Hunger Safety Net Programme
IBLI	Index-Based Livestock Insurance
ICTs	Information and Communications Technologies
ILRI	International Livestock Research Institute
LRLD	Long Rain Long Drought
MFI	Microfinance Institution
NDVI	Normalised Difference Vegetation Index
NGO	Non-Governmental Organisation
PPP	Public Private Partnership
SRSD	Short Rain Short Drought
TLU	Tropical Livestock Unit
USAID	United States Agency for International Development
VIP	Village Insurance Promoter

Contents

Summary

Index-based livestock insurance (IBLI) is a donor-funded programme aimed at designing, developing and implementing market-mediated, index-based insurance products to protect livestock keepers, particularly in the drought-prone arid and semi-arid lands (ASALs), from drought-related asset losses. The IBLI index is based on satellite data, which measure the quality of the pastureland every 10–16 days. These data are inputs to a statistical model of livestock mortality developed using historical data from the region. When evolving range conditions predict livestock mortality in excess of a critical threshold (say 15%) over a predetermined area, the insurance pays contract-holding pastoralists for their losses, allowing them to manage their individual risk. The programme operates under the International Livestock Research Institute (ILRI) and is delivered by several private sector insurance providers, with financial support from the United Kingdom Department for International Development (DFID), Australia's Department of Foreign Affairs and Trade and the European Union.

This impact analysis of IBLI and documentation of good practices was conducted using a mixed methods approach. A randomised controlled trial was designed, with fieldwork in three implementation geographical locations in Kenya, Isiolo, Marsabit and Wajir Counties, randomly selected. Qualitative research was also conducted in four different sub-locations in each county of implementation. Qualitative methods included focus group discussions (female and male beneficiaries and non-beneficiaries), key informant interviews (community elders, teachers, labourers, minority groups, traders), household case studies (a 'qualitative panel' of beneficiaries and non-beneficiaries), and participatory methods (social mapping, timelines and community wealth ranking).

This synthesis report summarises the findings from these research activities and presents conclusions and recommendations stemming from those findings for the IBLI.

Key good practices that address impact of climate change

In terms of one of the key objectives – *reducing challenges posed by climate change* – there is a significant aggregate impact on the proportion of beneficiary households falling below the national absolute poverty line as a result of livelihood asset loss occasioned by drought. Even more importantly, after

controlling for other factors that cause livelihood asset losses, a significant reduction – 25–40% of total livestock – in drought-related livelihood asset losses is observed, as well as an increase in mean consumption for poor and for fully mobile households (Chantarat *et al.*, 2013). Given the recent context of increasing severity and frequency of drought in northern Kenya, the fact that drought-induced livestock mortality incidence did not lead to complete loss of livelihood suggests that the IBLI is performing its function as a 'safety net' and risk insurance.

The aim of the IBLI pilot is to reduce poverty and promote asset retention and accumulation among its beneficiaries. However, its primary function is not poverty reduction *per se*, but to act as a drought safety net. In this sense its emphasis is on livelihood assets protection and livelihood promotion. As a drought safety net, IBLI was fairly effective at protecting beneficiary households in northern Kenya against the worst effects of the Horn of Africa drought. The IBLI therefore has a bigger impact on long-term livelihood security than on long-term poverty.

Thus, while IBLI, at its current coverage rates, might provide a functional safety net against drought, it is unlikely to systematically move people out of poverty. This is because of the negative climatic conditions that are endemic to the region and the relative marginalisation of the population.

1. Background

The rural economy of northern Kenya and southern Ethiopia is based on livestock reared by nomadic, semi-nomadic and agro-pastoral herders. Agriculture contributes about 30.3 and 41.9% of the Kenyan and Ethiopian gross domestic product, respectively (Odhiambo *et al.*, 2004; World Bank, 2014a), and livestock (mainly pastoral herds) accounts for 43 and 40% of agricultural output in Kenya and Ethiopia, respectively (Behnke and Muthami, 2011; Asresie and Zemedu, 2015). According to the Inter-Governmental Authority on Development's (IGAD) Centre for Pastoral Areas and Livestock Development (ICPALD), Kenya and Ethiopia have about 150 million head of livestock, consisting of goats, sheep, cattle, donkeys and camels. Livestock provide sustenance, income and wealth to more than 60% of the residents of northern Kenya and southern Ethiopia (ICPALD, 2013). Livelihood shocks and stresses to the well-being of livestock therefore have devastating implications for the rural poor and for the overall economy in both Kenya and Ethiopia. Major shocks are common because the region has a harsh climate where animals are herded over a large area with scarce water and pasture. From 2000 to 2002, droughts and famine killed 11 million animals. The governments in the region have struggled with the obvious question of how to address this problem.

Given the complex nature of pastoralism and arid and semi-arid lands (ASALs), managing risk in the livestock sector requires an unconventional combination of risk mitigation and financial approaches. Pastoral risk mitigation, including drought, water stresses and improved management of dry-season pastures, can help herders better prepare for weather events and related shocks. In extreme drought events – that is, slow onset of water and pasture stresses as a result of low rainfall and very high temperatures – high levels of livestock mortality are often unavoidable. In the past two decades four major droughts with recorded high livestock mortality (Mude, 2009) have further driven hundreds of thousands of herder households into poverty from which most will never recover (Hillier and Dempsey, 2012). A similar gloomy picture for the future of ASALs herder well-being has been forecasted with evidence indicating close correlations between climate-induced droughts, livelihood vulnerability and poverty. It is therefore increasingly necessary that pastoral herd management be complemented by financial mechanisms that provide herder households with immediate liquidity after a disaster. However, formal insurance contracts are rarely available for the pastoral households and small-scale agriculture in low-income countries in general often associated with highly risky environments.

There has been increased interest in the possibility of offering insurance to herders and livestock-owners. Specifically, the interest is in index-based insurance, where payouts are made not against some level of damage to the insured livestock, but against some objective and specified meteorological event in the area (e.g., rainfall at the nearest rainfall station falling below 50% of the long-term average for the months of a defined season). 'Traditional' insurance with individual loss adjustment has long been regarded as unfeasible in developing countries except for small numbers of commercial farmers, because of problems of high transaction costs (including avoiding corruption and complicity by those verifying crop losses), adverse selection (farmers may only insure those fields or livestock at the highest risk, leading to higher costs for an insurance company) and moral hazard (herders may put less effort into managing livestock that are insured).

1.1 Index-based livestock insurance (IBLI)

Index-based livestock insurance (IBLI) is a donor funded programme aimed at designing, developing and implementing market-mediated, index-based insurance products to protect livestock keepers, particularly in the drought-prone arid and semi-arid lands (ASALs), from drought-related asset losses. The IBLI index is based on satellite data, which measures the quality of the pastureland every 10–16 days. These data are inputs to a statistical model of livestock mortality developed using historical data from the region. When evolving range conditions predict livestock mortality in excess of a critical threshold (say 15%) over a predetermined area, the insurance pays contract-holding pastoralists for their losses, allowing them to manage their individual risk.

Index-based insurance can not only lower administrative costs but also offer a solution to the problems of adverse selection and moral hazards and even more importantly can be used as the foundation for an implementable productive safety net programme (Barrett *et al.*, 2008). In addition index-based insurance has the advantage that it can be sold in very small denominations; i.e., a farmer can pay a small or a large premium depending on his or her needs, and will receive the same ratio of payout to premium if the specified event happens. However, it does depend on the ability to define a weather or environmental event that is a reasonable proxy for livestock mortality causing distress among herders.

In 2010 the International Livestock Research Institute (ILRI) in partnership with Cornell University and the USAID-funded BASIS Research programme

introduced index-based livestock insurance in Kenya. IBLI was developed with the sole aim of protecting vulnerable pastoralist households from herd losses as a result of drought. IBLI differs from conventional insurance in that it offers compensation (in the form of a cash payout) based on an index rather than on verification of individual losses, which would prove prohibitively costly in the remote regions of northern Kenya. Traditional indemnity-based livestock insurance (based on individual losses) has proved ineffective in most of rural Africa especially in northern Kenya because of the high cost of covering animals spread across vast areas, *ex ante* moral hazard (herders failed to protect their livestock) and *ex post* moral hazard (herders falsely reported animal deaths).

IBLI was first piloted among pastoralists in Marsabit, northern Kenya, by ILRI and its partners that included commercial insurance companies and implementing non-governmental organisations (NGOs) following a research phase to design the programme. An IBLI product sale was launched in Marsabit county of Kenya in January 2010. Since then, it has been expanded to include Isiolo (August 2013), Wajir (August 2013), Garissa (January 2015) and Mandera (January 2015) in Kenya, and the Borana region of Ethiopia (July 2012). The Government of Kenya is exploring taking a variant of IBLI nationwide under a proposed Kenya Livestock Insurance Program.

The IBLI product has proved beneficial to pastoralist households' resilience to climate change but even more importantly there is evidence to indicate that a commercial market can sustainably support an IBLI scheme.

1.2 Objectives and methodology

This is a good practice document prepared as part of the Technical Centre for Agricultural and Rural Development (CTA)-funded good practice documentation on "proven practices, ICT Tools and policies to help farmers address climate change impacts". This document deals with best practice example, index-based livestock insurance (IBLI) as an innovative tool against drought loss in Kenya. It presents a selection of the most recent public–private partnership (PPP) best practices in the field of micro-insurance – and more importantly practices that have been recognised by the IBLI project partners during the duration of the project.

As well as documenting IBLI's impact and potential for covering drought risk effectively to a high and consist standard, we have recognised many best practices covering the product design, implementation, quality assurance and

user evaluation that are presented in this document. It also takes into account the best practices in the field of micro-insurance that had been established and presented in the framework of related livestock projects in rural Africa and other similar contexts around the world.

The impact of IBLI as a good practice has been assessed using rigorous scientific methods. Using a randomised controlled trial approach, a number of geographical areas (sub-locations) were selected for random assessment by the evaluation and documentation team. These sub-locations were then randomly assigned to be 'treatment' areas, where the programme began to operate straight away, or 'control' areas, in which the programme did not start at all. Impact was then assessed by comparing IBLI beneficiary households in treatment areas with households in control areas that were selected for the programme but who would not come into the programme for two years. For the final impact analysis there were 20 treatment and 20 comparison (control) sub-locations, with 125 IBLI households (the treatment group) and 121 control group households.

Qualitative research was also conducted in four IBLI treatment sub-locations in each county of implementation in northern Kenya. Qualitative methods included focus group discussions (with female and male beneficiaries and non-beneficiaries), key informant interviews (with community elders, teachers, labourers, minority groups and traders), household case studies (a 'qualitative panel' of beneficiaries and non-beneficiaries), and participatory methods (social mapping, timelines and community wealth ranking).

1.3 Geographical area of the case study

The IBLI Project started as a pilot in Marsabit County. Partners and stakeholders continued work on upscaling and improving the product, and its implementation has seen growth beyond the Marsabit pilot into the larger northern Kenya pastoral rangelands. As a result ILRI has been working to develop products for seven other arid counties in Kenya and one woreda (district) in southern Ethiopia. These are Turkana, Mandera, Wajir, Moyale, Samburu, Isiolo and Garissa in Kenya and Borena Woreda in Ethiopia.

In this region, rainfall is the main factor influencing the distribution of human and livestock population. The annual rainfall ranges between 75 mm and 250 mm per year. Accordingly, two ecological zones with variable grazing potentials can be identified: arid and semi-arid. The arid zone encompasses 70% of the

total area in Kenya and 30% in Ethiopia and it is in this region that 70% of the population lives with livestock herding as the main source of livelihood.

The pastoral areas are characterised by frequent droughts as a result of climate variability, with high livestock mortality followed by famine and human deaths as experienced for the last 40 years but most notably in 1984, 1992 and 2011 (Owuor, 2015). When a drought occurs, it substantially increases livestock mortality, reduces livestock prices and escalates the increase in the prices of food items and essential commodities. This has had the effect of aggravating the problem of pastoral households by shifting the terms of trade in favour of their purchases rather than their sales.

The current coverage of IBLI is confined to the drylands of northern Kenya and southern Ethiopia inhabited by pastoralists and agro-pastoralists. Most of the available studies on pastoralism in this region estimate that pastoral and agro-pastoral communities constitute 25% and 10–12% of the total population in Kenya and Ethiopia, respectively (Ahmed *et al.*, 2002). According to the World Bank (2014b), pastoralists occupy some 60% of the total land area, mainly the peripheral areas of the Horn of Africa, engaging in extensive livestock herding in the arid and semi-arid lands within their respective countries but also most importantly flexibly move across borders into neighbouring countries.

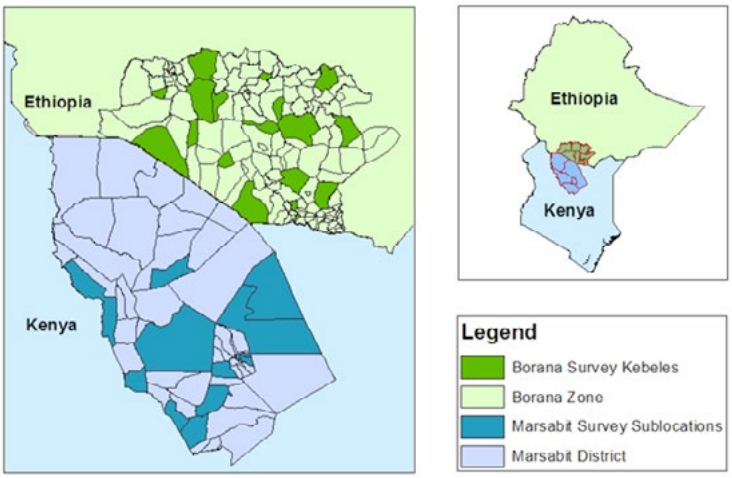


Figure 1. IBLI active contracts and survey regions in Kenya and Ethiopia

Source: Jensen *et al.* (2015)

2. IBLI development process

2.1 Aridity, drought risk and limited coping mechanisms

The more than 10 million pastoralists that live in the ASALs of Eastern Africa depend on pastoral livestock herds to get by and by extension constitute more than 60% of their income. Any losses of livestock herds can therefore not only be catastrophic for household income but also drive thousands of people into the poverty trap. In the past 100 years, northern Kenya and southern Ethiopia have experienced more than 20 droughts with devastating livestock mortality. The most recent drought, which occurred in 2010/2011, affected 13 million people across Eastern Africa and claimed over US$500 million in livestock losses (Hillier and Dempsey, 2012).

Pastoral households' risk management strategies, like most rural farmers, are primarily through husbandry practices like transhumance migration in response to drought conditions and social transfers in livestock where losses occur, practices which are generally ineffective and in decline. In the absence of alternative risk transfer mechanisms, continuous and escalating exposure to drought and other risks not only result in loss of valuable livelihood assets but vulnerable pastoral households also suffer from ongoing uncertainty of livelihood shocks as a result of droughts.

Pastoral households' perpetual exposure to drought is therefore not only detrimental in the short term but also affects longer-term opportunities in the livestock sector that might reduce their livelihood vulnerability and poverty in general. These and other challenges to pastoral livelihoods are a clear indication of the need to widen the availability of risk management options for pastoral herders to reduce their level of vulnerability. However, not all risks are insurable; some happen frequently but have nominal impact (i.e., milk spillage) while others happen infrequently but have a devastating effect on the financial resources of the household (i.e., livestock theft).

2.2 Index insurance innovation

Index-based insurance products represent a promising innovation for managing the climate-related risks that pastoral households face in Kenya and Ethiopia. Substantial research in pastoral risk management has pointed to the potential of index-based products in alleviating drought risk in the region. The most significant research that led to the development of an index-based product for pastoral households was initiated and carried out by the International Livestock Research Institute (ILRI) in collaboration with its partners at Cornell University and the USAID-funded BASIS Research Program. This collaboration aimed at designing, developing and implementing market-mediated, index-based insurance products to protect pastoral herders from drought-related livestock losses. Apart from developing the first index-based product in Africa, ILRI and its partners also facilitated extensive fieldwork and stakeholder consultation and the piloting of the product in Marsabit in 2010.

An index insurance contract has three main components relevant to the development process of the index-based product. According to Chantarat *et al.* (2008), these components are:

- A well-defined index and an associated strike level that triggers an insurance payout
- A well-defined, time-specific geographical coverage with a matching premium pricing
- A clear payout timing and structure for all covered premium holders conditional on strike levels reaching contractually agreed specified levels.

Therefore, the essential feature of the IBLI product is that it responds to forage availability (a well-defined index) at a defined location during an agreed time period. Because pastoral grazing systems and livestock health and survival depend on the availability of forage, IBLI design uses remotely sensed normalised difference vegetation index (NDVI) as an indicator of forage availability to predict livestock mortality. Since there is general consensus that most livestock mortality is associated with drought, and that widespread livestock mortality during droughts is caused primarily by forage scarcity, IBLI tracks local forage conditions using real-time, publicly available NDVI to determine the severity of drought, predict area-average livestock losses and calculate policyholders' indemnity payments.

2.3 Designing an IBLI product for pastoral commons in Kenya and southern Ethiopia

With an extensive research experience in Eastern Africa's ASALs and collaborations internationally, ILRI and its technical partners undertook extensive pastoral communities engagement in Kenya in Marsabit in 2008 including household surveys and field experiments in multiple locations. The processes that followed this inception were focused on contract design and piloting the product.

In line with northern Kenya's rainy-dry seasons, ILRI developed a contract covering long rain long drought (LRLD) and short rain short drought (SRSD). In this arrangement, insurance contracts are sold (for approximately two months) just before the start of the rainy season and are assessed at the end of the dry period to determine whether indemnity payments are to be made. Contracts are specified per tropical livestock unit (TLU) at a pre-agreed value per TLU. Pastoralist clients choose the total livestock value to insure, pay the associated premium to the insurance broker and receive indemnity payments proportionate to their IBLI coverage in the event of a payout. The contract is specific at the location level, based on the predicted mortality rate as a function of the vegetation index specific to the grazing range of that location.

The index on which the insurance contract is written is the predicted area average mortality rate, defined as a function of the NDVI. Because NDVI data are available in real time, the predicted mortality index can be updated continuously over the course of the contract period. We express the index in terms of percentage predicted mortality instead of NDVI in order to expressly link the index to the insurable interest of contract holders.

There are two comparable approaches to pricing an insurance contract, based on different underlying distributions. The first is a simple historical burn rate approach, in which the contract is priced based purely on the available historical distribution of vegetation data. The second is the simulation approach, which involves first estimating parametrically or semi-parametrically the distributions of the underlying vegetation index (NDVI) and then pricing the contracts based on those estimated distributions. The second approach has the advantage of assigning non-zero probabilities to events that may not appear in the available historical data, but the disadvantage of assigning probabilities based on estimating probabilities without knowing the true data generating process. IBLI pricing uses historical burn rate pricing based on 27 years of available NDVI data updated annually.

Table 1: IBLI structure and key features

Feature	Explanation
The risk	Index-based livestock insurance (IBLI) is a product that is designed to protect against drought-related livestock mortality. IBLI compensates pastoralists for predicted livestock losses due to severe forage scarcity due to drought.
The index	The index in IBLI is predicted livestock mortality. The index is calculated by using a measure of pasture availability that is recorded by satellites, called the normalised difference vegetation index (NDVI). This vegetation measure is fed into a response function that relates pasture availability with drought-related livestock mortality.
Contract strike (trigger) level	The index threshold above which payouts must be made is called the contract strike level. The strike levels for IBLI's northern Kenya contracts were set at either 10% or 15% with varying premium amounts from which clients would choose for purchase. IBLI insurers will then compensate if the NDVI predicted livestock mortality is above 10% or 15%, depending on the contract held.
Geographical coverage of contract	A larger geographical area (in the IBLI northern Kenya case, a county) would have separate contracts with differing contract strike premiums dependent on the risk of livestock mortality from historical livestock mortality data. The current IBLI contract is based on administrative division boundaries. Because payouts are made according to the index level, differing payouts may be made in the same larger geographical location (county). However, as long as the index is above the strike level that a client has chosen, every policyholder within the affected division will receive a payout at the same rate.

Source: adapted from Chantarat *et al.* (2013)

2.4 IBLI structure and key features

Like all designs and development processes of index insurance, the IBLI development process began with the utilisation of information gathered on household-level livestock mortality data collected monthly from 1996 in various northern Kenya locations and NDVI data collected on the same locations. However, the data alone were insufficient to yield the accuracy required to design an effective index insurance product. To solve this problem, IBLI design utilised the NDVI, which other than being reliable and cheap can also provide historical data that can easily be correlated with corresponding historical livestock mortality. Most importantly, since livestock in pastoralist systems depend entirely on available forage for nutrition, the NDVI would theoretically be a strong indicator, not only of the vegetation available for livestock to consume, but consequently of livestock mortality as well.

3. Target beneficiary groups and stakeholders of IBLI

The more than 10 million people who occupy northern Kenya's and southern Ethiopia's drylands depend overwhelmingly on livestock, which represent the vast majority of household wealth and account for more than two-thirds of average income. Livestock mortality is the most serious economic risk these pastoralist households face. The importance of livestock mortality risk management for pastoralists is amplified by the apparent presence of poverty traps in East African pastoral systems. These poverty traps are characterized by multiple herd size equilibrium such that losses that push a household below a critical threshold – typically 8–16 tropical livestock units (TLUs) – tend to tip a household into destitution (McPeak and Barrett, 2001; Lybbert *et al.*, 2004; Barrett *et al.*, 2006). Put differently, livestock losses that push households below this threshold appear irreversible in expectation, or to at least have very severe, long-term consequences.

Uninsured risk is the primary driver of such poverty traps among East African pastoralists (Santos and Barrett, 2006). Most livestock mortality is associated with severe drought. In the past 100 years, northern Kenya recorded 28 major droughts, four of which occurred in the last 10 years (Adow, 2008).

Pastoralist households commonly manage livestock mortality primarily through animal husbandry practices, in particular nomadic or transhumant migration in response to variability in forage and water availability. Traditionally, pastoralists herd losses are managed through social insurance arrangements that provide informal inter-household transfers of livestock, but these schemes cover a small component of loss (less than 10% of household herd losses on average), they do not include everyone and are generally perceived as in decline. In some isolated but increasing cases households can draw on cash savings and/or informal credit from family or friends to purchase animals to restock a herd after losses. But generally most livestock mortality risk remains uninsured.

Extensive research (Chantarat *et al.*, 2013) undertaken in Kenya's ASALs confirmed:

- Pastoralists' keen interest in an asset insurance product
- Their comprehension of the basic features of the index insurance product explained below
- Some modest willingness to pay for the product at a commercially viable premium – sufficient to support commercial implementation and market mediation.

3.1 Beneficiaries and demand side analysis

Pastoral households in rural northern Kenya and southern Ethiopia have little access to formal financial institutions like banks because their incomes are low and volatile and because they lack (acceptable) assets for collateral when trying to seek loans. Access to financial services, especially insurance, is therefore challenging, and local people tend to borrow from shops, relatives and neighbours or other informal lenders.

IBLI target beneficiaries are small and marginal cattle-herders in the rural areas of northern Kenya and southern Ethiopia who are dependent on pastoral herding of cattle, camel and shoats as a primary or secondary source of income. The project's initial target was to enrol 20,000 cattle-owners. These beneficiaries will be enrolling their livestock in an IBLI scheme supported by donors and implemented by NGOs. The IBLI scheme also has endorsement by the Government of Kenya through the National Drought Management Authority (NDMA). The product has been heavily subsidised for poorer households through donor funds.

3.2 Technical partners and research institutions

IBLI and related research on livestock insurance in the ASALs of Eastern Africa was designed and developed by ILRI in collaboration with partners in Cornell University, USAID-funded Broadening Access and Strengthening Input Market Systems (BASIS) research programme at the University of Wisconsin-Madison and Syracuse University. These partners have pursued a long-term, evidence-based research in Eastern Africa's ASALs on drought risk on livestock all aimed at designing, developing and implementing market-mediated livestock insurance products to protect herders from drought-related asset losses (Mude *et al.*, 2009). The products and lessons of this collaboration have been used for wider policy development in pastoral production systems across Eastern Africa.

3.3 Private sector institution roles

The active involvement of the private insurance companies with a presence at the point of product sales is required for the successful implementation of the IBLI scheme. They are to be associated with the work of premium sales, issuance of product information and claim settlement. Besides, being in touch with the cattle herders, they may also help in promoting and popularising the scheme.

During the IBLI pilot in Marsabit in 2010, UAP Insurance and Equity Bank Limited were the only insurance companies directly engaging with the IBLI target clients. However, other companies, most notably APA Insurance Company Limited and Takaful Insurance of Africa (TIA), have emerged to be the key players for the IBLI product.

3.4 Implementing partners: non-governmental organisations

IBLI has been greatly supported and implemented within various herder communities by NGOs operating in pastoral locations in northern Kenya and southern Ethiopia whose long-term programmes focus on livestock development and drought risk reduction. In Kenya, World Vision, Mercy Corps and their network of international and national NGOs have been leading implementation. Oromiya Insurance Company is the sole private sector player in southern Ethiopia. In order to bring about synergy between NGOs and private insurers under IBLI, ILRI has been engaged in long-term capacity development for all partners including coordination of sales and promotion activities. While the private sector is playing a key role in ensuring IBLI's long-term sustainability through continuous product improvement in collaboration with ILRI, IBLI's penetration requires making sure there is community acceptance and ownership for its long-term sustainability – a role implementing NGOs have successfully played.

3.5 Donors

Funding issues have been a major concern in Eastern Africa's ASALs given their history of marginalisation and neglect by governments of the region. It is not surprising therefore, that IBLI is funded and supported by a cross-section of donors in Kenya. The World Bank funded the initial pilot in Kenya but interest has since grown from other donors including the European Union (EU), the United Kingdom's Department for International Development (DFID) and Australia's Department of Foreign Affairs and Trade (DFAT), formerly Australian Agency for International Development (AusAID). It is important to note that these donors have previous and current programmes in pastoral development, most notably in the Hunger Safety Net Programme (HSNP), which is a cash transfer programme for vulnerable pastoral households in northern Kenya.

4. Adoption

Pastoral households in northern Kenya and southern Ethiopia are vulnerable to drought-related livelihood asset losses and have devised a variety of risk management strategies to reduce the impact of economic shocks and unexpected catastrophes. However, many of the strategies employed by pastoralists are inadequate and unreliable and often contribute to increased levels of vulnerability.

Apart from documenting IBLI as a good practice adequate to mitigate against pastoral livelihood asset losses as a result of drought shocks, this study also reviewed and evaluated the extent of IBLI adoption among pastoral herders in order to assess the feasibility of IBLI as a tool that adequately safeguards the target group from specific losses. This would encourage greater investment in high value livestock activities. Considering IBLI's promising market-oriented developments and interventions aimed to strengthen and expand market opportunities, previous evaluations of the product established that it is appropriate to design livestock insurance products to reduce the level of risk involved in livestock production.

As a result, our study surveyed 125 households representative of three counties in northern Kenya – Marsabit, Isiolo and Wajir. The survey reviewed a range of social and economic characteristics; analysed income sources and income activities; identified recurring risks related to pastoral herding; evaluated the level of financial literacy; and gauged the extent to which respondents would invest in IBLI. In relation to investment in IBLI, the indicators for the following three questions were scrutinized in detail:

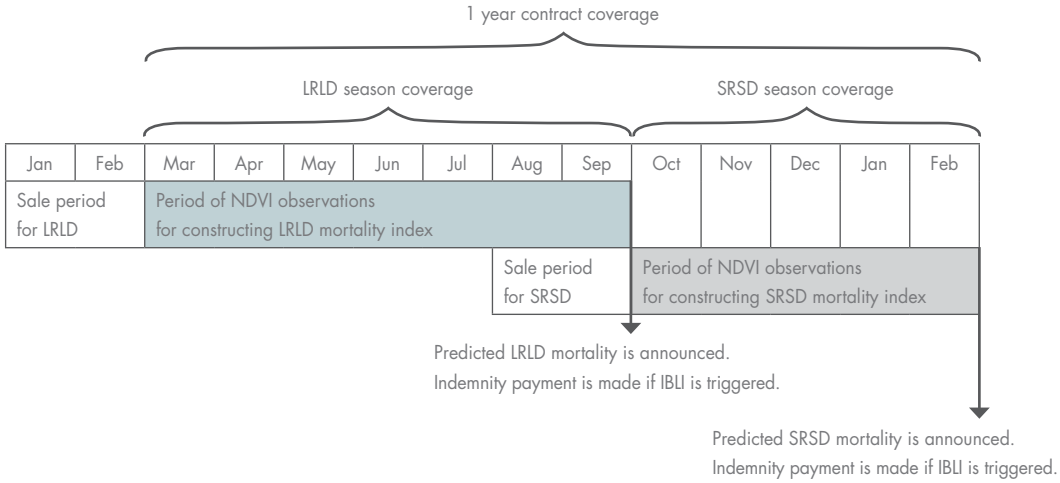
- What is the extent of implementation of IBLI in focus locations?
- What are the drivers of high levels of adoption by pastoralists?
- What is the trend of the adoption over time? And what accounts for this trend?

4.1 Adoption: implementation, outcomes and challenges

An overwhelming proportion of respondents indicated that livestock provided at least 50% of their income. In relation to livestock asset losses, drought was identified as the major cause of livestock mortality. Given these characteristics, strictly speaking, more than half of the respondents can potentially be IBLI policyholders. However, respondents appear receptive to taking insurance as an aversion to drought risk losses. IBLI came fourth in the preferred list of risk mitigation options.

Since the initial launch of sales in January of 2010, there have been regular sale periods. IBLI contracts, as a function of the risk being insured, can only be sold in the two month period preceding the rains to minimise any information content on the ensuing season for which risk is being purchased. In line with seasonal rainfall trends, sales for annual contracts are sold in January and February, before the start of the long rains in March, and in August and September before the short rains in October.

Figure 2: Temporal structure of the IBLI programme



Source: Mude (2009), ILRI: IBLI project document

Note: LRLD, long rain long drought; SRSD, short rain short drought

Table 2: IBLI sales data for northern Kenya

	Sales period	Contracts sold	No. of TLU covered	Value of live-stock insured in Ksh	Total value in US$
Marsabit	Jan/Feb 2010	1,975	5,965	1,193,080	46,602
	Jan/Feb 2011	638	1,309	261,700	9,842
	Aug/Sep 2011	508	835	167,100	10,858
	Aug/Sep 2012	216	411	82,220	3,546
	Jan/Feb 2013	214	457	81,240	3,288
	Aug/Sep 2013	117	146	34,933	2,669
	Jan/Feb 2014	113	42	11,573	1,089
	Aug/Sep 2014	288	159	42,666	3,423
Isiolo	Aug/Sep 2013	68	399	106,507	10,000
	Jan/Feb 2014	46	78	20,693	1,997
	Aug/Sep 2014	164	276	71,947	5,944

Wajir	Aug/Sep 2013	101	339	112,967	6,857
	Jan/Feb 2014	240	657	219,033	14,950
	Aug/Sep 2014	150	385	128,376	9,002

Note: TLU, tropical livestock unit

Source: Dror *et al.* (2015)

Table 3: IBLI payouts in Marsabit County

Payout period	Region	Total payout clientele	Payout value (US$)
October 2011	All five divisions of Marsabit County	638	25,397
March 2013	North Horr (Marsabit County)	69	672
March 2014	Marsabit County (North Horr and Loiyangalani)	73	879

Source: Dror *et al.* (2015)

4.2 Variations in IBLI uptake

While many have hoped that the IBLI could deliver financial services to the poor, in reality this has been very difficult for a number of reasons. IBLI uptake has fluctuated since inception and while some seasons have seen promising uptake of IBLI contracts, there has indeed been a general trajectory of declining sales since inception. Understanding these reasons is an important first step in identifying ways in which IBLI can be sustainably up-scaled to other areas.

IBLI is in many ways a special product. High level of adoption and uptake are a combination of various factors inherent in its features and modes of delivery. These features are explained below.

4.2.1 Transaction costs

First is the distribution challenge of conventional insurance: pastoral herders are often dispersed (most are engaged in mobile pastoralism) and simply reaching them (or having them come to an office to purchase insurance) often requires significant travel, which is costly and time-consuming. This problem is exacerbated by the fact that, because insurance is a complicated product, it requires individuals with relatively high levels of human capital to sell and service policies.

The cost of selling and underwriting insurance policies in northern Kenya has made it difficult to realistically price insurance and increase adoption. Index-based insurance innovations and the mobile phone infrastructure have decreased transaction costs and increased efficiency by making payout processing and premium collection easier and faster. As of June 2014, over 5,000 mobile phone-linked IBLI policies have been issued, with 5 of the 33 micro-insurance services identified by the Groupe Speciale Mobile Association (GSMA) achieving a scale of greater than 1 million policies. MicroEnsure in Ghana is cited as a particularly successful case, as it has developed policies to cover multiple types of risk (life, accident and hospital).

4.2.2 Financial literacy

Second, much of the pastoral population, especially the more mobile herders, lack a solid understanding of financial products and may therefore not recognise the value provided by financial services in general and IBLI in particular. Even in developed economies, low financial literacy has been identified as a barrier preventing the poor from accessing government-supported health insurance programmes. IBLI impact analysis reported that, in a sample of rural pastoral herders in northern Kenya, households with greater measured financial literacy were more likely to own insurance policies.

4.2.3 Risk aversion

A third reason why IBLI markets have not developed quickly is the existence of psychological or behavioural biases. Generally, pastoral herders make inconsistent decisions. Subsequent work has demonstrated the existence and importance of behavioural biases in relation to risks. With respect to insurance, perhaps the most important bias is 'risk aversion', a term used to describe the phenomenon whereby individuals are extremely averse to incurring cost against risks, relative to obtaining gains. Though one might hope that the presence of risk itself drives insurance purchasing behaviour, some evidence suggests that framing really matters. For example, herders purchasing a policy but not experiencing a loss might treat the insurance purchase decision as a 'loss'.

5. Impacts of IBLI

IBLI is expected to reduce livelihood vulnerability of pastoral herders directly, by insuring the livelihood assets against drought loss. However, the direct impacts are difficult to measure accurately in the short term and are subject to short-term variations. IBLI contracts and subsequent payouts are expected to raise household spending across a range of livestock services and to stabilise consumption of food and other essentials across seasons and years. IBLI contracts encourage investments in complementary income-earning activities or assets, which would further reduce poverty.

5.1 Variability of exposure

Before considering the overall impact of IBLI on pastoral household vulnerability to drought risks and associated losses, it is worth considering how different pastoral households benefit from IBLI, referred to as *variation in exposure* to the IBLI tool. Programme exposure varies for three reasons:

- Some pastoral households contain multiple IBLI policyholders
- Some pastoral households have benefitted from more payouts than others. This is sometimes due to differences in geographical readings in NDVI, but in some cases it is due to individual households buying policies for different species of livestock (e.g., cattle and camel, shoats and cattle)
- Differences in entry periods (first time buyers, returning buyers and multiple policy buyers).

It is expected that the IBLI would have a lower impact on households that have received less 'exposure', either as a result of living in a large household (where the effective per person value of the transfer is lower), having received fewer payment cycles, and/or because they hold just one (for a particular species of livestock) rather than two or more policies. These effects are taken into account as part of the impact heterogeneity analysis presented in this report.

Table 4: Proportion of households containing multiple policyholders and mean number of beneficiaries

Indicator	Isiolo	Marsabit	Wajir	All areas
Proportion of households containing more than one IBLI policyholder (%)	3.9	2.6	13.4	5.1
Mean number of policyholders per village (20 households)	1.04	1.03	1.13	1.05

5.2 IBLI impact on household vulnerability

Index-based insurance products are expected to reduce poverty directly by reducing household exposure to drought risk and inevitable income loss. However, incomes are difficult to measure accurately and are subject to short-term variations so surveys tend to estimate consumption instead; 'monthly household consumption expenditure per adult equivalent' is a standard proxy for household welfare.

Second, IBLI policyholders are expected to resort to 'panic' or 'distress' livestock asset sales – and where livestock losses actually occur, they have additional income in the form of an insurance payout. Some of the payout money might also be invested in income-earning activities or assets, which might further reduce poverty. At the same time, some of the transfers might be allocated to non-consumption transactions such as repaying debts, saving or providing informal support to vulnerable relatives.

Overall, given that it was not especially targeted at poor households but livestock-owning pastoral herders, the IBLI was making a small but significant contribution to household consumption, and especially to food consumption, which is more significant the poorer the household is to begin with. Given this, it would be expected that the IBLI should have an impact on consumption expenditure, especially for the poorest households, and thus in turn might have an impact on the poverty rates of beneficiaries.

IBLI might allow additional food to be purchased by households facing food deficits or hunger, and might also be invested in other income-generating activities. Household food security is therefore expected to improve, especially among poorer households, who typically spend higher proportions of their income on food than do wealthier households.

Many respondents referred to reduced distress sales and the resulting 'peace of mind' as the most fundamental impact the IBLI has had on their well-being, with 87% of IBLI policyholding households reporting that since buying an IBLI contract they have been able to reduce distress sales by almost 50%:

> "The IBLI has brought many benefits, the first being that it has satisfied the hunger in the community" [Male elder, Marsabit].

> "Drought is the worst thing in this world for a pastoralist, so this money has really saved us from drought" [focus group discussion with payout beneficiaries, Wajir].

Household distress sales are therefore expected to improve as a result of the programme. It is also expected that the transfers will enable beneficiary households to afford a wider range of livelihood assets. Provided there are no significant supply-side constraints in local livestock markets, a regular transfer of cash should substantially reduce food insecurity.

5.3 Livestock prices and drought-induced distress sales

IBLI contracts increase some level of livelihood security, which should provoke a response by traders and result in increased supplies to local markets, stabilising both supplies and prices over time. But these effects will be moderated if IBLI is extensive and has higher coverage, if markets are not fragmented and transactions costs facing traders are not very high, and if traders have confidence that a contract payout is guaranteed. There is also a risk that IBLI will have an inflationary effect – driving down prices in the absence of a demand response – especially if markets are weak. For the IBLI, which aims to provide a safety net against livelihood asset losses in case of a drought, monitoring these effects is especially important in relation to staple foods such as cereals.

5.4 Sustainable diversification of pastoral livelihoods

The main livelihood activity in the IBLI operational area is livestock rearing, but droughts as well as economic, social and political changes have disrupted pastoralist livelihoods and led to increasing reliance on other sources of income, such as casual labour and collecting bush products for sale. IBLI contracts are expected to give recipients the means to invest in their livelihood activities, or to engage in new and more productive livelihood activities, not only because the extra cash provides working capital but because insuring loss of main livelihood assets gives recipients the confidence to take moderate risks.

6. Validation

6.1 Adoption

The IBLI pilot in Marsabit and subsequent scale-ups in other parts of northern Kenya's ASALs have a high potential to be used for drought micro-insurance. The product is closer and much more directly related to drought-related livestock asset losses than any other coping mechanism currently practised by pastoralists in Kenya. Rainfall-based agricultural drought assessment methods, such as the water requirement satisfaction index (WRSI), are in fact ways of estimating the actual evapotranspiration from the rainfall data.

Table 5 describes the characteristics of IBLI beneficiaries. The table shows that the frequency of contract renewal has largely remained stable over time, implying that in most cases the households which purchased IBLI contracts at baseline have subsequent renewals after the expiry of the initial contract. It shows that IBLI policyholders predominantly renew their policies or buy additional policies (in around 90% of cases) and in only a very small number of cases did they neither renew nor buy additional policies (about 4%). In three-quarters of cases policyholders are women, and in just over half of all cases they are heads of household. The average age of policyholders is around 41 years.

Table 5: Characteristics of IBLI policyholders

Proportion that is...	Wajir	Marsabit	Isiolo
Primary policyholder	91.0	88.8	90.9
Secondary policyholder	14.8	15.6	12.4
Non-policy holder	2.7	4.4	4.5
Household head	52.5	51.9	55.1
Main provider	43.0	41.4	44.6
Female	74.6	75.3	75.0
Aged under 50	39.3	41.5	42.0
Mean age	38	39	40

Source: ARID Kenya impact assessment

Past pastoral risk mitigation projects were generally found to be quite unusually successful at achieving their intended outcomes. However, a model for connecting markets facilitation via the identification of a key-facilitating organisation (private business, civil society organisation or community-based) has yielded strikingly poor results in a number of instances. The problem has

been such models depend on the opportunistic selection of a facilitator identified as already having momentum in one or more product markets that offer potential for expansion to increased numbers of farmers.

There is a high level of awareness among most stakeholders of what the IBLI is and how it operates: *a mechanism mitigating drought risk*. ILRI and NGOs have a consistent understanding of the programme objectives (although these have never been fully articulated) based on their long and intimate involvement in the programme. On the other hand, the level of understanding of IBLI objectives and benefits among beneficiaries varies greatly, with some stakeholders holding certain misperceptions and misgivings. It is envisaged that the capacity building and other pastoral community engagement process, embarked upon in late 2014, will provide clarity by linking IBLI activities with a set of well-defined programme objectives.

The use of Village Insurance Promoters (VIPs) as both a measure of support from ILRI and the basis of reaching the remotest and most inaccessible areas is a long-standing and well-accepted practice. The evaluation found that, while there is general consistency between VIPs and the insurance company sales strategies, some significant discrepancies exist. It is evident that over time the sales narrative and providing critical information on the IBLI product have become increasingly complex with a deleterious effect on transparency. While sales strategies have worked throughout the recent years of a growing IBLI programme reach, it is apparent that the introduction of new players into the programme, a decline in subsidies budget, or a combination of both has rendered the current practice unsustainable. This has unfortunate, but unavoidable, implications for IBLI sustainability, in that subsidy allocations cannot be guaranteed year on year.

6.2 IBLI scale-up

The Marsabit pilot has been designed initially as one-year initiative, and was a first of its kind for Kenya and Africa. The pilots have been customised to herders' needs, local livestock and weather requirements, and discussed in-depth with all key stakeholders involved: donors, partner implementing organisations, insurance companies and international reinsurers. Demand for these products has been assessed through frequent community perceptions surveys in Marsabit pilot communities. A national product launch was planned for November/ December 2010, where the product was showcased to donors, government agencies, insurance practitioners, partner organisations and regulatory bodies.

This pilot was critical in determining the future landscape of micro-insurance in Kenya and the region at large. The pilot was successfully rolled out in northern Kenya all in Wajir and Isiolo counties, and made a sustainable business case for index-based livestock micro-insurance, while enhancing the livelihoods of the marginalised and under-served pastoralist herders. ILRI has been undertaking continuous research on product development as the future of these products lies in ensuring that they are efficient, built on streamlined and established delivery channels through microfinance institutions (MFIs), social protection schemes and NGOs, and serve as an affordable risk management tool for thousands of pastoralist herders across the region.

6.3 Harnessing cell phone technology

Kenya has been dubbed the mobile capital of the world with its innovative mobile money transfer services. Safaricom, the largest telecom operator in Kenya with 20 million subscribers as of July 2014, collaborated with commercial insurance company to launch the first mobile-insurance product in Kenya in 2013 where premiums and payouts can be done using a cell phone. The policy can be subscribed to (or unsubscribed) via a text message and the premium is deducted from the cell phone balance according to the chosen insurance plan. Upon activation, the subscriber gets a confirmation text message with a policy number and PIN code. A physical copy of the policy can also be printed either from the Safaricom or insurer's website using this information, or acquired from the nearest Safaricom service centre. Insurers can also initiate payouts via SMS, which is then processed by the insurers and claims are settled within three to five working days after submission of the required documents.

Although data on the programme were unavailable at the time of writing this report, the promise of technology in expanding insurance outreach is playing out in Kenya like in many countries across the world. In Kenya in particular, a few of the larger players are looking at entering the market through partnerships with microfinance providers, telecom companies and even utility companies. However, it is also clear that it will be the larger players that will be the first movers as existing information systems would need upgrading, extensive product testing would be required and even losses may need to be absorbed initially before economies of scale kick in and profits materialise.

6.4 Takaful IBLI: A *Sharia* compliant insurance product

Takaful IBLI by the Takaful Insurance Company Ltd (meaning no interest), a *Sharia* compliant insurance company set up in 2007 by a social entrepreneur, is an innovative model for providing index-based livestock insurance to pastoralist herders of Islamic faith in Kenya. Underwritten by Takaful Africa, the scheme focuses on herders of Islamic faith who for religious reasons do not accept conventional insurance due to beliefs related to interest and risk transfer in Islamic faith. The company currently offers IBLI products based on the target market, with more services in the pipeline.

6.5 Summary of IBLI innovation and good practices

While ILRI and insurance sector stakeholders continue to strive for innovation in products through pilots and subsequent scale-ups of IBLI, there is excitement surrounding how to deliver these products to the right people at the right price. Examples from Kenya include distribution of IBLI products as a policy printed on livestock drug cartons and through water kiosks, livestock water points and vendors that sell livestock index products in pastoralists' settlements.

Innovations in using cell phone technology to advance financial inclusion have also begun to create interest among IBLI stakeholders. Commercial insurers in Kenya are already harnessing the potential of the mobile money transfer, cell phones and chip cards to reduce costs and expand outreach. In summary notable examples of good practices in IBLI include:

- Provision of IBLI as a part of a 'bundle of services' that are required in the production and management of livestock. Here inputs such as livestock drugs, feed supplements, water access fees and branding rods (among many others) are bundled and sold together. The herders not only save money but also can find all they need under one roof. This has in turn given rise to what is now known as IBLI merchants.
- The use of low-cost cell phone payment systems and automated solar-powered weather stations. This makes use of local livestock drug stores, which use cell phone applications for paperless registration, premiums payments and payouts. Using this user friendly technology helps reduce transaction costs and enables real time monitoring of policies and payments.

IBLI experiences in Kenya reiterate that the success of index insurance products depends on the products being appropriate, accessible, affordable, responsive and simple. A look at the IBLI shows that a number of projects are under way to test ways to expand member benefits, reduce premiums and promote collaboration between the public and private sectors. For example, Mercy Corps in collaboration with Kenya Markets Trust (KMT) is testing a model that will allow pastoralist herders that are currently excluded to get discounts on IBLI premiums for routine livestock health consultations and drugs.

7. Drivers of success for IBLI

A critical look at IBLI's current standing vs. its potential suggests that while ILRI and its partners have done an admirable job in bringing stakeholders on board and executing pilots, and while strong demand and impact potential clearly exist, there remain substantial challenges to establishing viable index insurance for smallholder pastoral herders on a retail basis at scale. ILRI's IBLI initiative has, like many similar pilots, focused on retail index initiatives. This approach deflected attention from addressing some of the fundamental building blocks required for building a sustainable pastoral production system. These include, for example, improved access to veterinary drugs and services, water, ensuring reliable access to weather data, and a supportive regulatory framework. While these may have limited immediate or direct impact on pastoral poverty vulnerability reduction, it is unlikely that insurers can take existing retail pilots to scale without them.

The following section critically evaluates the success factors of the IBLI product in terms of growth of micro-insurance business premium earned, product approved and customer benefited. The future growth potential is also looked at, dependent on the ability of the key stakeholders to strengthen the industry around the *impact points* (availability, affordability, awareness, cost efficiency, credibility) and *enablers* (product and pricing, delivery process, consumer education) for growth and sustainability. While the impact points are critical for building a robust index insurance demand for livestock herders, the enablers are critical for propelling the growth of the industry in future.

7.1 Putting consumers at the heart of product design

The key advantages of index-based insurance relative to traditional insurance lie in the resolution of moral hazard and adverse selection problems, combined with cheap and fast settlement procedures and the ability to hedge local risk on global capital markets. The key disadvantages are basis risk, the relatively complex nature of the product and, in some cases, its cost. Flexibility in terms of product design, clearly indicates the loading (pricing) of insurance policies, or specifies exactly how the loading is calculated. For success it is essential that index-based insurance carefully outline the loading factor along with other important product design features, if possible, to facilitate comparisons across insurance products.

7.2 Liaison with local non-governmental organisations

IBLI project success lies in liaison with a range of local and international NGOs for project implementation. Cooperating with local NGOs, MFIs and other local organisations to market insurance products and administer payouts have the potential to simplify the implementation by tapping into the established trust of these organisations and lower premium costs. Organisations such as World Vision and Mercy Corps are trusted local organisations whose involvement has significant potential to increase take-up of these products. In addition, herders often have less than complete understanding of the products and explanations by representatives can help overcome informational barriers. Of course, the impact of cooperating with a local body will differ depending on the reputation of the organisation, the staff's knowledge of the products, their performance in marketing and providing information, and their success in implementing different aspects of the project. However, the results from the IBLI project indicates that the connection between prior knowledge of the NGO by potential customers of the insurance product and take-up seems to depend on the organisation in question, with both positive and negative effects reported.

7.3 Financial literacy: creating trust and perception of value

In most of the African countries (and particularly in Kenya) traditional insurers (both formal and informal) consider the pastoral herders as unprofitable compared with other opportunities. Additionally, the high cost of doing business in the largely marginalised northern Kenya imposes higher costs and makes it unprofitable for insurers to offer low premium products. The target segments for the IBLI product (pastoral herder households) pose distinctive challenges that need to be overcome before they will make a voluntary purchase of an insurance product. Among others, limited knowledge and low awareness levels mean that few low-income consumers are aware of the potential benefits of insurance. Pastoral herders in northern Kenya also show a disproportionately high distrust of insurers and insurance, requiring particular attention to product design, the sales process and claims payment. Financial literacy and awareness go hand in hand in creating a viable market and enable players to drive inclusion. Therefore, herder education being a public good can generate a win–win situation for all interested parties as it enhances the demand for IBLI and other financial products and reduces information asymmetries. It also promotes market transparency, competitiveness and efficiency.

7.4 Bundling of products

IBLI, in line with all micro-insurance products, is a low cost, high volume business, and unless costs are contained, micro-insurance cannot be scalable and sustainable over time. Developing a sustainable IBLI model for pastoral herders depends on balancing three competing objectives: *coverage* (meeting the needs of large numbers of low income consumers), *costs* (operating and transaction costs for the insurer) and *affordability* (price and transaction costs for clients). Price and product bundling with other essential livestock production inputs and services can be one such strategy to curb cost and enhance volume. The index insurance design should not only have provision for composite products (an insurer to provide life and non-life cover) but at the same time should encourage the market players by providing faster product and marketing approval. In the IBLI case implementing NGOs have tried bundling with a higher degree of success.

8. Potential for scaling up the case study

8.1 Scalability

The aim of IBLI from inception was to be able to provide low-cost, satellite-based drought and excessive precipitation insurance to herders in the larger east and Horn of Africa. Drought is the single largest cause of livestock mortality in the east and Horn of Africa, keeping herders stuck in vulnerability to climate variability and poverty. Index insurance is considered the key to escaping this poverty trap by improving the resilience of herders to drought risk losses. Insurance, in these marginalised areas, is also expected to unlock other financial services, allowing herders to invest in better inputs and reach much higher production and income.

8.2 Geographical scale

In 2015, the IBLI scheme, which was developed and piloted in Marsabit County in 2010, was replicated in another three northern Kenyan counties, namely Isiolo, Garissa and Wajir counties. Given the positive project results, ILRI has extended piloting to southern Ethiopia and is looking into further pilots in Somaliland and the larger Somalia.

8.3 Product and target group

The target group for the IBLI scheme consists of over 10 million pastoral and agro-pastoral herders in the east and Horn of Africa rangelands. Pastoral herders in the arid and semi-arid rangelands of Eastern Africa inhabit the four key regions of Eastern Africa: northern Kenya, east and southern Ethiopia, western Somalia and parts of Eritrea and Djibouti. The 10-year target is to reach more than 7 million households, of which 1.6 million are expected to purchase the product offered. The insurance addresses the needs of pastoral herders that earn most of their income and livelihood from livestock.

The main value proposition of the IBLI product for herders is that they can insure their livestock against losses as a result of drought risk. It thus protects a farmer against risks that seriously affect their ability to rebuild their herds after drought-related mortality. In effect, it is expected that IBLI modifies/unlocks the risk-aversion behaviour of herders towards livestock herding that prioritises optimisation of long-term productivity and drought-induced livestock loss.

ILRI had therefore designed a transaction fee structure for private insurance providers to enable the delivery of the IBLI product through the use of an expansive agent network. Some NGOs, most notably Mercy Corps, have thought through strategies for the IBLI product to be offered as part of a basket of services that are essential for livestock production including veterinary drugs and services. ILRI has also embarked on efforts to offer IBLI sales, information and payouts that run on a mobile financial services platform in a bid to bring increasing value content as a cost-effective value proposition to herders. By offering cost-effective transactions, private sector insurers are able to charge low prices thereby achieving transaction volume, which is one of the pillars of a viable business.

8.4 Delivery model and business innovation

Financial services and conventional livestock insurance in Africa is virtually non-existent. In Eastern Africa in particular, traditional insurance based on actual herd losses is too expensive. Innovation based on global research has led to insurance based on weather indices, which is often considered an inexpensive alternative, but there are insufficient weather data in Africa and new ones lack the measuring history required for drought risk assessment. Using NDVI technology provides a good alternative to accurately capture weather events and related livestock mortality for a specific location while monitoring continues in real time. Therefore, index-based insurance allows for easy scaling up, corresponding economies of scale, thus enabling affordable insurance propositions to small-scale farmers, including pastoral herders in Eastern Africa. With an anticipated livestock income of US$500 million per year in the region, the business becomes financially sustainable even with just a small percentage of insured herders reached after 10 years of the IBLI scheme.

Given this background, the innovative business delivery channels were necessary if pastoral herders were to be reached with IBLI products. These processes however need huge investment in basic infrastructure that might drive product prices beyond the reach of ordinary herder households. In the case of IBLI, donor-funded subsidies covered a large part of the initial product development and piloting investment and hence had considerably reduced the financial risk to insurers. This fact has, however, caused critics to question the rationale for donor funds subsidising the private sector.

It is important to note that from the start, IBLI was meant to advance public–private partnerships to expand financial service delivery to pastoral herders in

northern Kenya with an index insurance product that offers a basic safety net to protect them against drought-related perils. In partnership with local insurance companies and a network of their agents, the insurance product will be delivered to vulnerable herder households to mitigate drought-induced herd losses.

In combination with the main social protection programme for vulnerable pastoralist households, the insurance payout can be aligned with the HSNP to be made locally available through financial and infrastructure services of the HSNP. The project consortium will align to the rural finance strategy (RFS) as managed through Kenya's social protection systems. This allows for a systematic, synergetic approach to provide financial inclusion, promote investment for agriculture, broker sustainable production methods and provide risk transfer tools. The followed system approach creates a suitable legal, institutional and organisational framework.

8.5 Partnership

ILRI and its technical partners have done excellent work in establishing and sustaining extensive partnerships across the public and the private sectors on the basis of earlier research and development activities and during the inception and implementation of the IBLI scheme. The IBLI partnership is designed to be a mutually complementary and all-inclusive group.

8.6 IBLI in the real world: issues and challenges

The main challenges that IBLI has been facing are related to scale and costs. Low costs are considered a mandatory feature of index insurance and would have been enabled by prices that make the product affordable to ordinary pastoral herders. IBLI pilot and subsequent scale-ups have had a major cost challenge because most pastoral herders take insurance for a very small portion of their herds. A huge donor subsidy programme during the pilot stages also stands in the way of a solution to this problem. Initially heavily subsidised in the pilot stages, the true cost of IBLI contracts was a major deterrent and a key factor in the decline of uptake for most pastoral households in the later stages.

Reaching scale is not only a matter of increasing geographical coverage, but also requires adequate information processing and dissemination techniques without necessarily transferring costs to the herders. ILRI and its IBLI partners have built a variety of approaches to meet this challenge. These approaches include

agency-based sales points and use of Village Insurance Promoters (VIPs) engaged to provide IBLI product-related information especially to herders with no formal education. These are complemented by the work of implementing NGOs who are engaged in other complementary programmes.

For most herders who are without formal education, the complexities of IBLI are real and can potentially affect uptake if sufficient and proper information is not available. For these reasons it remains necessary to build trust among herders, insurers and other stakeholders. ILRI has already invested extensively in information provision on IBLI in forms and quantities suitable for use by illiterate herders, but more is still required in terms of local implementation of complementary drought monitoring and livestock mortality forecasting services. This includes publication of the related information through a variety of media, in order to support habituation to the IBLI product.

Pastoral household client feedback indicates that there still exist some misconceptions on the product features and the extent of coverage offered by the product among some of those who bought them. The design of improved extension tools and information delivery helps but what is clear is that one-shot efforts are not helpful and actually considered with suspicion. The community expects a continuous programme of education and information and would like access to agents of extension of IBLI. As a result IBLI is extending its partnerships among NGOs and government offices with a comparative advantage in extension to improve both the reach and access to information.

9. Conclusion

One of the most important conclusions of the review and documentation of IBLI is that there is a large evidence gap on the impact of IBLI on pastoral vulnerability in the long term. While presenting our conclusions we would like to emphasise that our results are based on a very small sample of pastoral households and our results and conclusions should be interpreted with this in mind. There is some evidence from IBLI implementation in northern Kenya that access to index-based livestock insurance decreases distress livestock sales during droughts. These findings are encouraging in terms of the potential impacts on livestock productivity but urgently need to be complemented by more research in more realistic settings.

Overall, the IBLI scheme has shown great potential and is generally considered key to drought-induced risk cover, poverty alleviation, economic development and climate adaptation by pastoral herders in northern Kenya. It is clear that in a region largely marginalised economically where traditional asset insurance is expensive and sensitive to adverse selection bias, IBLI holds great promise for improving the lives of people for whom drought incidences can mean the difference between survival and catastrophic loss of the most important livelihood assets – livestock.

In line with recent reviews, our documentation process inquiries have shown increasing uptake of IBLI across northern Kenyan counties in which the product is offered. By September 2015, over 5,000 insurance policies had been sold across the four counties in northern Kenya. The number of pastoral herders insured is expected to grow as IBLI partners' strategies for providing information alongside innovative product development gets into gear. IBLI uptake is also expected to increase as a result of public sector support and successful PPPs established thereof. In the following 10 years this number is expected to grow to over 20,000. Note prior to 2010, the Kenyan market for index-based livestock insurance was non-existent and traditional insurance served only some hundred thousand livestock farmers concentrated around the urban dairy sector.

IBLI's relative success in northern Kenya is however not without some inherent complexities and challenges. These challenges will require careful thought and management to be overcome and successfully mitigated. At this point IBLI's potential for large-scale drought risk mitigation is still more on paper than in practice. While the product has been successfully developed and piloted, validated and tested in a large number of pilot projects in northern Kenya, the

target of 20,000 pastoral herders being insured at the end of 2015 was not met and is unlikely to be surpassed at all. The number of herders re-taking the product has also been decreasing as the effects of miss-selling and misinformation continue to mismatch herders' expectations.

To be successful beyond the current uptake and use, all stakeholders need to invest in the infrastructure of delivering IBLI products, consistent and innovative product development and reliable delivery channels complete with information provision to make herders understand and want to use the product. Preliminary impact assessment on product suitability and sustainability for drought risk mitigation have provided promising results that IBLI can potentially provide public institutions and local governments with tools to make better choices about poverty reduction and drought risk management. However, the current levels of PPP on IBLI delivery indicate that a lot of effort and resources need to be invested in training and in educating key players on the concept of index insurance for benefits to be realised.

On the other hand private insurers should step up efforts on product development as well as strengthening relationships with existing delivery channels. These steps will lay the groundwork for an efficient product, functioning delivery and communication channels for an informed pastoral clientele. These have been addressed by providing training to key stakeholders and customised information (on poster, brochures, policy and summary briefs) explaining the index to herders and other stakeholders, as well as by getting media attention for the products.

Strategic cooperation with local insurance sector players, other financial services providers and livestock input providers have helped to package the insurance product in a logical and attractive way. In addition training and information courses and materials could be developed in cooperation with NGOs and extension service providers. In this study, IBLI coverage has a higher impact on herders with better understanding of the insurance product and prior experience with similar products. More risk-averse herders and those who face more risky investment prospects also show higher impacts of access to insurance. This suggests that efforts to increase understanding of the insurance products through various inputs and techniques available are important. In this connection, the impact of marketing and product design factors on take-up rates are also analysed. Most marketing strategies analysed in IBLI implementation locations included in this review have insignificant effects on take-up rates. However, promotional materials that focus on group and family responsibilities and the

vulnerability of the herders are shown to have some impact on take-up. In terms of product design, evidence from IBLI in northern Kenya indicates that there may be interest in group-based insurance policies. ILRI is already considering introducing macro and meso level products for county governments in Kenya.

This documentation process therefore concludes that the index-based livestock insurance currently implemented by ILRI in northern Kenya has shown great potential in providing an excellent alternative for mitigating drought-induced livestock asset losses for vulnerable pastoralist households. The product is uniform across spatial and temporal in its design and implementation, objective, validated and sufficient demand to make it commercially viable, which allows for easy scaling up, while keeping costs down.

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