



Feasibility report on the agricultural insurance sector in Burkina Faso

Prepared for UNDP Burkina Faso



About Pula Advisors

Pula Advisors AG (Pula) is an insurance and technology company that designs and delivers comprehensive solutions to protect and improve the livelihoods of smallholder farmers. This includes agricultural insurance and digital services to help smallholder farmers and rural clients endure climate risks, improve their farming practices, and boost their profits. In addition, Pula provides consulting and advisory services for agricultural insurance, climate risk and disaster risk management. For more information, please visit Pula's website at www.pula-advisors.com.

Pula was contracted by the United Nations Development Programme (UNDP) to carry out this feasibility study on possible agricultural insurance solutions for smallholder farmers in Burkina Faso.

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Acronyms and abbreviations

AEZ	Agro-ecological zone
AICB	<i>Association Interprofessionnelle du Coton du Burkina Faso</i>
APSAB	<i>Association Professionnelle des Sociétés d'Assurances du Burkina</i>
ARC	African Risk Capacity
AYII	Area yield index insurance
CCE	Crop-cutting experiment
CHIRPS	Climate Hazards Group InfraRed Precipitation with Station data
CIMA	<i>Conférence Interafricaine des Marchés d'Assurance</i>
CNAAS	<i>Compagnie Nationale d'Assurance Agricole du Sénégal</i>
FAO	Food and Agricultural Organisation
FEPA-B	<i>Fédération des Professionnels Agricoles du Burkina</i>
FISP	Farmer Input Support Programme
GDP	Gross Domestic Product
HII	Hybrid index insurance
INSD	<i>Institut National de la Statistique et de la Démographie</i>
MPCI	Multi-peril index insurance
Mt/ha	Metric tonnes per hectare
NGO	Non-governmental organisation
SOFITEX	<i>Société Burkinabè des Fibres Textiles</i>
SONAR	<i>Société Nationale d'Assurances et de Réassurances</i>
TSI	Total sum insured
UNDP	United Nations Development Programme
WFP	World Food Programme
WII	Weather index insurance
WMO	World Meteorological Organisation
XOF	West African XOF Franc

1. Introduction

This project's aims were to assess the agricultural insurance landscape in Burkina Faso, provide examples of different index insurance products for specific crops, and carry out product stress tests. Assessments were carried out through field-research in Burkina Faso to understand previous and existing agricultural insurance initiatives, as well as stakeholder interviews and literature reviews. This report brings together the findings from the study and explores potential agricultural insurance solutions for smallholder farmers in Burkina Faso.

This study provides an overview on the agricultural sector in Burkina Faso by looking at crop production trends, the agricultural risk profile of the country and the challenges that smallholder farmers currently face. The project focussed on crops that are typically grown by farmers in Burkina Faso: cotton, maize, millet, sorghum, and rice. The study takes into account the policy, regulatory and data environments for agriculture and insurance.

These background sections serve as a precursor to the current landscape of agricultural insurance in Burkina Faso. This section highlights the types of insurance available, the main providers in the market and the challenges to scale that they have faced. The study then uses these challenges to demonstrate the opportunities for growth in the market, by showing the total market size, proposing a product to design and launch, and outlining distribution options.

Finally, the study includes recommendations on product development and a roadmap for pilot projects for climate risk insurance. The objective of these pilots would be to lead to an appropriate agricultural insurance product for smallholder farmers Burkina Faso. This product will be expected to improve smallholder farmers' resilience by helping to mitigate the risk of income losses from catastrophic events that can damage crops.

The study has identified partners that are likely to be key for the successful development and implementation of agricultural insurance in Burkina Faso. This was done through interviews with relevant organisations in the insurance sector. While the research looked at the potential for insurance in the entire country, the study focussed on the two regions of importance identified by the UNDP: Boucle du Mouhoun and Sahel.

The findings and recommendations from this study can be used to decide on how best to design, develop and implement an insurance product in Burkina Faso. The study should also be considered when developing insurance capacity building programmes with smallholder farmers or other actors required to form an insurance value chain in the country. In addition, the study can be used as a knowledge base beyond practitioners in the insurance, climate resilience, agricultural, development and financial sectors.

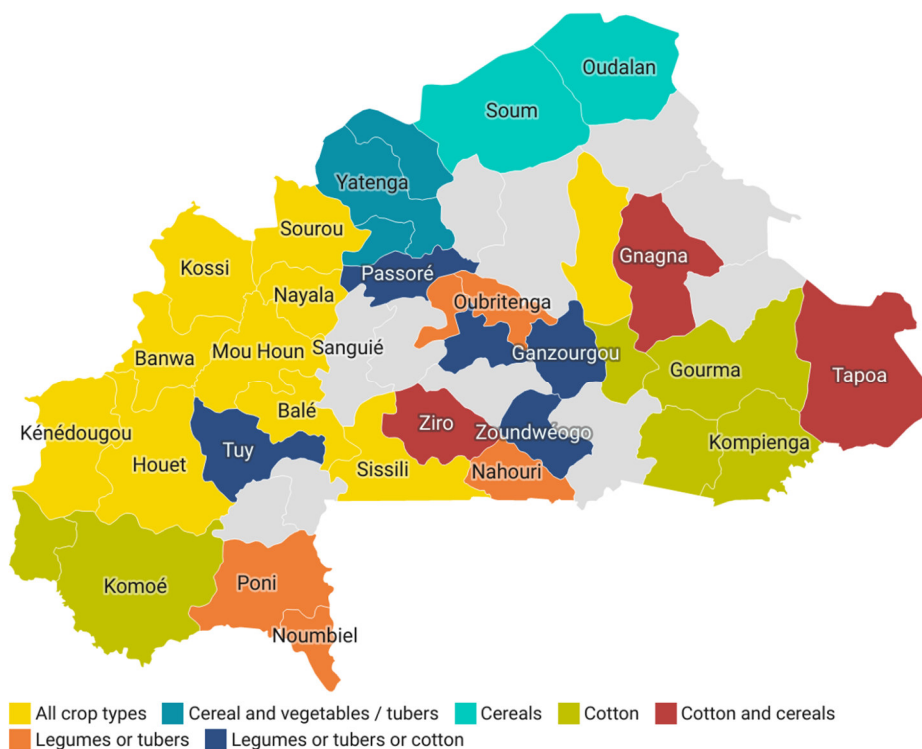
2. Agriculture in Burkina Faso

2.1 Overview of crops and production

Agriculture is important to Burkina Faso's economy. The sector employs around 80 percent of the workforce¹ and contributed around 18.4 percent to the country's total gross domestic product (GDP) in 2020. Worldwide, the average contribution of the agricultural sector to GDP is 4.3 percent.² Most farmers in Burkina Faso have small-scale holdings less than five hectares. Women account for over half of the agricultural workforce and produce more than two-thirds of the food consumed in the country.

The main food crops grown in Burkina Faso are sorghum, millet, cowpea, and maize. Other important crops include cotton, sesame, nuts and fruits. Food crops are grown on around 80 percent of the country's total arable land.³ Millet dominates in the dry north, while maize is grown in the more humid southern regions (figure 1).

Figure 1: Crop development by province in Burkina Faso⁴



¹ Oxfam, (2018). [Agricultural Insurance in Burkina Faso: Challenges and perspectives.](#)

² [Statista - Burkina Faso: Distribution of gross domestic product \(GDP\) across economic sectors from 2010 to 2020](#)

³ [Global Yield Gap Atlas](#)

⁴ Kambire HW, Djenontin INS, Kaboré A, Djoudi H, Balinga MPB, Zida M, Assembe-Mvondo S and Brockhaus M. 2016. The Context of REDD+ and adaptation to climate change in Burkina Faso: Drivers, agents and institutions. Occasional Paper 158. Bogor, Indonesia: CIFOR.

Production levels for sorghum, maize and most other crops were above average in 2020 due to favourable weather conditions. However, estimated yields for 2021 were expected to be lower than average for sorghum, maize and millet (figure 2).

Figure 2: Cereal production in Burkina Faso, 2020 and 2021⁵

Crop	Production levels (000 tonnes)			Change - 2020-2021
	2016-20 average	2020	2021 estimate	
Sorghum	1,734	1,840	1,617	-12.1
Maize	1,693	1,920	1,913	-0.4
Millet	970	957	718	-25.0
Others	388	462	462	0.0
Total	4,786	5,179	4,709	-9.1

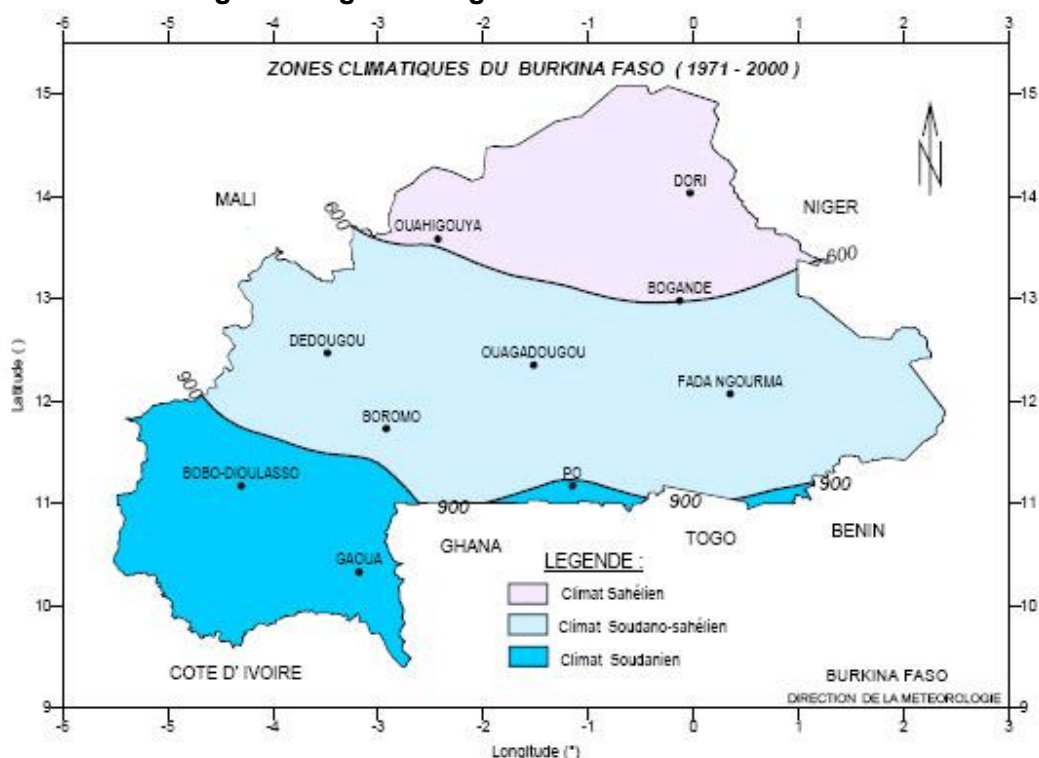
In the southern, western, and central areas of the country, the main producing regions, erratic rainfall, and pest attacks led to lower yields in 2021. In the northern and eastern areas, production levels declined due to increasing insecurity. This limited farmers' access to agricultural inputs and labour, forcing many rural households to abandon their crops in the fields.

2.2 The agricultural risk profile of Burkina Faso

Agricultural potential is determined by soil, altitude, rainfall and temperature conditions. This combination can determine which regions have the optimal climate for particular crops to be grown in. The volatility of these variables can determine the agricultural risk profile too. Burkina Faso has three broad climatic zones (figure 3): the Sahelian zone in the north, the North-Sudanian zone in the centre and the South-Sudanian zone in the south of the country.

⁵ [FAO/GIEWS Country Cereal Balance Sheet for Burkina Faso](#)

Figure 3: Agro-ecological zones of Burkina Faso⁶



The average rainfall level ranges from 400 to 900 millimetres, with 50-70 rainy days annually. There is significant temporal and spatial variation in the rainfall. The northern zone has a predictably longer dry season, while the two Sudanian zones typically see more rainfall than the Sahelian zone (figure 4).

Figure 4: Mean annual rainfall across Burkina Faso's climatic zones⁷

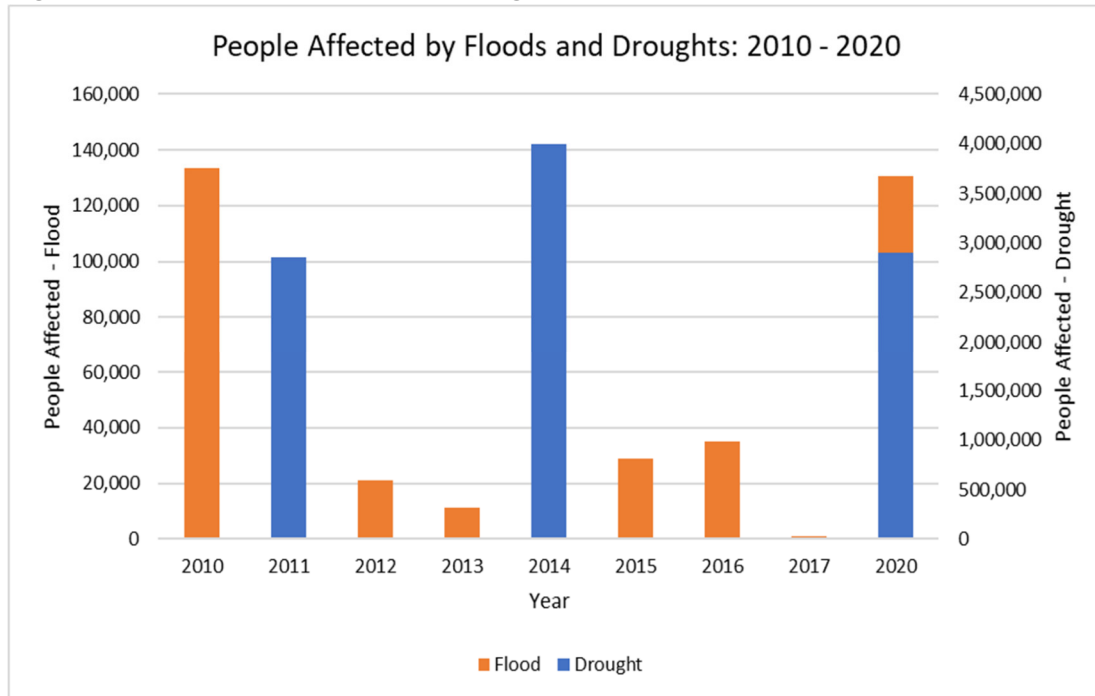
Zone	Mean annual rainfall (mm)	Duration of wet season	Wet season months
Sahelian	200 - 600	3 - 5 months	July - September
North Sudanian	600 - 900	4 - 5 months	June - October
South Sudanian	900 - 1,200	6 - 7 months	May - October

The monthly mean temperature ranges between 25.8° C and 29.6° C, with the Sahelian zone experiencing the highest temperature at around 45° C. Aside from rising temperatures, Burkina Faso has experienced droughts, floods, heatwaves, windstorms, and insect infestations. Between 2010 and 2020, floods and droughts were found to be the most common hazards (figure 5).

⁶ Diarra, A., Barbier, B., Zongo, B. & Yacouba, H. (2017). [Impact of climate change on cotton production in Burkina Faso.](#)

⁷ Oxfam, (2018). [Agricultural Insurance in Burkina Faso: Challenges and perspectives.](#)

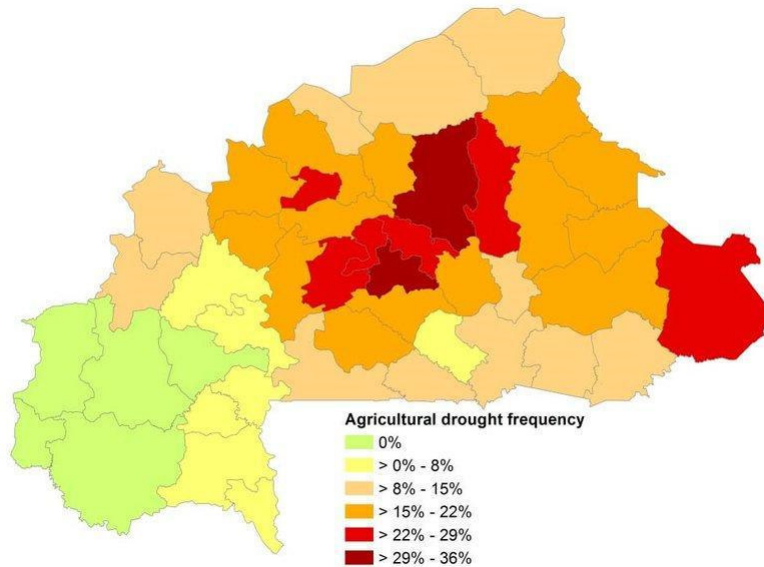
Figure 5: Incidence of flood and drought between 2010 and 2020 in Burkina Faso⁸



The frequent floods and droughts in Burkina Faso is a common occurrence across the Sahel, making it a high-risk agro-climatic environment. For smallholder farmers involved in low-intensity production, farming in the Sahel subjects them to the unpredictability of severe climatic shocks occurring. While this increases the types of risks they would be exposed to, increasing bouts of drought and floods can compound their potential production losses (figure 6).

⁸ World Bank Climate Change Knowledge Portal - [Burkina Faso](#).

Figure 6: Drought frequency map of Burkina Faso, 2001-2014⁹



2.3 Current challenges faced by farmers

Burkina Faso has one main annual agricultural season. Based on the available wet seasons, most crops are sown at a similar time. However, the harvesting period varies by crop type (figure 7).

Figure 7: Crop calendar by crop in Burkina Faso¹⁰

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cotton				Blue	Blue	Blue	Light Green	Dark Green	Dark Green	Dark Green	Dark Green	Dark Green
Maize					Blue	Blue	Light Green	Dark Green	Dark Green	Dark Green	Dark Green	Light Green
Millet					Blue	Blue	Blue	Light Green	Light Green	Dark Green	Dark Green	Dark Green
Rice (rainfed)					Blue	Blue	Light Green	Light Green	Dark Green	Dark Green	Dark Green	Light Green
Sorghum					Blue	Blue	Blue	Light Green	Light Green	Dark Green	Dark Green	Dark Green

Legend



⁹ Dembélé, Moctar & Zwart, Sander. (2016). An Assessment Of Agricultural Drought Events In Burkina Faso Between 2001 And 2014 - A spatially explicit analysis using remotely sensed data of vegetation, surface temperature and precipitation. 10.13140/RG.2.2.34319.18089.

¹⁰ [FAO/GIEWS Country Cereal Balance Sheet for Burkina Faso](#)

Agricultural productivity is low in Burkina Faso compared to other Sub-Saharan African countries. Most of the rural population relies on small-scale, rain-fed subsistence farming for sustenance and income. Much of this farming relies on small amounts of nutrient inputs. Climate change has led to increasingly erratic rainfalls, with shorter rainy seasons that occur later than expected, and a higher frequency of extreme weather events - such as floods, which can wash away fragile seedlings, and droughts, which can prevent germination.

Given the country's agro-ecological make-up, climatic risks represent the most prominent threat to farmers in Burkina Faso (figure 8). These include excessive rainfall, leading to flooding. In some of the most productive areas of the country, this risk co-exists with drought. Farmers are also prone to post-harvest losses and damage caused by animals and pests.

Figure 8: Summary of people affected by natural disasters in Burkina Faso 1972–2013¹¹

Years	Drought	Floods	Pest attacks	Total affected
1970-1979	1,742,000			1,742,000
19890-1989	1,450,000			1,450,000
1990-1999	3,510,692	68,000		3,578,692
2000-2009	106,556	191,742	1,622,000	1,920,298
2010-2019	3,500,000	153,096		3,653,096

Note: A complete version of this table has been included in Appendix 1.

Over time, while drought and floods have continued to pose a significant risk to smallholder farmers, other agricultural risks have emerged. For instance, more crops are now affected by pests and diseases across much of Sub-Saharan Africa. Over one million farmers in Burkina Faso were affected by locust infestations between 2000 and 2009. This is not isolated to West Africa; farmers in East and Central Africa have suffered from locust infestations in recent years too.

The risks of climate change coupled with overgrazing, soil degradation and deforestation, leave rural households and their livelihoods at risk. In response to these risks, many smallholder farmers sell off their assets given the scarcity of any suitable or adequate risk management tools, such as insurance. This trend stands to put smallholder farmers at a further disadvantage.

Despite the varying climate, much of Burkina Faso's population continues to rely on agriculture – either for sustenance or for economic productivity. Improvements in the sector, such as access to better inputs (e.g., drought-resistant seeds) and credit, have reduced the threat of recurring famine. However, more than 3.5 million people - around 20 percent of the population - remain food insecure.¹²

Burkina Faso occupies the western Sahel region – along with Mali, Mauritania and Chad – an area that is consistently at risk of severe drought. This often leads farmers to focus on food

¹¹ Oxfam, (2018). [Agricultural Insurance in Burkina Faso: Challenges and perspectives](#).

¹² USAID - [Agriculture and Food Security in Burkina Faso](#)

crops, to sustain themselves and their families, preventing them from growing profitable cash crops such as cotton and sesame.¹³ The threat of a severe drought means that cash crops can easily be destroyed, leaving farmers to grow basic crops, such as millet and sorghum. While these crops would enable farmers to sustain themselves, they offer lower revenue potential.

Among the crops covered in this study, drought is known to present a significant risk to maize; sorghum and millet are seen as relatively drought-resistant (figure 9). Flooding poses a significant risk too, particularly to rainfed rice. For all crops, excessive warm or wet weather can lead to an increase in plant diseases or pest infestations. Cotton and sorghum are more susceptible than other crops to damage caused by pests and diseases.

Figure 9: Climate sensitivities of the main crops in Burkina Faso¹⁴

	Drought	Floods	Pests and diseases
Cotton	High risk	Medium risk	High risk
Maize	High risk	Medium risk	Medium risk
Millet	Medium risk	Medium risk	Medium risk
Rice (rainfed)	High risk	High risk	High risk
Sorghum	Medium risk	Medium risk	Medium risk

Cotton is one of the most profitable but riskiest cash crops.¹⁵ Growing cotton is both labour-intensive and requires more inputs than other crops. Beyond this, cotton is exposed to fluctuations in international market prices, beyond farmers control, which directly affect farmer income. Because of this and the risk of unpredictable weather, smallholder farmers often limit how much cotton they plant. Many are likely to diversify their crops, and therefore the risks their respective crops are exposed to.

¹³ USAID, (2018). [Index Insurance Has Big Returns for Small-scale Cotton Farmers and Local Economies in West Africa.](#)

¹⁴ USAID - [Climate Risks in Food for Peace Geographies: Burkina Faso](#)

¹⁵ Stoeffler, Q., Gelade, W., Guirkinger, C., and Carter, M. (2018). [Agricultural Index Insurance Has Big Impacts for Farmers in Burkina Faso.](#)

3. Agriculture policy, regulation and data

3.1 Government policy towards agriculture and insurance

Government investment in agriculture is focussed on improving rice and cotton production through irrigation and subsidies. Rice producers can access fixed inputs, while cotton producers can access variable inputs. The bulk of the government's expenditure on agricultural infrastructure (73 percent) goes towards irrigation, as a means of improving water management.¹⁶

Despite their importance to smallholder resilience, sorghum and maize receive little government support. Prices for both crops are volatile, due to annual supply and demand mismatches. This is further compounded by the impact of climatic hazards and an ineffective market information system for both crops.

Given its export revenue potential, the cotton value chain is highly subsidised. This includes a premium subsidy for crop insurance for products distributed through government insurer *Société Nationale d'Assurances et de Réassurances* (SONAR) IARD. However, government policy on supporting cotton risks undermines diversification and investment in food crop value chains. For example, the sesame value chain receives virtually no government budget support, despite contributing 20 percent to the country's agricultural exports.

Although there is no public agriculture insurance policy in Burkina Faso, the government has so far expressed a preference for weather index insurance. The Council of Ministers has recognised WII as a tool to provide insurance for smallholder farmers¹⁷. Following the strategic partnership announced in 2020 between MAMDA Re and SONAR, WII products offered by SONAR were offered with a 50 percent subsidy. As of 2022, this subsidy does not extend to other products offered in the market.

Key measures for supporting the uptake of agriculture insurance such as i) making insurance a compulsory aspect of any agriculture loans, or ensuring that any agricultural productive investment by government includes agriculture insurance are not yet in place. Similarly there is not yet an industry wide directive in place with regard to insurance premium subsidies. Such initiatives have been key in driving uptake in other markets.

¹⁶ FAO MAFAP Country Analysis - [Burkina Faso](#)

¹⁷ Interviews with key informants

3.2 Agricultural insurance regulatory landscape

Who is the regulator?

The insurance market in Burkina Faso is regulated by the *Direction des Assurances*, within the *Direction Générale du Trésor et de la Comptabilité Publique*. The *Direction* is responsible for overseeing consumer protection, as well as market supervision. Additional responsibilities include oversight of reinsurance arrangements of insurance companies. Insurers in Burkina Faso are obliged to make compulsory reinsurance cessions to CICA Re and Africa Re, two regional reinsurance companies. Any new product in the market needs to be approved by the regulator and needs to comply with local as well as CIMA regulation.

Most key informants felt that the regulator needs improved technical capacity and a better understanding of microinsurance. Poor technical knowledge and inexperience with microinsurance has contributed to several agricultural insurance schemes simply not launching at all. Some informants were encouraged that the government was keen to support the sector through its limited subsidy programme. However, most felt the regulator could provide additional impetus by understanding best practices on agricultural insurance from other countries in Sub-Saharan Africa.

Current regulatory landscape

The *Direction* is keen for different government ministries and agencies to work together regarding agricultural insurance schemes. Currently, the government's existing scheme is run by the Ministry of Agriculture. With the Ministry of the Environment keen to develop a product with the UNDP, the regulator prefers a one-institution approach. This can lead to better and targeted coverage of the country in a coordinated manner, rather than overlapping and even competing in certain regions.

The regulator remains keen to form an agricultural insurance company, such as Senegal's *Compagnie Nationale d'Assurance Agricole du Sénégal* (CNAAS). This would allow the government to drive all agricultural insurance initiatives through a single focal point, and crowd in the private sector to grow insurance adoption among smallholder farmers. However, the regulator and government should consider market demand for such an initiative - especially considering private sector players trying to offer agricultural insurance.

Insurance premium tax on agricultural insurance

Insurance premium tax in Burkina Faso is set at 12 percent for certain non-life products, including agricultural insurance. Compared to other business lines, this is the second highest rate of insurance tax. Only property is subject to a higher insurance premium tax of 20 percent.¹⁸

The tax impact on insurance premiums is likely to further weaken demand for insurance from farmers and aggregators working with farmers. Most stakeholders cited this tax as a significant

¹⁸ Oxfam, (2018). [Agricultural Insurance in Burkina Faso: Challenges and perspectives](#).

barrier to uptake, especially because of the socio-economic impact that agricultural insurance can have. In comparison, life insurance is not subject to insurance premium tax due to its impact across the population.

Insurance associations in the country

The *Association Professionnelle des Sociétés d'Assurances du Burkina* (APSAB) is the local insurance association. APSAB promotes the interests of the insurance market, collects statistics, runs education programmes on insurance, and represents the market to the government. A similar regional body - the African Insurers' Federation (*Fédération des Sociétés d'Assurances de Droit National Africaines* (FANAF)) - represents the interests of insurers. It also promotes training, research and regional cooperation.

Co-insurance pools

Local insurance providers have long considered the creation of a co-insurance pool, where insurers can act collectively for a particular insurance need. Currently, there are a limited number of pools in Burkina Faso. One such example is the insurance pool behind *Société de transport en commun*, the bus company. A co-insurance pool remains an option for agricultural insurance, particularly as a means of sharing the risk involved. So far, none have been developed - though Coris Assurance remains keen among the insurers interviewed for this approach. In other countries, the formation of such a pool has had the equivalent effect as the formation of a national agriculture insurance company, albeit without weakening private sector investments.

3.3 The data environment in Burkina Faso

Data collection within Burkina Faso is inconsistent. The cotton sector, through its associations, carries out its own crop-cutting experiments. This data and its methodology is privately held. Weather index providers primarily rely on rainfall data from the national meteorological service. However, many have increasingly switched to using public or privately held remote sensing data for precipitation and vegetation.

Weather and soil data is often publicly available through organisations that use public remote-sensing tools. Examples include CHIRPS (which provides over 30 years of rainfall estimates on a 5x5 km grid) and AFSys (which provides soil data available on a 250 metre grid). Such publicly available data can drastically reduce the need for weather station data to price insurance premiums.

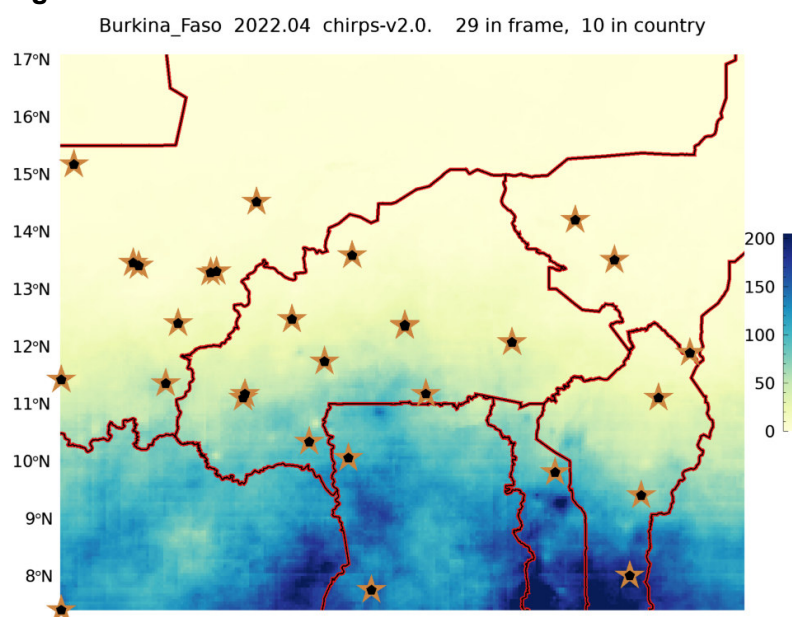
Designing, developing and implementing index insurance products requires several types of data points (figure 10).

Figure 10: Data required for index insurance products and their sources

Data type	Typical sources
Yield and productivity data	Ministry of Agriculture, farmer associations, private agribusinesses, the national statistics agency, international non-governmental organisations (NGOs) and development organisations, FAOStat, <i>Institut National de la Statistique et de la Démographie</i> (INSD), and cotton associations in Burkina Faso such as Sofitex or the Union of Cooperatives (UNPC-B).
Weather data	Satellite datasets such as ARC2, TAMSAT, CHIRPS, Sentinel2, EARS and the national meteorological service - using manual or telemetric (automatic) weather stations.
Soil data	Ministry of Agriculture, the national disaster risk agency, Earth Observation Facility, the Food and Agriculture Organisation (FAO), the Famine Early Warning Systems Network (FEWSNET), and the Global Facility for Disaster Reduction and Recovery (GFDRR).
Catastrophe incidence data	

Ground-level data from weather stations does not cover the entire country. According to CHIRPS, which pulls daily automated data accredited by the World Meteorological Organisation (WMO), there are only ten WMO-accredited weather stations that regularly report data in Burkina Faso (figure 11).

Figure 11 Distribution of weather stations in Burkina Faso¹⁹



¹⁹ [CHIRPS country data - Burkina Faso](#)

4. Agricultural insurance in Burkina Faso

4.1 Introduction to agricultural insurance

There are broadly two different types of agricultural insurance products: (1) those based on an observed loss on the insured farm, and (2) those based on an agreed proxy measure of the loss. The latter do not necessarily reflect the (exact) loss on insured farmers' fields. The former are referred to as 'indemnity based' products and go under trade names such as 'multi-peril crop insurance' (MPCI) or named peril crop insurance. The latter are generally referred to as 'parametric' or 'index based' insurance products, e.g., weather index insurance and area yield index insurance (figure 12).

Figure 12: Types of agricultural insurance products in Burkina Faso²⁰

Insurance type	Average farm size (hectares)	Risks covered	Crops covered	Loss assessment method	Key advantage	Offered by
WII	Any	Drought, floods, evapotranspiration, germination failure.	Non-irrigated crops and livestock.	Satellite or remote sensing data or weather stations.	Quick pay-outs - within two weeks. ²¹	Inclusive Guarantee, Yelen Assurance, SONAR IARD
AYII	Any	Floods, droughts, pests and diseases.	All crops.	Crop-cutting experiments.	Broad cover and pay-outs within a month.	Inclusive Guarantee, Coris Assurance
MPCI	Over 250	All risks.	All crops and livestock.	Loss assessment visit.	Claims settled on an individual basis.	NA

Multi-peril index insurance

MPCI is widely used in developed and emerging markets, such as Europe, America and Asia, where land sizes and premium volumes are larger. This insurance product can cover a range of risks, such as hail, drought, flood, disease and pests. Operationally, the product relies on regular season assessments by independent loss assessors. These assessments are expensive, so farm sizes are expected to be at least 250 hectares for the product to offer value for money to the farmer (figure 13).

Figure 13: Characteristics of different types of agricultural insurance²²

²⁰ Pula Advisors

²¹ Pay-outs are often made via mobile money. In some limited cases, pay-outs can be made in the form of inputs or input vouchers.

²² Raithatha, R. & Priebe, J. (2020). [Agricultural insurance for smallholder farmers Digital innovations for scale](#). GSMA.

	Set-up costs	Operational costs	Transaction costs	Claims settlement speed	Moral hazard and adverse selection	Basis risk	Actuarial difficulty
MPCI	Medium	High	High	Slow	High	Low	Low
AYII	Low	Medium	Medium	Medium	Low	Low	Medium
WII	High	Low	Low	Fast	Low	High	High

Most farmers in Burkina Faso are smallholder farmers with an average farm size that does not exceed three hectares. This product would not be suitable for smallholder farmers in the country as the unit economics would be affected by high operational costs involved.

Weather index insurance

Weather index insurance (WII) has been commercialised over the last 15 years, with multiple pilots implemented around the world. The risk covered by index insurance needs to be closely related to the proxy being measured. For instance, drought can be measured by a lack of rainfall for a defined period or over a long period. This is likely to occur homogeneously over a large area, affecting many farmers simultaneously. Drought is a suitable risk for index insurance to cover: it is the most frequently used 'weather index insurance' product type.

Weather indices may be measured using weather stations but are increasingly managed through remote-sensing data. Several products in Sub-Saharan Africa and Asia rely on remote-sensing data. This overcomes the need for an expensive weather station network.

Indices are created based on a thorough analytical process. Based on the water requirements of a crop at each growing stage, an algorithm is created to capture the cases in which insufficient rainfall would cause crop damage or loss. If the rainfall measured at the end of the season is below the required 'trigger' value, farmers in the insured area will receive a pay-out. The pay-out amount is calculated using the same algorithm

Beyond drought, farmers will experience several risks. As their farming activity becomes more professional, farmers will be exposed to the impact of pests, diseases, flooding and excessive rainfall. These risks pose a challenge to weather index insurance as pests and diseases can be complicated to find a measurable proxy or index for.

Area yield index insurance

Within index insurance, 'other', non-drought related risks can be insured through area yield index insurance (AYII). In AYII, the yield of an area (or large group of farmers) is used as the proxy for individual farmers' experience. The insurance product covers risks such as floods, fall armyworm, drought, hurricane, pests, and diseases.

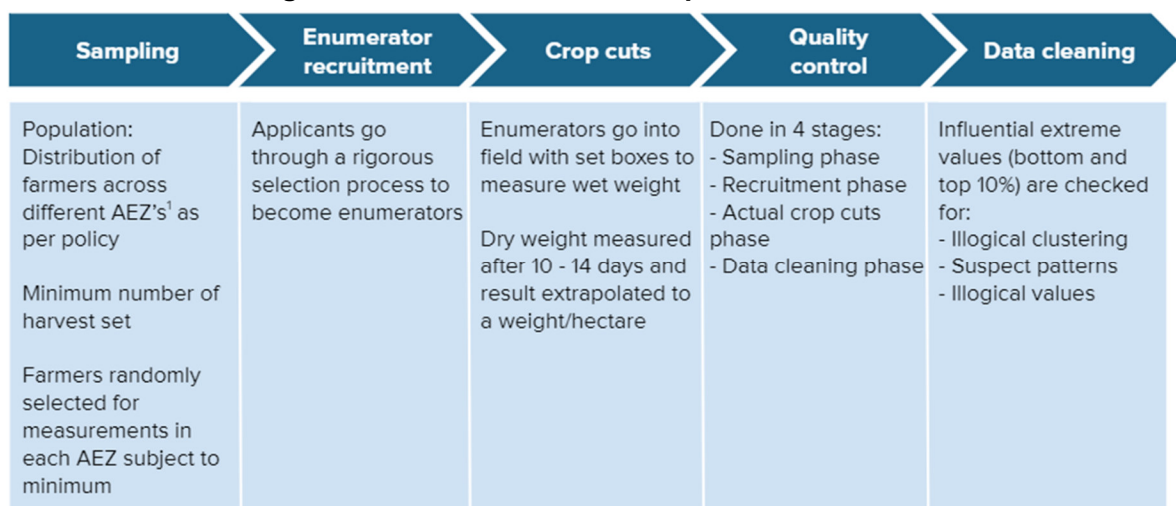
At the start of the season, the region to cover is divided into agro-ecological zones (AEZ) based on historical rainfall and yield data. A yield benchmark is then set for each AEZ. At the end of

the season, a random sample of farmers in each AEZ is selected for harvest measurement visits. These are known as crop-cutting experiments (CCEs). Farmers whose measured yields are lower than the determined benchmark yield level for their AEZ all receive a pay-out.

By measuring harvests, losses due to flooding, pests and disease can be accounted for. This broad cover makes AYII suitable for Burkina Faso where farmers are exposed to a wide range of risks. Globally, some of the world's largest agriculture insurance schemes for smallholder farmers use area yield index insurance products (e.g., in India and Mexico). In Sub-Saharan Africa, several governments have adopted AYII. This includes Kenya, Nigeria and Zambia.

Traditionally, CCEs have been carried out by governments and research institutes. However, in Kenya and Nigeria, CCEs are increasingly carried out by private sector insurance providers. Key to this is timeliness, as crop-cuts must be carried out at the time of the harvest, and scale (figure 14). For the latter, the private sector should lead any CCEs on contract from governments. Beyond the scale that private sector involvement can bring, this would allow the data collected to become a public good and available for use beyond insurance.

Figure 14: Yield data collection process for CCEs



Hybrid index insurance

An alternative approach to standalone WII and AYII services is a 'hybrid' index. This type of index can be developed where farms are insured using both AYII and WII. Weather index insurance can be used to cover drought at the onset of a season, which could lead to failed germination. Early pay-outs from the weather index insurance component would allow farmers to replant in this case. Area yield index can be used for the whole season to cover post-germination risks. Most recently, this product was adopted by the Zambian government as an integral part of its Farmer Input Support Programme (FISP) for the 2021-2022 season.

4.2 Types of insurance services available in Burkina Faso

The main crops grown in Burkina Faso include cotton, groundnuts, maize, millet, rice and sesame. Among these, the cotton value chain is highly structured: smallholder farmers work together with cotton companies who meet the farmers' short-term financing needs. With over 350,000 insurable smallholder farmers in the cotton sector²³, there have been several previous attempts to launch insurance products for cotton smallholder farmers. These included both WII and AYII. WII schemes have been launched for other crops too.

Of the two index insurance products, WII is the most popular in Burkina Faso to the extent that it is favoured by the government-backed agricultural insurance scheme. However, at least two providers have offered or currently offer other products such as AYII. In Burkina Faso, PlaNet Guarantee (now known as Inclusive Guarantee) designed and implemented the first index insurance schemes for maize and cotton around 2011. Within the region, Inclusive Guarantee pioneered the development of index insurance in several other West African countries.

Several insurance providers have emerged over the last ten years (figure 15). Local underwriters, such as SONAR, Yelen Assurance and Coris Assurances, have played a leading role. Each offers insurance through a partnership with a distribution partner, such as the Ministry of Agriculture, the World Food Programme (WFP) and the *Société Burkinabè des Fibres Textiles* (SOFITEX). Other approaches include L'Oreal and AXA, who are looking to provide crop and health insurance to shea butter farmers directly through L'Oreal's supply chain.²⁴

Figure 15: Summary of the main index insurance programmes in Burkina Faso²⁵

Insurance provider	Underwriter	Other partners	Type of insurance	Crop & region covered	Objective and outcome	Distribution strategy	Current status
Inclusive Guarantee	SUNU Assurance (formerly Allianz); CORIS Assurances; Yelen Assurance	FEPA-B SOFITEX AICB Oxfam <i>Intermón</i>	WII and AYII	Cotton and maize in Boucle du Mouhoun, Cascades, Hauts-Bassins and Southwest	Drought and yield cover; 2,500 farmers received a pay-out in 2018	AYII: Embedded with inputs	Inclusive Guarantee product ongoing ; product with SOFITEX discontinued
Ministry of Agriculture	SONAR IARD	MAMDA Re	WII	Maize in Boucle du Mouhoun, East and West	Drought cover; 830 farmers signed up (target: 5,000)	Voluntary, standalone product	Ongoing - pilot due to end in 2022
WFP	Yelen Assurance	African Risk Capacity	WII	Cowpeas, maize, millet, rice and sorghum in the North, East and Sahel	Drought cover; 407 farmers received a pay-out in 2022	Bundled with inputs	Ongoing
L'Oreal	AXA SONAR	OLVEA	Parametric and health	Shea butter in the West	Pilot testing due in 2021	To be confirmed	Pilot scheduled for 2022

4.2.1 Weather index insurance in Burkina Faso

Inclusive Guarantee

²³ Devahasdin, P. and Sagbo, C., (2017). [Global Index Insurance Facility, Burkina Faso country profile](#).

²⁴ B4IG Incubator, (2021). [Insurance Net for Smallholders](#).

²⁵ Source: Pula Advisors

Inclusive Guarantee was the first licensed agriculture insurance brokerage company in Burkina Faso. It is privately owned and operates as a fully licensed insurance broker in the CIMA region.

Inclusive Guarantee (previously PlaNet Guarantee) was responsible for launching one of the first WII products in Burkina Faso in 2011. The product covered maize farmers under the *Fédération des Professionnels Agricoles du Burkina* (FEPA-B) against the impact of drought. FEPA-B buys production inputs in bulk and stores and retails agricultural products for its members across 37 provinces. Inclusive Guarantee was responsible for designing the product and managing the scheme, while Oxfam *Intermón* contributed to awareness raising and education campaigns for farmers.

The objective of the scheme was to protect farmer incomes from droughts. In doing so, the scheme sought to mitigate the risk of input credit²⁶ defaults and de-risk loans to farmers from banks. The insurance aimed to incentivise bank lending to the agricultural sector, specifically to smallholder farmers through intermediaries such as input suppliers, agribusinesses, co-operatives and farmers' associations.

The product was based on data collected via remote sensing - this helped to cover the large target geographical area. Existing ground measurement devices, such as weather stations, lacked sufficient coverage. The cost of existing data available influenced product design too: this led Inclusive Guarantee to design the scheme using satellite data.

As of 2018, nearly 49,000 farmers had signed-up for Inclusive Guarantee's Evapotranspiration (weather) index insurance product. Around 70 percent were cotton farmers while the rest produced maize. These farmers were in Boucle du Mouhoun, Cascades, Hauts-Bassins and the Southwest regions. Inclusive Guarantee offered its product through farmer associations, cotton buying companies, input distributors and credit providers. Of the insured farmers, nearly 2,500 were affected and received an undisclosed pay-out.²⁷

Despite the product seeing good uptake among farmers, it was not deemed to be an outright success. Like many other weather index insurance services, Inclusive Guarantee's product suffered from a lack of reliable historical and current data and basis risk²⁸. This meant that farmers did not receive a pay-out when they expected one, leading to a lack of trust in the product and subsequent low renewal rates.

Inclusive Guarantee is still active as of 2022 and offers its products to a limited set of customers. However, the company has been affected by low product uptake and a loss of existing technical capacity as its technical partner, EARS from the Netherlands, stopped offering its evapotranspiration product.

²⁶ Agricultural input credit refers to a specific type of credit or loan provided to farmers that can only be used to purchase agricultural inputs.

²⁷ Inclusive Guarantee - <https://www.inclusiveguarantee.fr/implantation-burkina>

²⁸ Basis risk is the difference between the actual loss incurred by a farmer and the loss determined by the index.

SONAR IARD

SONAR IARD (hereafter SONAR) was created as the first licensed insurance company in Burkina Faso in 1974. Its main shareholders include the state, local private individuals and foreign companies. SONAR has been active in agricultural insurance for at least ten years.

Since 2020, the Burkina Faso Ministry of Agriculture has been working with SONAR and MAMDA Re, a Moroccan re-insurance company, to provide farmers with weather-index insurance. This product was launched as part of an intergovernmental co-operation effort between the governments of Morocco and Burkina Faso. In 2018, a memorandum of understanding was signed between both governments to enable the promotion of this project.²⁹

The product is sold to individual farmers on a voluntary basis, with the government subsidising 50 percent of the cost of premiums. The product covers maize, rice, and sorghum farmers in three regions against drought: Boucle du Mouhoun, East, Centre-West. Insurance is provided as part of an input loan from the Banque Agricole du Faso.

This scheme is scheduled to run for three years, from 2020 to 2022, and will cover the cost of inputs. With the government providing a 50 percent premium subsidy to farmers, the scheme is distributed on a voluntary basis and is sold through in-person agent training. The scheme targeted 5,000 farmers to be insured per year. In 2020, 369 farmers registered for the product; in 2021, 803 farmers were insured.

This low uptake signals that the product is not yet commercially viable, despite the 50 percent subsidy. The main reason for the low numbers is the voluntary nature of the distribution strategy, coupled with low insurance awareness among farmers. SONAR has carried out several capacity-building exercises, but these were not enough on their own. To complement SONAR's efforts, a more strategic distribution and financing structure should have been considered.

As a weather index insurance product, ground-based weather data is used to trigger the indices. Given the limited network of weather stations in the country, poor ground-level data quality and coverage - which has affected prior weather index insurance schemes - has limited the product's success. Basis risk has been a significant challenge for SONAR's product. Resultantly, this has undermined farmers' trust and created another barrier to uptake.

The insurance premium is around XOF 12,400 (approximately \$20) or 9.5 percent of the sum insured. With the 50 percent government subsidy, farmers are required to pay around XOF 6,200 (\$10). In 2021, around 107 farmers received claim pay-outs totalling XOF 5 million (\$7,900) or an average of around XOF 46,700 (\$74) per farmer. This is three times the premium, which can be considered as fair compensation from an insurance perspective.

²⁹ Congo, M. (2018). [Assurance agricole : Signature de convention](#). L'Economiste du Faso.

For the level of pay-out received, many farmers felt the premium was still expensive. Based on field research carried out for this study, farmers stated XOF 3,000 (\$5) was the average premium that would be affordable for them.

Running the product season-after-season could prove to be more challenging than expected. The product is unaffordable for farmers without the government subsidy. To scale up as targeted, the product needs strategic government or commercial distribution partnerships. For instance, the product is not bundled with inputs or credit. SONAR has expressed an interest in bundling the product with credit. This is likely to improve farmers' access to credit, with the insurance serving as collateral for the loan.

From a technical standpoint, SONAR's reliance on ground-based data means that it neither has sufficient nor accurate data for all agro-ecological zones its products cover. SONAR relies on MAMDA Re for technical pricing and reinsurance placement for the product. However, given the low uptake so far, MAMDA Re has signalled that it is restructuring its operations and is looking to exit from the project (and the Burkina Faso insurance market in general). Although SONAR is committed to working with the government to gradually build a customer base, it may not be able to offer a viable agricultural insurance product without appropriate technical partnerships.

Yelen Assurance

Yelen Assurance has been offering agricultural insurance since 2012 and was the first licensed micro-insurance company in Burkina Faso. It operates as a fully fledged insurer.

Yelen Assurance offers a weather-index insurance product that covers several cereals (millet, maize, sorghum, river rice and cowpeas). The product was launched in 2018. Currently, 30,000 farmers are insured through this product. With a higher customer base than the product offered by the government and SONAR, Yelen has benefitted from working together with the WFP on a multi-cereal insurance product. The WFP is responsible for training the farmers on the product, fully financing the premiums and supporting the farmers to contribute a share of the premium through work.³⁰

The technical product offered by Yelen was developed by African Risk Capacity (ARC), and was designed to be launched across the whole country. However, the product is only offered in the North, East and Sahel regions - regions where the WFP is present and active. These are areas where there is a greater humanitarian need compared to the South-West, where most of the country's production takes place.

The company does not formally work with the government, though it could be beneficial for the sector if the government worked closely with all agricultural insurance providers. This way, it could access the government's 50 percent premium subsidy. Currently, this is only accessible to the product offered by SONAR and MAMDA Re.

³⁰ WFP, 2022. Climate Risk Insurance - Annual Report 2021

4.2.2 Area yield index insurance in Burkina Faso

Inclusive Guarantee

In 2012, Inclusive Guarantee developed a cotton AYII product that covered input credit defaults due to a reduction in yields in the target areas, as well as yield losses. The input credit for cotton production was channelled from banks, such as EcoBank, the Bank of Africa and *Faïtière des Caisses Populaires du Burkina* (FCPB), to groups of cotton producers. In practice, the credit was channelled through the *Société Burkinabè des Fibres Textiles* (SOFITEX), one of the country's tree cotton companies.

The cost of insurance was included in the loans provided to farmers. Farmers are expected to repay these loans from the proceeds of seasonal cotton revenues. The insurance policy was initially underwritten by Allianz (now known as SUNU Assurances), with Coris Assurance joining the scheme around 2017. Although policies were issued at group level, individual farmers were named as beneficiaries.

Before the start of a season, insured yields for the different groups were set. To reduce moral hazard³¹, yield reference data from SOFITEX is used to determine insured yields. Farmers receive a pay-out when both these conditions apply³²:

- The recorded cotton producer yield level is lower than the selected insured yield level based on actual yield data, and
- The recorded yield level of a 'synthetic neighbouring village' is also lower than the coverage level.

In the case of an adverse event³³, when the index is triggered, all participating cotton producers that are members of an insured cotton producing group automatically receive a pay-out - without any loss assessment. Cotton producers paid a premium of XOF 11,200 (\$18) per hectare or 12 percent of the value insured.³⁴

Despite the broad risk coverage offered by area yield-index, the product was deemed to be too expensive by stakeholders. This limited its uptake among producers and use among farmers. In addition, the cotton yield thresholds set in contracts between cotton buyers and farmers were often too low to provide appropriate and affordable insurance cover. Furthermore, between 2018 and 2020, a dispute between SOFITEX and Inclusive Guarantee, due to the level of basis risk experienced, led to the project being discontinued.³⁵

³¹ A moral hazard occurs when a farmer intentionally allows crops to fail to receive a pay-out.

³² Note: It is unclear as to whether the actual yield data is collected through crop-cutting experiments or through satellite data, or a combination of both.

³³ Adverse selection refers to when a farmer takes out additional insurance policies knowing they are likely to receive a large claim pay-out.

³⁴ Stoeffler, Q. et. al. (2020). [The Spillover Impact Of Index Insurance On Agricultural Investment By Cotton Farmers In Burkina Faso](#).

³⁵ Oxfam, (2018). [Agricultural Insurance in Burkina Faso: Challenges and perspectives](#).

4.3 Challenges to scaling agricultural insurance in Burkina Faso

Despite the launch of several insurance schemes – both for cotton and other crops – there has been limited success. Agricultural insurance penetration in Burkina Faso remains low. Some schemes were unable to grow beyond a small number of farmers due to distribution difficulties, while others failed because of poor product design or a lack of understanding among farmers.

4.3.1 Growth-limiting factors

Many insurance schemes did not succeed as expected because the distribution strategy was not well designed and relied on voluntary uptake. When insurance was offered to farmers directly, many found the product expensive and difficult to understand. Coupled with the product not sufficiently tailored to local conditions, these factors limited the growth of agricultural insurance services. Beyond these barriers, there are several other challenges that insurers were unable to overcome.

To understand these in greater detail, this study carried out farmer surveys³⁶ in Safané and Tcheriba in the Boucle du Mouhoun region, and Dori in the Sahel region, as well as key informants involved in the existing and past agricultural insurance schemes.

Distribution and partnerships

Distribution is a major challenge for all key informants and this is also obvious from the experience of products that have been launched in the market. Early projects have relied on voluntary uptake. For such products to experience strong demand farmers often need local, trusted agents to serve as focal points for any insurance-related queries, which in the long term are expensive to retain.

Insurance providers should consider distributing through co-operatives, microfinance institutions and agricultural-focused banks that have a relationship with the local population. Some key informants suggested starting a central agricultural insurance company, such as the public-private partnership-based *Compagnie Nationale d'Assurance Agricole du* (CNAAS) in Senegal, to manage product distribution. However, others felt that better government-led coordination across the sector was more likely to lead to better distribution outcomes. While establishing a dedicated agriculture insurer could be considered, this does not take into account that CNAAS in Senegal relies wholly on embedding insurance in structured value chains, development projects and credit schemes.

Basis risk events

Basis risk is the difference between the claim pay out, as determined by the index, and the actual loss incurred by the insured, when caused by the risk that the policy is intended to cover. WII in particular is prone to basis risk events due to its use of weather station data over a wide

³⁶ See Annex 3 for details on the groups and numbers of farmers surveyed by Pula in February 2022 for the UNDP.

area or poor quality remote-sensing data. All WII products launched in Burkina Faso have suffered from the impact of basis risk. Farmers not receiving a pay-out for losses where one was expected has led to a deep lack of trust in insurance. Insurance providers have cited basis risk as one of the main concerns, because farmers believe their products to be unreliable. The low uptake of the various WII products tried in Burkina Faso can be strongly attributed to the impact of basis risk.

Capacity building and training

All key informants cited training and capacity building as a major challenge across all actors in the insurance value chain. For farmers, a comprehensive capacity building programme that includes workshops, radio, TV documentaries, live dramas and roadshows can help to educate farmers about agricultural insurance. Training other value chain actors has been an issue with previous agricultural insurance schemes. Key informants mentioned that some partners did not have a firm grasp of their respective roles.

Communication

Communication is considered one of the main barriers to growth. Many stakeholders indicated poor communication between value chain actors and partners. Some did not understand their role well enough, while others did not understand how the product worked. There is a need for stronger leadership among partners for an insurance scheme to succeed.

Cost

The government-back insurance scheme offers a 50 percent subsidy to farmers enrolling for the product. However, the subsidy has not helped to scale up the product, based on its low uptake. It is possible that the product - even with a subsidy - is not considered affordable or comprehensive enough. Irrespective of price, it is possible that farmers may not fully trust the scheme too. Some farmers expressed an interest in paying the full premium to insurers if they received better training, and a good quality product based on their needs and affordability.

Rather than the cost, the timing of when premiums are paid is more important. This was substantiated by a 2017 study that used randomised controlled trials to test a novel pay-at-harvest insurance model.³⁷ Carried out in partnership with a sugarcane contract farming company in Kenya, the study concluded that the timing of premium payment plays a key role in the level of insurance uptake. Farmers were split into three groups. One group was offered standard, pay-upfront insurance. A second group was offered the same type of insurance but with a 30 percent discount on the premium. The final group paid premiums at the end of the season, which led to a significantly higher uptake: 73 percent. The second group that was offered a discounted pay-upfront product only saw a slight improvement in uptake.

Data quality and availability

Weather index insurance services have suffered from a lack of quality data. With a sparse network of only ten meteorological stations, rainfall data is often not available for certain areas.

³⁷ Lorenzo and Willis (2017), "Time vs. State in Insurance: Experimental Evidence from Contract Farming in Kenya".

Insurers have tried to use alternative sources, such as satellite data, but have encountered alignment issues between ground-based and satellite-based data. In addition, insurers have sometimes faced a high cost when sourcing good-quality data for weather index insurance products when working with third party technical providers. The ARC product was offered free of charge to Yelen and this has supported its uptake in the market.

Area yield index insurance products have been affected by data availability too. Area yield index design has suffered from a lack of historical yield and climate data. This has been further compounded by limited product design knowledge in the market.

Farmer trust in insurance

Many farmers do not easily trust insurance companies as agricultural insurance. Previous weather index insurance schemes have been impacted by basis risk events, leading to farmers disputing pay-outs and not renewing their policies. Insurance is likely to be new to most farmers and its uptake rests on farmers understanding how the product works and its benefits. The farmer surveys carried out for this report found that a lack of understanding was commonplace among many farmers.

Government support

Key informants felt that the government needs to do more for the sector. Beyond the premium subsidy, the government should have a plan on how to engage with and grow the sector. In particular, the government should support private sector players to design and develop good quality insurance products, and improve insurance awareness among farmers. Any such commitment should look to attract more and more private sector players over the long term.

In addition, the government can play a leading role in promoting the product and distributing the product by embedding insurance into its agricultural development programmes. The newly launched e-voucher scheme in partnership with the World Bank offers a key opportunity, although it would require a product that is suitable for irrigated crops.

From a fiscal standpoint, some stakeholders cited insurance premium tax as a barrier to uptake. Insurance premium tax in Burkina Faso is set at 12 percent for certain non-life products, which includes agricultural insurance³⁸. This makes insurance products costlier, even more so for poor farmers on low incomes. Life insurance policies are not liable for insurance premium tax, due to the social impact they can have. Among insurers, this has posed a problem given the social impact that agricultural insurance can have for smallholder farmers.

Technical capacity

All key informants expressed a need for better technical capacity within the sector. This can have a significant impact on product design and quality - many farmers surveyed did not trust insurance due to previous products that did not work out as expected. There is a need to

³⁸ Oxfam, (2018). [Agricultural Insurance in Burkina Faso: Challenges and perspectives](#).

develop product development and underwriting skills in Burkina Faso; this may lead to better technical capacity among local insurers.

Technology

A lack of technology or poor use of technology has plagued previous agricultural insurance products. All informants felt that technology should be increasingly used for insurance products. This includes using digital enrolment through mobile money to collect premiums and pay out claims. Such platforms need to be better integrated with agricultural insurance products, given the high degree of trust the public is likely to have in mobile network operators.

Separately, agricultural insurance products can be improved through better technology. All key informants had a thorough understanding of weather index insurance but cited poor quality data that has resulted in inaccurate indices and basis risk. Some informants felt a strong need to use automated weather stations to trigger indices, rather than relying on existing meteorological and satellite data. Many consider the latter to be unreliable.

Collective impact on product growth

Each of the aforementioned factors are prerequisites for an agricultural insurance product to be piloted or launched. Some requirements currently affect agricultural insurance and its growth more than others (figure 16). Several issues are interdependent. For instance, distribution and partnerships can influence the type of capacity building and training provided to farmers and other value chain actors; the use of technology and technical knowledge can determine the cost of a policy, as can government policy around premium subsidy and applicable taxes. To overcome these challenges, a coordinated effort is required – one that includes an initiative to advocate policy changes with the government of Burkina Faso as a starting one.

Figure 16: Summary of the challenges to growing agricultural insurance in Burkina Faso

Challenge	Current impact of the challenge
Distribution and partnerships	High
Basis risk events	High
Capacity building and training	High
Communication	High
Cost	Medium
Data quality and availability	High
Distribution and partnerships	Medium
Government support	Medium
Technical capacity	High
Technology	High

4.3.2 The potential for index insurance in Burkina Faso

Among the different schemes launched, the area yield index insurance programme for cotton offered by Inclusive guarantee and SOFITEX saw some success. The scheme exemplified how best practice in agricultural insurance could be implemented. For a limited period, it worked well due to several factors:

- The insurance product is integrated into a well-structured value chain – it is not sold in isolation as a stand-alone product.
- With its link to input credit, the scheme provides access to production inputs, overcoming a key barrier to improving agricultural productivity.
- The scheme offers comprehensive coverage for a variety of risks that farmers face.
- The scheme does not affect production incentives for individual cotton growers – insurance triggers are based on criteria that cannot be directly influenced.
- A well-established relationship with the cotton processing company has reduced possible side-selling.

Despite its comprehensive cover, stakeholders raised several issues. Both producers and lenders felt that the scheme was expensive, which limited product uptake. Cotton yield thresholds set by the insurer were considered too low for any appropriate insurance coverage.

This meant that the aggregator was reluctant to make the insurance a compulsory part of the input and credit package, which limited distribution and scale. Part of the premium rate was driven by the commercial loadings that insurers and reinsurers had applied. The insurance premium tax (set at 12 percent) applicable to agricultural insurance policies further compounded the high premium cost cited by some farmers.

Due to disputed pay-outs between 2018 and 2020, the product was discontinued. This was due to farmers and aggregators experiencing substantially different outcomes compared to the pay-outs determined by the insurance product. Prior to this, stakeholders had believed that uptake could have been improved through a better product that aligns with farmers and SOFITEX's expectation, better training and capacity-building activities, and marketing tailored to smallholder farmers. This would have been accompanied by an updated regulatory framework that reduces loadings, such as the tax burden.

5. Opportunities for growth

5.1 Agricultural insurance market size

Collectively, the main crops covered in this study (i.e., maize, millet, rice and sorghum) have a total sum insurable per year of around \$51 million. This is nearly \$20 million less than the market opportunity for cotton, the main export crop in Burkina Faso. However, each crop represents a significant insurance opportunity – both for insurance providers and for smallholder farmers (figure 17).

For this opportunity to be captured, farmers need to be offered the right product through an appropriate distribution or aggregation channel. For the cotton sector product and distribution channel are available, which explains why most pilots so far have focussed on this crop. For the other crops, this is much less clear so far, and there are opportunities for both government and development agencies here to support market development.

Figure 17: Annual market size by crop³⁹

Crop	Land under production (ha)	Market potential – total sum insurable (\$)	Addressable potential (60%) (\$)	Premiums (\$) (Current market rate used: 9%)
Cotton	647,265	\$1,260 million	\$756 million	\$68 million
Maize	1,135,405	\$272 million	\$163 million	\$15 million
Millet	1,183,792	\$214 million	\$129 million	\$12 million
Rice	183,871	\$279 million	\$167 million	\$15 million
Sorghum	1,860,260	\$175 million	\$105 million	\$9 million

5.2 Proposed product: Hybrid index insurance

WII can cover smallholder farmers against insufficient rainfall during the season. However, farmers are likely to experience other risks, most significantly flooding pests and disease. These are inadequately covered by weather index insurance. For instance, if a farmer replants seeds and experiences a poor harvest at the end of the season – due to pests, for example – they will not receive any compensation since those risks are not covered by weather index insurance.

This scenario applies to the WII products currently offered in Burkina Faso. With only one agricultural season per year in Burkina Faso, using WII risks not covering the full range of risks that farmers could be exposed to. As a result, WII will not be able to capture a significant proportion of the available market.

³⁹ Our analysis included data from FAOStat and www.selinawamucii.com, as well as proprietary data. We have assumed that 60% of the total sum insurable opportunity is the addressable market. The 9% premium rate applied is based on the mean premium rate used by local insurers.

AYII provides protection against a variety of climatic risks, as well as pests and diseases that cause crop losses at any point during the season. However, this product will not cover farmers against seed germination failure in the early part of the season. Further to this, farmers have to wait for any compensation until the end of the season. In Burkina Faso itself, only a small number of farmers, in the cotton value chain, have any experience of AYII.

Based on the current policy environment which favours weather index insurance, this study recommends a hybrid index insurance product that combines both weather and area yield indices (figure 18). This product can offer the advantages of both WII and AYII. Using weather index insurance as part of a hybrid index insurance policy means that the product complies with the current policy preference, exposes them to the fast pay-outs triggered by satellite-based weather index insurance products, while offering the wide coverage of yield index insurance. This comprehensive coverage may encourage smallholders and distribution partners representing farmers to embrace and sign up for the product.

Figure 18: Comparing different index insurance products⁴⁰

Aspect	Weather index insurance	Area yield index insurance	Hybrid index insurance
Coverage duration	First three to five months of the season.	Entire season.	Entire season.
Risks covered	Insufficient rainfall.	All causes of systemic crop losses i.e., drought, flood, windstorm, hail, frost, excess rainfall, heatwave, pests and diseases.	Insufficient rainfall and all causes of systemic crop losses i.e., drought, flood, windstorm, hail, frost, excess rainfall, heatwave, pests and diseases.
Loss assessment methodology	Satellite based.	On-ground evaluation through standardised yield measurements (crop cutting experiments)	Comprehensive, i.e., both - early pay-outs using satellite data and loss assessment at the end of the season.
Basis risk	Can exist to a great extent - satellite based assessment can lead to considerable discrepancies between pay-out and actual damage suffered.	Exists but reduced to a great extent due to the on-ground evaluation coupled with multiple stratified samples within each district insured.	Combination of both further reduces instances of basis risk as losses are comprehensively assessed via both methodologies.
Timing of pay-out	At the end of insured windows - approximately three to four months into the season.	At the end of the insured season, after collection of yield samples is completed.	Early pay-outs during the season under the weather index component and comprehensive end of season pay-outs upon measurement of yields after the end of the season under the area yield index component.

⁴⁰ Pula Advisors

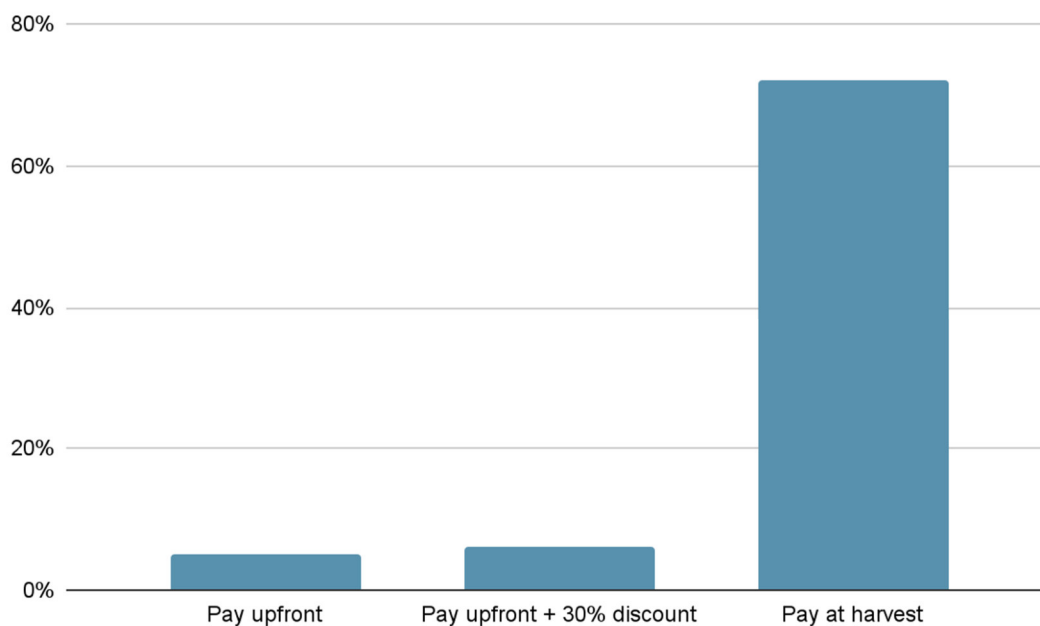
5.3 Possible distribution channels

5.3.1 Pay-at-harvest

Most smallholder farmers have competing financial demands, leaving them unable to pay for insurance. Premiums are typically payable at the start of the season, when farmers are likely to prioritise farm inputs purchases. Insurance simply doesn't feature as a necessity.

A study by the University of Zurich and Columbia University found that the timing of insurance purchase impacts farmer uptake⁴¹. Of the farmers surveyed for this report, only 5-6 percent agreed to buy insurance when asked to pay upfront, even when a 30 percent discount was applied. Conversely, 72 percent of farmers are likely to take up insurance when asked to pay at harvest (figure 19).

Figure 19: Insurance uptake in 2017 Kenya study⁴²



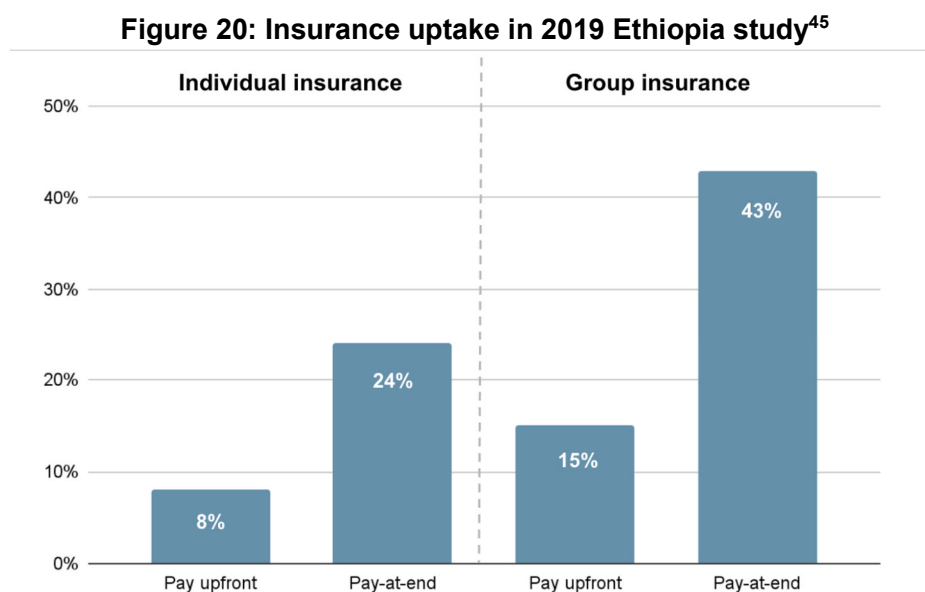
Premiums must be pre-financed by a financial institution. Farmer contributions are deducted from the proceeds of harvest sales or from claim pay-outs. This is typically done by the aggregator that the farmers sell their produce to. This approach requires a structured crop value chain: contracts between buyers and farmers are necessary to prevent side-selling and enforce the insurance scheme.

⁴¹ Casaburi, L. & Willis, J, (2017). [Increasing crop insurance adoption among smallholder farmers with pay-at-harvest premium payment](#)

⁴² Ibid.

In 2019, a similar study in Ethiopia⁴³ investigated the impact of the timing of premium payment, on index-insurance uptake for individuals and groups (*Iddirs*⁴⁴). For both individuals and groups, payment at the end of the season increased insurance uptake significantly (figure 20) - albeit to a smaller extent than observed in Kenya.

The study found that individuals adopting the payment-at-the-end-of-season model had a default rate of 17 percent. However, default rates could be reduced by targeting groups for payment at the end of season instead of individuals. An alternative approach would be to implement contracts with farmers that penalise defaults through legal channels. However, the study noted that harsh penalties could discourage farmers from purchasing insurance.



5.3.2 Bundling insurance with farmer products

Value chain actors can serve as distribution channels. This includes financial institutions, governments, NGOs, development agencies, mobile network operators and PayGo solar companies. Each may have the working capital to finance insurance for farmers, which can be embedded with loans, inputs and government programmes (figure 21).

⁴³ Belissa, Bulte, et al. (2019). Liquidity constraints, informal institutions, and the adoption of weather insurance.

⁴⁴ Indigenous and voluntary mutual help associations made up of people united by family ties, friendship, proximity, employment, or their ethnic background.

⁴⁵ Belissa, Bulte, et al. (2019). Liquidity constraints, informal institutions, and the adoption of weather insurance.

Figure 21: Examples of agricultural insurance approaches in selected countries⁴⁶

Insurance provider	Country	Type of insurance	Bundled with	Distribution partner	Farmers reached per year (approx)
ACRE Africa	Kenya	WII	Agricultural inputs	Local agro-dealers	10,000s
Blue Marble	Zimbabwe	WII	Agricultural inputs	World Food Programme	10,000s
EcoFarmer	Zimbabwe	WII	National farmers' union membership and funeral insurance	Zimbabwe Farmers' Union and EcoSure	10,000s
Green Delta Insurance	Bangladesh	AYII	Agricultural inputs	Supreme Seeds	10,000s
OKO Insurance	Mali	WII	-	Orange Money Mali	1,000s
Pula	Zambia	AYII	Subsidised inputs	Ministry of Agriculture, Zambia	1 million
Pula	Nigeria	AYII	Farmer loans	Central Bank of Nigeria	100,000s

Government input or subsidy programmes

Government input programmes offer an ideal distribution network for agricultural insurance. Agriculture ministries often have large budgets for agricultural inputs. A poor harvest can risk these inputs either being lost or not being maximised. In this case, bundled insurance can benefit such schemes by de-risking the investment made in purchasing farmer inputs. In the event of a poor harvest, farmers and governments will be compensated.

Government subsidy programmes can incentivise input providers to pay or co-pay for insurance or include insurance with e-voucher schemes. Without government involvement, the full cost of insurance would need to be borne by input providers. Examples include the Farmer Input Support Programme in Zambia (FISP) and Planting for Food & Jobs in Ghana.

FISP was introduced in 2002 with the objective of improving the supply and delivery of subsidised agricultural inputs to small-scale farmers. This is done through a public-private partnership approach to make the inputs affordable, with the aim of increasing household food security and income. In 2017, the Zambian government introduced mandatory insurance for all FISP beneficiaries with an embedded insurance component introduced two years later.

The embedded premium payment approach used by FISP provides a strong incentive for farmers who would not otherwise buy crop insurance. FISP relies on farmers' willingness to purchase heavily discounted inputs (the government covers 81 percent of input contributions), which can be unlocked through an upfront insurance premium payment. This is a unique mechanism which can be implemented and scaled up in other markets.

Agricultural loans or credit

Agricultural insurance bundled with loans can act as both a form of loan protection and an income safety net. Bundling an insurance policy with loans or credit can serve as collateral for loans. In turn, this is likely to lead to a greater willingness among lenders to provide agricultural loans. For example, Green Delta Insurance in Bangladesh offers insurance for livestock loans

⁴⁶ Source: Pula Advisors

taken out through Brac Bank. Farmers' whose livestock might experience a shock may receive a claim pay-out, allowing them to avoid the risk of loan default and receive some compensation towards the loss of income.

5.3.3 Distribution options in Burkina Faso

Among the possible distribution channels (figure 18), pay-at-harvest is best suited for structured value chains (e.g., cotton). In terms of government subsidies, Burkina Faso offers subsidised inputs to smallholder farmers in partnership with the World Bank⁴⁷. These inputs are targeted at selected irrigated and semi-irrigated crops as part of a national strategy to focus on improving agricultural productivity and increasing agricultural resilience. The semi-irrigated crops targeted through this intervention will be a strong opportunity for distributing agriculture insurance. The irrigated crops would require coverage similar to AYII rather than WII.

Another viable option would be to bundle insurance with agricultural credit or loans. Insurance can serve as a substitute to collateral, which many smallholder farmers are unlikely to have. This approach can reduce the risk of loan defaults, enabling increased lending to the agricultural sector in the long-term. Among the stakeholders surveyed, Coris Assurances expressed an interest in offering insurance together with agricultural credit provided by Coris Bank.

Figure 22: Summary of possible distribution options

Distribution channel	Existing scheme	Potential to bundle insurance
Pay-at-harvest	None	Pay-at-harvest works well for structured value chains, such as cotton. It is unsuitable for maize, millet, rice or sorghum, unless bundled with a contract farming scheme.
Government subsidy programmes	Ministry of Agriculture / World Bank PReCA	This World Bank-funded scheme was designed to increase agricultural productivity and market access for smallholder farmers for selected value chains. However, the project is aimed at irrigated crops, requiring a yield index and was suspended in February 2022 due to the political situation in Burkina Faso.
Agricultural loans	None	Although cotton associations offer input credits to their member farmers, no other scheme exists for other crops. Coris Assurances expressed an interest in offering insurance bundled with loans provided by Coris Bank.

⁴⁷ World Bank, (2019). [Burkina Faso Project Appraisal Document - Agriculture Resilience and Competitiveness Product](#).

6. Lessons and recommendation

6.1 Lessons for index insurance products

Capacity building is essential to improve awareness and understanding of insurance among farmers and value chain stakeholders alike

Capacity building can be a standalone exercise, or as part of product dry runs or new product launches (including pilots). In this case, given the index insurance product proposed, a capacity building programme should involve all partners across the value chain prior to the season starting.

Sensitising farmers can be done through physical and digital approaches. Physical approaches involve workshops and training sessions in districts and villages to educate farmers on how the product works and its benefits. Digital approaches can include SMS blasts, IVR and radio advertisements to complement agent-led sessions (assuming farmers provide their consent to receive SMS). These approaches together can reach most farmers to be targeted.

Carrying out a dry-run before launching a pilot can lead to improved farmer awareness and preparation, and can lead to better ground data being collected pre-launch

A dry run for a prototype index insurance product could be carried out prior to a pilot. This involves several activities, some of which are broadly similar to launching a product proper. This includes product design, developing technical notes and pricing for underwriting, devising processes for remote sensing and ground data collection, and training all value chain players.

The dry run and pilot should be carried out by the same lead insurance provider and technical service provider, as the data from the dry run should naturally feed into the product design process. Product development times may vary between three and six months. As this requires private sector involvement, the cost of a dry run will depend on the chosen provider's experience and capacity.

As a pilot would, a dry run can typically take place over the course of a season. Burkina Faso only has one agricultural season per year. A dry run could delay launching a pilot and protecting farmers in the process. Conversely, a dry run and a complementary capacity-building programme can help collect farmer yield data outside of an insurance cover period. This data and farmers' improved understanding of insurance can then be used to develop a better product when it is subsequently launched, as well as bring about familiarity with the crop cutting exercise used to measure yield data.

Once a pilot is launched, the first claims should be paid out at a public event to promote the insurance product and spread awareness on how it works

In the case of a pay-out, the consultant recommends holding a public event to compensate farmers with key stakeholders invited. These events are critical to increasing insurance awareness among farmers and key players in the market, and can demonstrate that agricultural insurance truly works, is not a scam and can be trusted.

Government support is essential for any agricultural initiative to succeed. For agricultural insurance schemes, the government can play several roles

Government support is usually important for agricultural insurance schemes to scale. The Government of Burkina Faso should extend its premium subsidy across a range of agricultural insurance programmes – not limit it to programmes it is actively involved in. Subsidies can also exist in the form of tax relief, exempting insurance from any currently applied taxes.

Subsidies can be provided and reduced on a gradual, season-by-season basis. As the benefits of insurance emerge across several seasons, farmers or organisations that farmers work with are likely to be willing to pay for unsubsidised insurance.

Government assistance is important for capacity building exercises too. Government agencies typically work with farmers' unions, and can help reach and train large groups of farmers.

Similarly, government programs should be considered as a distribution channel that can embed insurance premiums into existing programmatic interventions and investments for smallholder farmers.

As agricultural insurance grows in Burkina Faso, the current insurers may consider forming a consortium to build the financial capacity to underwrite the risk. This will reduce the individual risk an insurer faces and may encourage more insurers to take up agricultural insurance. The government's support and involvement will be key in setting up a consortium.

Finally, the government should aim to improve the regulator's technical capacity. This will enable the regulator to work closely with insurance providers, as for instance the Insurance Regulatory Authority of Kenya does. We recommend the regulator to adopt a sandbox approach, where products are trialed in a controlled environment, or a wait-and-see stance. This is where providers are encouraged to launch products, with regulation then based on the products launched.

6.2 Product recommendations

Yelen Assurance has experience of underwriting both WII and AYII

Among the active insurance companies in Burkina Faso, SUNU Assurance and CORIS Assurances have experience of area yield index insurance. Both companies have underwritten Inclusive Guarantee's product for SOFITEX. However, yield data was collected by SOFITEX.

Yelen Assurance underwrote part of Inclusive Guarantee's AYII product too. The company is also involved in weather index insurance in Burkina Faso. It currently insures more farmers than other providers. Yelen has benefitted by working with WFP, which has enabled broad distribution in the regions WFP is present in. However, Yelen was not involved in product development - instead, an ARC-designed water requirement satisfaction index product was used.

Why they would be able to develop a HII product

This study recommends a hybrid index insurance product for smallholder farmers producing maize, rice, sesame and sorghum in the two focus regions: Boucle du Mouhoun and Sahel. This is a novel product that has not previously been used in Burkina Faso before. As a result, few - if any - of the insurers will have sole experience of designing and launching a HII product.

Yelen Assurance has previously been involved in underwriting AYII offered through Inclusive Guarantee, while currently doing the same for the WII offered through the WFP. From an underwriting perspective, Yelen could be included as a partner for a HII scheme. However, Yelen would require additional capacity and support to design, develop, launch and run a HII product. This can either be done through a partnership with an experienced external partner or through a long-term capacity building programme aimed at developing Yelen's HII know-how.

CORIS Assurance has previously underwritten AYII policies offered by Inclusive Guarantee. Despite the Inclusive Guarantee scheme discontinuing, the company is keen to continue selling AYII. However, AYII has been only used by a limited number of farmers in Burkina Faso. To scale a HII product that includes AYII, it may be necessary for more than one underwriter - in this case, Yelen and CORIS - to provide risk capacity.

Burkina Faso offers an opportunity to bundle insurance with inputs or with loans

A hybrid index insurance product can be offered either with inputs or with credit (figure 23). Based on the WFP example, insurance can be bundled with inputs through existing UNDP programmes in Boucle du Mouhoun and Sahel. This requires a reliable input supplier with a presence in both regions. The World Bank runs an input subsidy scheme for irrigated and semi-irrigated crops, which may offer an opportunity to bundle insurance too.

An alternative distribution method would be to bundle insurance with agricultural credit. CORIS Assurance has previously expressed an interest in developing an index insurance product bundled with loans provided by CORIS Bank. An aggregator or intermediary would still be required for this approach, to lend to and insure groups of farmers. This is necessary to target specific crop value chains and to ensure that the product can scale up.

Figure 23: Examples of value chain partners

Approach	Underwriter	Distributor	Other partner
Bundled with inputs	Yelen Assurance CORIS Assurance	UNDP	Input supplier
Bundled with credit		CORIS Bank	Aggregator

Given the limited experience in developing HII in the country, either approach will require further technical expertise and accurate historical yield and climate data. Burkina Faso has had limited success with WII and AYII. Using an external technical partner is likely to help develop capacity in improving existing WII and AYII products, or designing new products for future use.

Based on the average production history and estimated harvest value per crop, an affordable hybrid index insurance product can be offered to farmers at a premium of around \$8 (figure 24). This figure was calculated assuming a premium rate of nine percent - below the 12 percent rate currently used by the SONAR IARD WII product. Based on a rate of nine percent, farmers will be covered for at least ten times the value of the premium.

Figure 24: Details on a possible hybrid index insurance product

	Cotton	Maize	Rice	Sorghum
Product proposed	Hybrid index insurance			
Risks covered	Windstorm, excessive rainfall, heatwave, flood, drought, pest and diseases			
Source of settlement data	Private collection of data through crop-cutting exercises			
Average production history (mt/ha)	1.04	1.43	1.79	0.79
Average harvest value - TSI per hectare (\$)	\$1,948	\$239	\$1,517	\$94
Average premium per farmer	\$7.63	\$7.91	\$7.63	\$7.86

Appendix 1: Natural disaster statistics

Figure 14: Number of people affected by major natural disaster by year in Burkina Faso⁴⁸

Year	Natural disaster	Number of people affected
1972	Drought	325,000
1973	Drought	325,000
1974	Drought	325,000
1975	Drought	325,000
1978	Drought	442,000
1983	Drought	1,250,000
1988	Drought	200,000
1990	Drought	2,600,000
1994	Floods	68,000
1995/1996	Drought	692
1996/1997	Drought	910,000
2001	Drought	106,556
2004/2005	Locust attack and drought	1,622,000
2007/2008	Floods	11,356
2009	Floods	180,386
2010/2011	Floods	140,039
2011/2012	Drought	3,500,000
2013	Floods	13,057

⁴⁸ Oxfam, (2018). [Agricultural Insurance in Burkina Faso: Challenges and perspectives](#).

Appendix 2: Insurance pilot cover details

Insurance period

The main planting season in Burkina Faso begins in May/June depending on the part of the country and harvests are generally completed by December/January.

The proposed insurance period for the Weather Index Insurance is **1 June to 31 August** as described previously. This period is expected to cover the onset of rainfall and the early stages of crop growth during which adequate rainfall is required to prevent yield losses.

For the area yield index insurance and hybrid index insurance Products, the proposed insurance period is from **1 June to 31 January** so that losses experienced at any point between planting and harvesting are captured and compensated accordingly.

Sum insured

For this study, we propose to insure 500 farmers for each of the crops cultivated in each of the 3 selected departments. Rice and Cotton will not be insured in Dori department as these two crops are not grown in the Sahel region due to unsuitable growing conditions. A total of **6,500** farmers are proposed to be insured in this study.

The sum insured per farmer has been set at **XOF 60,000**. This value has been determined such that it covers the costs of inputs during the season and caters for other household expenses in the event of adverse experience. Reports published by the United States Department of Agriculture provided the costs of seeds and fertilisers (NPK and Urea) which were used to determine an appropriate sum insured. The total sum insured under the product is therefore **XOF 390,000,000**.

The sum insured for the Hybrid Index Insurance is split such that **20 percent** of the sum insured is covered under the **weather index** component and **80 percent** is covered under the **area yield index** component.

Average Production History (APH)

The APH has been set using historical yield data. The data used was compiled from sources including: Food and Agriculture Organisation of the United Nations (FAOSTAT), United States Department of Agriculture (USDA), African Development Bank Group (AfDB) and *Institut National de la Statistique et de la Démographie* (INSD) of Burkina Faso.

The yields data from the INSD reports were the most comprehensive, granular and relevant hence have been used to a greater extent than the other sources. The APHs set by crop and province are shown in the tables in the *Policy Schedule* section.

Data Sources

Data on historical yields and climatic parameters was necessary for the design and commercialisation of the proposed insurance products. The required data was compiled from different sources.

The historical yield data sources are summarised in the table below:

Source of Data	Level of Data	Years Available	Gaps if any?	Consequences of Gaps
FAOSTAT	National Level	60	<ul style="list-style-type: none"> Data is aggregated at national level, yet pricing is done at an AEZ level. Average yield does not differentiate between farmer profile e.g. Smallholder/Commercial or Rainfed/Irrigated. 	<ul style="list-style-type: none"> Presents data heterogeneity challenges.
USDA	National Level	12	<ul style="list-style-type: none"> Data is aggregated at national level, yet pricing is done at an AEZ level. Average yield does not differentiate between farmer profile e.g. Smallholder/Commercial or Rainfed/Irrigated. Data for Sesame and Cotton not available. 	<ul style="list-style-type: none"> Presents data heterogeneity challenges. Data cannot be used to price for Sesame and Cotton.
AfDB	National Level	19	<ul style="list-style-type: none"> Data is aggregated at national level, yet pricing is done at a more granular level. Average yield does not differentiate between farmer profile e.g., Smallholder/Commercial or Rainfed/Irrigated. Data for Sesame and Cotton not available. 	<ul style="list-style-type: none"> Presents data heterogeneity challenges. Data cannot be used to price for Sesame and Cotton.
INSD	Province Level	5-15	<ul style="list-style-type: none"> Average yield does not differentiate between farmer profile e.g. Smallholder/Commercial or Rainfed/Irrigated. Latest year data is not available for some regions. Sesame has a shorter data time series than other crops. 	<ul style="list-style-type: none"> Presents data heterogeneity challenges but to a lesser extent. Inconsistency in APH setting due to missing data points. Shorter time series may fail to capture infrequent but more severe risks.

The climate data sources are summarised in the table below:

Source of Data	Parameter	Resolution (Km)	Years Available	Comments
CHIRPS	Rainfall	55	41	<ul style="list-style-type: none"> Daily values of rainfall available Resolution is granular and rainfall can be aggregated based on the required unit area of insurance.
NOAA	Temperature	Stations	41	<ul style="list-style-type: none"> Daily average, max and min temperatures available. Data is only available for specific stations across the country hence cannot accurately be aggregated by unit area of insurance.
ERA5	Temperature, Wind	Temperature - 27.75 Wind - 31	43	<ul style="list-style-type: none"> Hourly values of data available Data can be downloaded for specific coordinates to identify regions.

Policy Schedule

Weather index insurance illustration

Department	AEZ	Crop	APH Yield (MT/Ha)	Hectares	Farmers	Total Sum Insured (XOF)	Total Gross Premium (XOF)	Gross Premium Rate	Premium per Farmer
Tcheriba	52	Maize	1.43	500	500	30,000,000	2,718,712	9.06%	5,437
Tcheriba	52	Rice	1.79	500	500	30,000,000	2,718,712	9.06%	5,437
Tcheriba	52	Sorghum	0.87	500	500	30,000,000	2,718,712	9.06%	5,437
Tcheriba	52	Sesame	0.67	500	500	30,000,000	2,718,712	9.06%	5,437
Tcheriba	52	Cotton	1.04	500	500	30,000,000	2,718,712	9.06%	5,437
Safané	26	Maize	1.43	500	500	30,000,000	2,438,186	8.13%	4,876
Safané	26	Rice	1.79	500	500	30,000,000	2,438,186	8.13%	4,876
Safané	26	Sorghum	0.87	500	500	30,000,000	2,438,186	8.13%	4,876
Safané	26	Sesame	0.67	500	500	30,000,000	2,438,186	8.13%	4,876
Safané	26	Cotton	1.04	500	500	30,000,000	2,438,186	8.13%	4,876
Dori	17	Maize	0.60	500	500	30,000,000	3,635,015	12.12%	7,270
Dori	17	Sesame	0.49	500	500	30,000,000	3,635,015	12.12%	7,270
Dori	17	Sorghum	0.62	500	500	30,000,000	3,635,015	12.12%	7,270
Total				6,500	6,500	390,000,000	36,689,536	9.41%	5,645

Area yield index insurance illustration

Department	AEZ	Crop	APH Yield (MT/Ha)	Hectares	Farmers	Total Sum Insured (XOF)	Total Gross Premium (XOF)	Gross Premium Rate	Premium per Farmer
Tcheriba	52	Maize	1.43	500	500	30,000,000	2,311,843	7.71%	4,624
Tcheriba	52	Rice	1.79	500	500	30,000,000	2,311,843	7.71%	4,624
Tcheriba	52	Sorghum	0.87	500	500	30,000,000	2,311,843	7.71%	4,624
Tcheriba	52	Sesame	0.67	500	500	30,000,000	2,539,010	8.46%	5,078
Tcheriba	52	Cotton	1.04	500	500	30,000,000	2,311,843	7.71%	4,624
Safané	26	Maize	1.43	500	500	30,000,000	2,311,843	7.71%	4,624
Safané	26	Rice	1.79	500	500	30,000,000	2,311,843	7.71%	4,624
Safané	26	Sorghum	0.87	500	500	30,000,000	2,311,843	7.71%	4,624
Safané	26	Sesame	0.67	500	500	30,000,000	2,539,010	8.46%	5,078
Safané	26	Cotton	1.04	500	500	30,000,000	2,311,843	7.71%	4,624
Dori	17	Maize	0.60	500	500	30,000,000	2,376,765	7.92%	4,754
Dori	17	Sesame	0.49	500	500	30,000,000	2,539,010	8.46%	5,078
Dori	17	Sorghum	0.62	500	500	30,000,000	2,311,843	7.71%	4,624
Total				6,500	6,500	390,000,000	30,800,377	7.90%	4,739

Hybrid index insurance illustration⁴⁹

Department	AEZ	Crop	APH Yield (MT/Ha)	Hectares	Farmers	Total Sum Insured (XOF)	Total Gross Premium (XOF)	Gross Premium Rate	Premium per Farmer
Tcheriba	52	Maize	1.43	500	500	30,000,000	2,393,216	7.98%	4,786
Tcheriba	52	Rice	1.79	500	500	30,000,000	2,393,216	7.98%	4,786
Tcheriba	52	Sorghum	0.87	500	500	30,000,000	2,393,216	7.98%	4,786
Tcheriba	52	Sesame	0.67	500	500	30,000,000	2,574,950	8.58%	5,150
Tcheriba	52	Cotton	1.04	500	500	30,000,000	2,393,216	7.98%	4,786
Safané	26	Maize	1.43	500	500	30,000,000	2,337,111	7.79%	4,674
Safané	26	Rice	1.79	500	500	30,000,000	2,337,111	7.79%	4,674
Safané	26	Sorghum	0.87	500	500	30,000,000	2,337,111	7.79%	4,674
Safané	26	Sesame	0.67	500	500	30,000,000	2,518,845	8.40%	5,038
Safané	26	Cotton	1.04	500	500	30,000,000	2,337,111	7.79%	4,674
Dori	17	Maize	0.60	500	500	30,000,000	2,628,415	8.76%	5,257
Dori	17	Sesame	0.49	500	500	30,000,000	2,758,211	9.19%	5,516
Dori	17	Sorghum	0.62	500	500	30,000,000	2,576,477	8.59%	5,153
Total				6,500	6,500	390,000,000	31,978,209	8.20%	4,920

⁴⁹ Note that these are **tentative** premium rates and are subject to change based on the final farmer distribution.

Appendix 3: Focus group participant details

Farmer focus group discussions were held in three rural communes in Burkina Faso in February 2022: Safané and Tcheriba in the Boucle du Mouhoun region, and Dori in the Sahel region. The focus groups in the first two communes were run by a local consultant. Due to the security situation in Dori, a local agent was hired to lead the focus groups there. Across all regions, the focus groups included 522 farmers covering crops such as maize, cowpeas, sorghum and sesame (figure 8).

Figure 8: Breakdown of farmer details interviewed through focus groups in Burkina Faso

Region	Municipality	Village	Number of focus groups	Number of farmers	Number of female focus groups
Boucle du Mouhoun	Tcheriba	Tcheriba	3	54	2 (40 members)
		Bankorosso	3	41	2
		Tikan	2	35	1
		Sirakélé	2	27	
		Tierkou	4	50	2
	Safané	Sokoula	5	63	5
		Bona	4	56	
		Pakoro	3	42	1
		Safané	1	11	
		Nounou	3	36	2
Subtotal			30	415	15
Sahel	Dori	Bèbaye	2	22	1
		Boulogne	2	23	
		Hoggo-Samboel	2	20	
		Koria	2	23	1
		Lerbou	2	19	1
Subtotal			10	107	3
Total			40	522	18

Most farmers interviewed were male. Despite this, a concerted effort was made to ensure that female farmers were included. In Tcheriba and Safané, female-only focus groups were held in most of the villages sampled. In one village in Safané, Sokoula, all focus groups surveyed were female-only.