



Pascaline in her sorghum field. Pascaline and her family live in Nioko, a small rural town in the commune of Pissila, in the north of Burkina Faso. Photo: Pablo Tosca

AGRICULTURAL INSURANCE IN BURKINA FASO

Challenges and perspectives

Burkina Faso has reached a critical point in its search for solutions for managing risk in the agricultural sector. A significant amount of international experience of agricultural insurance schemes has been gained in recent years, and growing interest in this area has encouraged various actors to develop new initiatives. This report argues that key stakeholders should now agree on strategic decisions and pursue a coordinated approach to design and introduce agricultural insurance schemes that will benefit the country's smallholder farmers.



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1 INTRODUCTION AND OBJECTIVES OF THE STUDY

Agriculture is the main occupation for 80% of the population of Burkina Faso. The country's agricultural sector faces both significant constraints, in terms of poor agricultural infrastructure and supply chains, and a high level of exposure to climatic risk, principally drought and floods and high volatility of commodity prices. It faces major challenges in increasing productivity and raising rural incomes, reducing poverty levels and achieving food security.

Risk management is therefore a central pillar of achieving agricultural development objectives. One risk management mechanism is agricultural insurance, which is well established in high-income countries, but is only more recently being experimented with in low-income settings with adaptations to smallholder agriculture, notably through the use of index insurance.

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Since 2012 Oxfam Intermón has been collaborating with CPF, micro-insurance broker PlaNet Guarantee (PG) and the Fédération des Producteurs et Productrices Agricoles du Burkina Faso (FEPA-B), a farmers' organization which supports commercial maize production, on the introduction of an index insurance scheme for maize. The scheme has not achieved the level of success hoped for in benefiting farmers, particularly in terms of facilitating access to seasonal credit, which was envisaged at the outset, and participation in the scheme by FEPA-B members has declined. Although an evaluation of the FEPA-B scheme was carried out in 2016,¹ CPF and Oxfam determined that a complementary analysis was required, not only of the PG/FEPA-B scheme, but more widely to provide an international comparison on the potential for agricultural insurance and the roles that government and the private sector could play in the design and implementation of agricultural insurance in Burkina Faso, with a focus on the specific circumstances of FEPA-B producers.

The questions posed for the research were focused on the relevance in Burkina Faso, in comparison with international experience, of:

- **public policy**, such as the status of an existing government initiative to form a specialist agricultural insurance organization and a technical risk management unit; the relevance of government services in statistical data collection; the role of premium subsidies in promoting agricultural insurance; and government strategy for risk management and insurance and other government roles;
- **the role of the insurance sector**, in particular in relation to product design, delivery, education and awareness raising, and the relationship between the private and public sectors for the development of agricultural insurance;
- **technical constraints**, specifically considering the types of index insurance product already introduced in Burkina Faso, the risks covered, their acceptability to farmers, basis risk and potential improvements; and
- **the relationship to agricultural credit**, in particular whether insurance facilitates access to credit, and perceptions of credit institutions on risk and insurance.

Despite the high level of international interest in indexed agricultural insurance as a tool to facilitate gains in agricultural productivity and to promote access to credit and stabilize farm incomes, many pilot programmes in Africa have proved challenging to implement and slow to scale up. The high-risk environment in the Sahel with frequent droughts and floods, linked to

diverse smallholder farming practices and low-intensity production, makes the design of insurance products difficult. Selling products to a large number of small-scale clients is not attractive to insurers, particularly in the absence of effective value chains and farmers' organizations. For Burkina Faso, comparative international experience, regionally and globally, can support decision making on appropriate insurance strategies, complementing the considerable amount of experience already developed through PlaNet Guarantee's programmes and the significant research undertaken as part of the work of the Comité Interministériel sur la mise en place d'un mécanisme de gestion des risques agricoles et alimentaires au Burkina Faso in the period 2012–14. There continues to be significant national and donor interest in developing agricultural risk management solutions to benefit smallholder agriculture in Burkina Faso and in the wider region.

2 AGRICULTURE AND RISK IN BURKINA FASO

Agriculture is a key component of Burkina Faso's economy. The agricultural sector contributes roughly one-third of the country's gross domestic product (GDP) and it employs around 80% of the workforce. Agricultural production is also a significant source of export revenues, accounting for about 30% of all exports.² Burkina Faso's agriculture is based on cereals (mainly sorghum, millet, maize and rice), cowpeas, cotton, nuts and other fruit and vegetable crops.

Crop production is mainly seasonal and rain-fed, and this explains why drought is by far the biggest source of risk, in particular in cereal production. The marked dependence of Burkina Faso's agriculture on rainfall poses serious threats to the income of smallholder families and severely limits the involvement of financial institutions in the financing of the sector.³

Table 2.1: Crop production in Burkina Faso – the 10 biggest crops in 2016

Crop	Hectares harvested (2016)
Sorghum	1,651,961
Cow peas	1,257,838
Millet	1,244,688
Maize	937,495
Seed cotton	720,000
Groundnuts	420,000
Sesame seed	390,000
Rice	156,402
Cashew nuts	80,033
Bambara beans	47,693

Source: FAOSTAT.

Given the strong rural make-up of the Burkinabe population, climatic risks represent a serious threat for the entire community. Table 2.2 indicates how relevant and frequent the impact of such risks can be on the welfare of the population. As well as drought, climate risks include excessive precipitation, leading to flooding; in some of the most productive areas of the country, this risk co-exists with drought events. In addition, agricultural produce is threatened by post-harvest losses and by damage caused by animals and pests (Figure 2.1). Although it is not the subject of this report, livestock production is also very important and is also affected by climate risk and in particular by the loss of pasture due to drought.

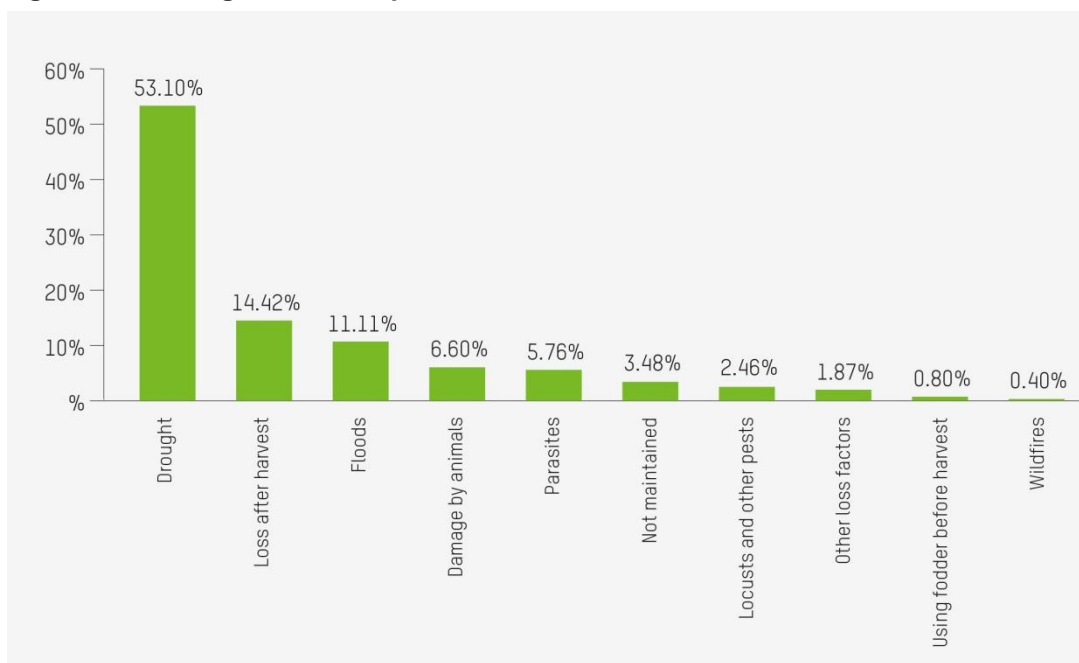
Identifying appropriate solutions for managing agricultural risks is of great relevance for the livelihoods of farmers in Burkina Faso and is a driver in the search for appropriate risk management tools in agriculture, among which agricultural insurance is one of the main options to be considered.

Table 2.2: Summary of the biggest natural disasters in Burkina Faso 1969–2013

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	111,356
2009	Floods	180,386
2010/2011	Floods	140,039
2011/2012	Drought	3,500,000
2013	Floods	13,057

Source: Université Catholique de Louvain, AGVSA. Cited in Ilboudo et al. (2014).

Figure 2.1: Average relative importance of loss factors 2000–2012



Source: Direction Générale des Etudes et des Statistiques Sectorielles (DGESS), Ministère de l'Agriculture et de la Sécurité Alimentaire. Cited in Ilboudo et al. (2014).

3 FEATURES OF INSURANCE IN AGRICULTURE AND INTERNATIONAL EXPERIENCE

3.1 SPECIFICITIES OF AGRICULTURAL INSURANCE

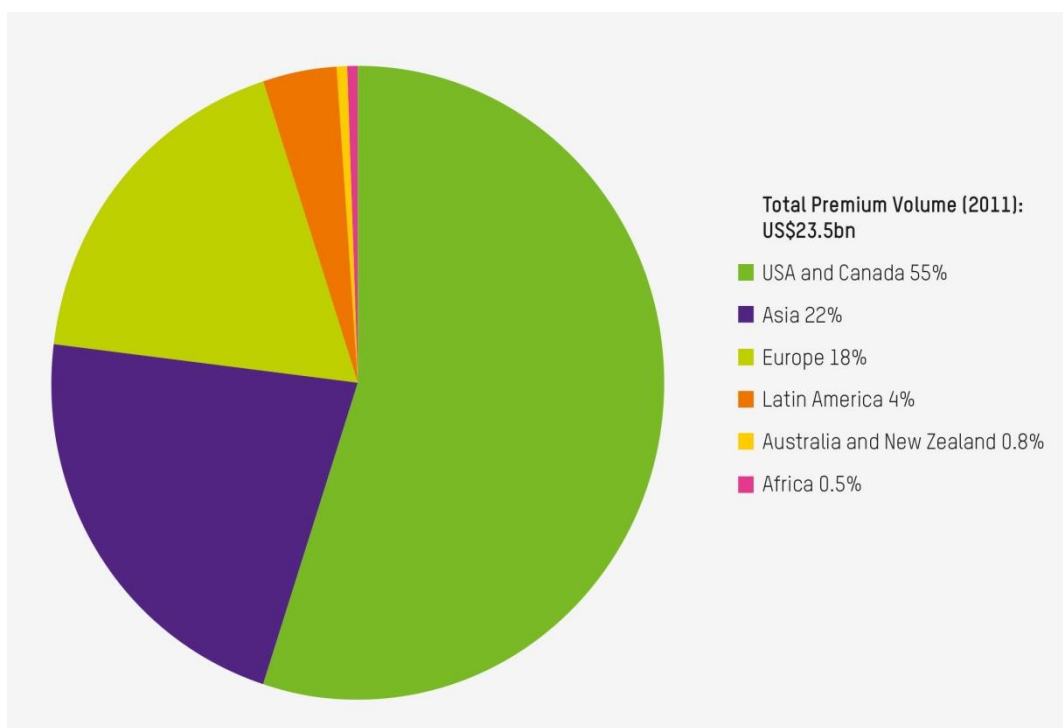
Given the distinctive features of agricultural production activities, developing an agricultural insurance programme presents numerous challenges. In fact, not all insurability conditions hold in agriculture and there are well-documented obstacles that hinder the development of private insurance markets.⁴ The main issues that affect the implementation of agricultural insurance are the following:

- Agricultural risks are generally 'correlated', and therefore the diversification effect that insurers count on does not hold.
- There are relevant asymmetries in information (i.e. the different parties to a contract have different levels of information on the object of the coverage) that lead to 'adverse selection' and 'moral hazard' effects.
- The structural features of agricultural production generate high transaction costs for underwriting, monitoring and loss adjustment activities.

The origins of agricultural insurance markets date back to the mid-18th century, when mutual associations of farmers began to share the burden of losses due to hail events.⁵ Given their highly localized nature, hail events are less correlated than other risks that affect agriculture (e.g. drought, floods, etc.) and therefore are easier to handle in insurance transactions. Attempts to provide more comprehensive coverage, focusing on yield guarantees for a wider set of risks, began in the 20th century, and after World War II various governments began to offer publicly managed and supported insurance programmes. However, most of these programmes failed due to poor management and high underwriting losses.⁶

According to the latest estimates available, in 2011 the premium volumes for agricultural insurance products worldwide reached US\$23.5bn.⁷ Figure 3.1 shows that more than half of world premiums are generated in the USA and Canada, which have large crop insurance programmes supported by central and local governments. Asian countries (mainly India and China) also account for a large share of crop insurance premiums, one that over the period 2007–11 grew from 16% to 22%⁸ and more recently is likely to have grown further.

Figure 3.1: Global agricultural insurance premiums in 2011



Source: Swiss Re (2013).

3.2 AGRICULTURAL INSURANCE PRODUCTS

3.2.1 Product classification

A first way to classify agricultural insurance products is to distinguish between 'indemnity-based' and 'index-based' products. Indemnity insurance policies are contracts in which compensation is based on measured crop loss or damage, while index insurance contracts pay out with reference to an indirect indicator intended to be a 'proxy' for loss or damage.⁹

The main types of indemnity-based crop insurance products are:

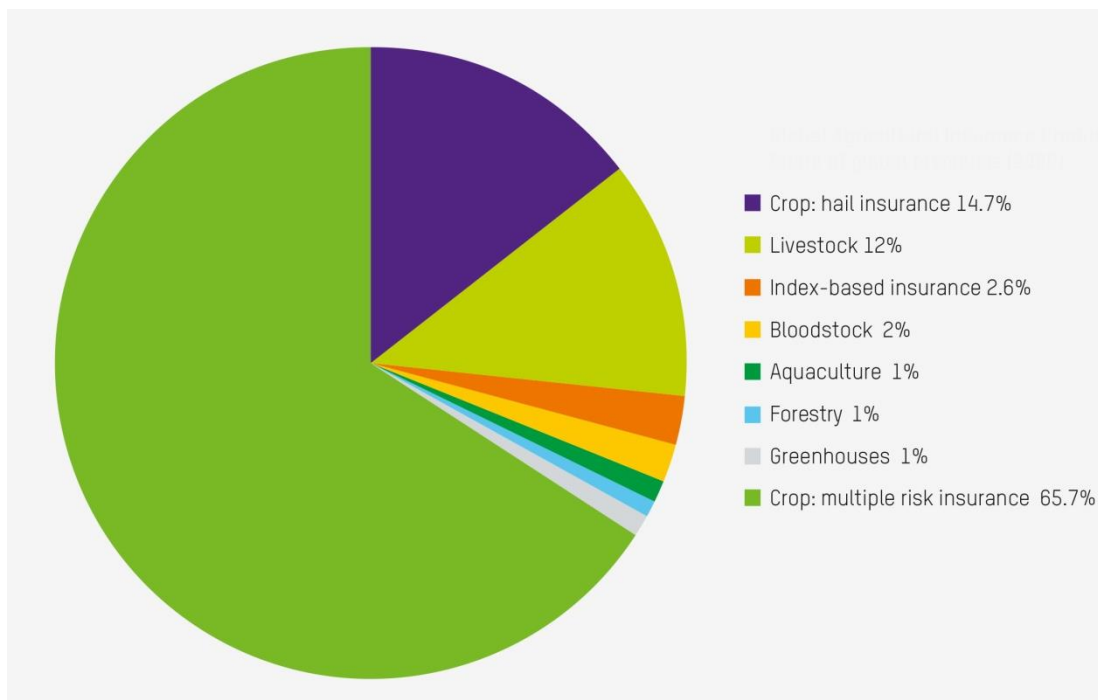
- **named peril crop insurance (NPCI)**, which can be either 'single peril' (e.g. hail) or 'combined peril' (e.g. hail + frost + wind), and where payments are made on the basis of a percentage of assessed damage;
- **multiple peril crop insurance (MPCI)**, in which payments are established on the basis of loss of yield generated by a comprehensive set of perils (some exclusions may apply);
- **revenue insurance**, in which the yield loss component of MPCI cover is complemented by a price coverage element.¹⁰

There are two main categories of index product:

- **weather index insurance (WII)**: contracts that for a specified area provide the same payouts to all farmers according to the value of an index based on a weather variable (e.g. rainfall, temperature, wind speed, etc.);
- **area yield index insurance (AYII)**: contracts that for a specified unit area of insurance (UAI) provide the same payouts to all farmers against an estimated reference average yield (the 'yield index') of the area.

Relevant data on premium volumes in agricultural insurance product types are very difficult to find. However, some reliable estimates referring back to 2009 show that, at that time, NPCI and MPCI combined represented more than 80% of the volume of global premiums, with index insurance products accounting for only 2.6% (Figure 3.2). Although things have certainly changed since 2009 and the relevance of index insurance is growing, it is clear that, overall, traditional indemnity policies are the more commonly used type of agricultural insurance product globally.

Figure 3.2: Global agricultural insurance products – share of global premiums (2009)



Source: Iturrioz and Stutley, quoted in CABFIN (2017).

3.2.2 Features of indemnity and index insurance products

The operational differences between indemnity and index products are quite relevant and it is worth highlighting the preconditions and the advantages and disadvantages of the different types of insurance product.¹¹

Multiple peril crop insurance

Preconditions

- Detailed information required about yield history and farming practices at farm level.
- Need for trained personnel in the field for drawing up policies and for carrying out loss adjustment.

Advantages

- Provides comprehensive coverage at individual farm level. Usually the type of product preferred by farmers.
- No basis risk (except in the case of imprecise determination of reference yield averages).
- Simple to design, with limited technical adaptation required for different crops.

Disadvantages

- Contains a systemic (catastrophic) risk component that is difficult for insurers to handle.
- Subject to adverse selection and moral hazard.

- High transaction and loss adjustment costs (there are many examples of failed schemes; almost all those that are functional are heavily subsidized by government).
- In smallholder farming environments, farm-level data are rarely available and individual farmer insurance is very challenging to administer.

Weather index insurance

Preconditions

- Identified strong correlation between agricultural production and the weather variable to be indexed.
- Availability of sufficient data for designing the weather index and of objective ways for measuring the insured variable.

Advantages

- Eliminates most of the asymmetric information problems (moral hazard and adverse selection) of traditional insurance products.
- No loss assessment required.
- Objective and transparent.
- Simplified claim process and timely payouts.
- Reduces administrative costs.
- Facilitates risk transfer outside of the local community and insurance market (international reinsurance).

Disadvantages

- Basis risk: i.e. the difference between the payout, as measured by the index, and the actual loss incurred by the insured, when caused by the peril that the policy is intended to cover (e.g. missed payouts in drought conditions for a deficit rainfall index contract).
- Complexity in design and explanation.
- Covers only specific weather perils, leaving farmers potentially exposed to risks that are not the object of the coverage (i.e. other weather risks and non-weather risks such as pests and diseases).

Area yield index insurance

Preconditions

- Homogeneous producing areas with high correlation between yields of different farms.
- Availability of an accurate system for measuring actual average yields in UAIs, which requires a large number of trained professionals to carry out crop cuttings at harvest time and an efficient data management system.

Advantages

- Moral hazard and adverse selection are minimized.
- Costs of administering the coverage are lower than for MPCl (no need for direct visits and loss assessments on individual farms, although yield sampling is needed in each UAI).
- By directly estimating the average yield for the area, exposure to basis risk is lower than for WII since it is limited to its idiosyncratic component (i.e. localized mismatches between the average yields of the area and yields of individual farmers).

Disadvantages

- Basis risk, which in the case of AYII can be defined as the risk arising from the potential difference between the average yield in the selected area and the yields achieved by

individual farmers. Such differences can be generated by localized perils that may affect only some of the farmers in the UAI, or by marked heterogeneities in the yields of the selected insurance areas.

Table 3.1: Insurance products for agriculture – features of MPCl, AYll and Wll

		What is it?	Transaction costs	Moral hazard and adverse selection	Basis risk	Claims settlement time
Multi-peril crop insurance	Farm	Multi-peril crop insurance is a traditional indemnity insurance product against all perils	High	High	Low	Medium
		Payouts are determined through a farm-level loss assessment process				
Area yield index insurance	Village	AYll is based on average losses at the regional level, rather than at farm level	Medium	Low	Medium	Medium
		It is often based on crop cutting experiments				
Weather index insurance	Village	Wll is based on weather parameters (such as rainfall, temperature or soil moisture) correlated with farm-level yields or revenue outcomes	Low	Low	High	Low

Source: World Bank (2011).

3.2.3 Remote sensing and index insurance

Index insurance can also be designed on the basis of data collected through remote sensing devices (i.e. satellites, aircraft, drones), and this method is becoming progressively more widely used in agricultural insurance programmes.

Remote sensing data can be used to develop pure weather index products (e.g. rainfall index products based on precipitation levels estimated via satellites), or to develop products that measure variables that are directly related to the growing conditions of the crop (hence resembling more closely an area yield index).

The most common remote sensing approaches adopted in index insurance for agriculture are:

- rainfall estimates
- vegetation indices (normalized difference vegetation index (NDVI), fraction of absorbed photosynthetically absorbed radiation (FAPAR), leaf area index (LAI), etc.)
- evapotranspiration estimates (actual and relative evapotranspiration)

- soil moisture
- crop monitoring through Synthetic Aperture Radar (SAR) data.

Remote sensing applications are relatively new to agricultural insurance and the industry is still on a steep learning curve. There is clearly very strong potential for addressing some of the key problems in the implementation of crop insurance, in particular the chronic lack of data and the challenges in ground-based monitoring of remote areas. However, their ability to capture variations in productivity to an acceptable degree is not entirely proven. Such a discussion is extremely relevant but, given its complexity, it cannot be fully addressed in this report. However, it may be worth referring to the conclusions of a multi-year study carried out by the Weather Risk Management Facility (WRMF)¹² – a joint initiative by the World Food Programme (WFP) and the International Fund for Agricultural Development (IFAD) – which, in the context of smallholder agriculture in Senegal, carried out dedicated in-field testing of most of the remote sensing approaches listed above (see Table 3.2). Its conclusions are rich and instructive and, among many valuable observations, it highlights that basis risk (i.e. the risk of the contract not paying out the right amount) is a significant concern and that, for other index products, ways of mitigating the impact of the likely occurrence of basis risk events should be adopted.

Table 3.2: Remote sensing methodologies tested in WRMF study on remote sensing and index insurance

RSSP	Type of product/approach	Remote sensing data used
EARS	Relative evapotranspiration	MSG based relative ET (3km x 3km)
FewsNet (USGS)	Actual evapotranspiration	MODIS based actual ET (1km x 1km)
Geoville	Radar-based estimation of soil moisture SoS based on soil water index	ERS (50km x 50km) METOP ASCAT (50 km x 50 km; 25 km x 25 km resampled to 10 km x 10 km)
IRI	Rainfall estimates	NOAA based RFE2 ARC (10km x 10km)
ITC	Vegetation indices (NDVI)	SPOT-VGT NDVI (1km x 1km)
VITO	Vegetation indices (NDVI and fAPAR) SoS based on rainfall estimates	SPOT-VGT NDVI / fAPAR (1km x 1km) TAMSAT rainfall estimates (4 km x 4 km)
sarmap	Radar crop maps and SoS indicators	CosmoSkyMed (15m x 15m) Sentinel 1A (20m x 20m)

Source: adapted from IFAD and WFP (2010).

Box 3.1: Selected conclusions from the WRMF study on remote sensing and index insurance

- The methodologies tested fulfil the criterion of operational feasibility for insurance purposes.
- The availability of expertise and dedicated service providers is a key challenge.
- Knowledge is needed of land use, local farming practices, agronomy and agro-meteorology.
- Remote sensing data are increasingly available, but there are constraints on supplementary data in terms of availability and cost.
- The insurance regulatory authorities need to be involved and have, generally, been supportive of initiatives for remote sensing index insurance, provided consumer interests are properly protected.
- Consumer education is a key component for success.
- Access to reinsurance has generally ceased to be a limiting factor in setting up index insurance programmes.
- Yield variability between individual farmers in insured areas can create challenges in operating index insurance.
- Ground signals are complex to interpret for output-based remote sensing of smallholder farms.
- Methodologies cannot distinguish between the yield performance of different crop types in highly mixed cropping areas at a local (village) level.
- A key dimension in operating index insurance is the accurate definition of UAls.
- The lack of appropriate yield data and ground information is one of the primary challenges in designing and testing index insurance schemes.
- Product design has a critical influence on performance.
- Crop maps and masks can improve performance.
- The performance of the remote sensing methodologies developed for the project varies across different crops and areas.
- Remote sensing methodologies can be usefully adopted for identifying key stages of crop life, such as start-of-season (SoS) or end-of-season (EoS) dates.
- Product testing activities indicate that the index structures developed would not have tracked yield variability to a satisfactory level.
- Basis risk remains the main concern for both insurers and insured farmers.

Source: IFAD and WFP (2010).

3.3 AGRICULTURAL INSURANCE PROGRAMMES

3.3.1 Stakeholders in agricultural insurance

Agricultural insurance is normally offered to farmers and agribusinesses by private sector insurers. However, in some high-income countries and in most developing countries there is often strong government involvement, in terms of subsidies on premiums and other types of assistance. Agricultural insurance is therefore normally implemented in the framework of a **public–private partnership (PPP)**. This section focuses on the typical roles that government plays in promoting agricultural insurance, and section 4 provides specific examples of institutional structures including PPPs. Specific private sector initiatives, supported by development partners, have seen the introduction of many programmes in parallel with larger national PPP initiatives, such as the micro-insurance provider PlaNet Guarantee in West Africa.

The implementation of micro-level agricultural insurance requires the involvement of a number of stakeholders, as shown in Table 3.3.

Table 3.3: Stakeholders typically involved in traditional or weather index crop insurance programmes

Category	Potential stakeholder
Local insurer	Private commercial insurance companies Insurance association
Reinsurers	International reinsurance companies
Intermediary channel/distributors	Agricultural banks, rural banks, cooperative banks, non-government organizations (NGOs), micro-finance institutions (MFIs), input suppliers, agribusiness companies, outgrower or contract farming schemes
Farmers	Farmers' associations, cooperatives
Government departments	Meteorological service Insurance regulator Ministry of finance Ministry of agriculture Planning ministries Research and specialist institutes
Donors	Technical assistance and project funding

Source: Authors.

International experience shows that the agricultural insurance business is most effectively and most logically managed by **insurance companies**. Insurance policies provide a predefined legal and contractual basis under which compensation is paid to policyholders. The primary role of an insurance company under a crop insurance programme is to underwrite the products, to issue the insurance contracts on its own paper, to collect premiums and to settle claims.

Insurance companies in developing countries have focused their business on urban, commercial and motor insurance, and normally have few rural branches. There is a lack of technical expertise and know-how in underwriting crop or livestock insurance and an unwillingness to invest in agricultural insurance, which is considered difficult, costly to service and risky. However, insurance markets, working with governments, recognize the importance of the agricultural and rural sector and the potential business opportunities it offers.

Options that can help to overcome the high entry barriers for agricultural insurance include the following organizational structures.¹³

Insurance market associations

Insurance market associations exist in many countries, where they represent the interests of insurers and act as a forum for collective actions, such as training, and joint insurance industry initiatives. Associations can act as a focal point for initiatives to develop difficult types of insurance, which require that the market collaborates and which are beyond the scope of a single company. An example in sub-Saharan Africa is Malawi, where the Insurance Association of Malawi (IAM) agreed that the introduction of WII should be a 'market initiative' with the formation of technical committees, working initially with the World Bank to develop products and to organize training for all interested insurers in the market.

Co-insurance pools

Co-insurance pools are arrangements in which several insurance companies work together to issue policies for specific products. A group of insurers decide that an insurance policy for a new or difficult class of insurance can be issued as a joint ('co-insurance') policy, where each company is named as carrying a certain share of the overall risk. The pool can appoint a lead insurer to be responsible for taking underwriting decisions. Examples include Malawi, where the IAM appoints a lead insurer and companies may (on a voluntary basis) participate as co-insurers with the leader. Other examples include Spain (see section 4.4) and Turkey; in both countries, insurers have formed a pool and have also formed a specialized managing agency (Agroseguro in Spain and Tarsim in Turkey), which is responsible for policy issuance and claims management.

Specialist agricultural insurance companies

There are many specialist agricultural insurance companies internationally. Examples include the Agriculture Insurance Company of India (AIC), the Nigerian Agricultural Insurance Corporation (NAIC) and Compagnie Nationale d'Assurance Agricole du Sénégal (CNAAS) in Senegal. Many other examples exist, such as the agricultural insurance companies formed in each province of Canada. These companies may be state-owned, or have joint state and private sector shareholding.

Technical support units (TSUs) are specialized units with dedicated technical staff. A TSU can coordinate programme design and implementation with stakeholders, and can allow a focus on capacity development in agricultural insurance and create a centre of expertise that can link to national technical and research organizations and to international technical assistance. A TSU can develop national capacity to increasingly manage product design, rating, technical functions and programme monitoring. It can also coordinate with international and national/regional technical assistance partners and donors. A TSU can be attached to an insurer (or insurers) or can form part of a separate entity in association with one or more government departments.

Reinsurance is particularly important in managing financial exposure of covariate natural hazard risks such as drought in agricultural insurance. Reinsurers have expertise in agricultural insurance products, including index insurance, and as well as providing risk sharing through reinsurance, they can support insurers with actuarial pricing of risks and may also provide technical support to programmes. The availability of reinsurance markets supporting index insurance has increased as a result of the proliferation of agricultural insurance pilots and programmes, including in Africa.

Distribution of agricultural insurance to smallholder farmers is a critical part of programme design, given the geographical dispersal of the farmer client base, the need for education and awareness raising and the need to minimize the unit cost of insurance delivery. **Bundling or linkages** to supply chain actors are mainly linkages to credit providers (MFIs, banks) but also to input providers or off-takers (buyers), who may also be involved in extending seasonal credit to farmers. Similarly, effective farmers' organizations or cooperatives are needed to act as focal points for **group sales** of insurance. The presence of effective farmers' organizations is a prerequisite for the distribution of agricultural insurance, and experience shows that insurance is most feasible where it is linked to an effective and integrated agricultural supply chain or programme, where access to credit, inputs and markets is being facilitated. Similarly, more specialist supply chain arrangements, such as contract farming or organized agricultural sectors such as cotton production and processing, provide a clear entry point for insurance bundling. Such bundling frequently leads to compulsory ('automatic') insurance, where such sectors are well organized or insurance may be a requirement stipulated by the credit institution.

3.3.2 Government support for agricultural insurance

Government departments have an essential role to play in supporting agricultural insurance within a PPP.

Ministries of agriculture and livestock and research institutions responsible for agricultural crop data collection (notably crop area and production data, and loss or damage data) play a key role in developing agricultural insurance, and are needed both for historical datasets during the design phase and for ongoing data collection in operational phases. This is particularly the case for AYII (see section 3.2). Similarly, other data on livelihoods, food security and population distribution are important to insurance planning and client targeting; other government departments concerned with development, social security and disaster preparedness can also inform and collaborate on the design of appropriate agricultural insurance. Research institutes concerned with crop and livestock production and farming systems, appropriate crops and varieties, and support for supply chain development and credit systems are all also potentially relevant. Where supply chains are well developed and the crop is processed, as with cotton, opportunities for insurance are wider and processing companies play a key role.

The **regulatory authority for insurance** also plays a role in ensuring consumer protection, guiding the introduction and approval of new products and linking to regional authorities. In the case of West Africa, this is the Conférence Interafricaine des Marchés d'Assurance (CIMA), which provides an overall policy and regulatory framework for insurers in participating countries in the region.

Meteorological services are needed to provide historical data, current season data and seasonal agricultural interpretation and forecasting. Their services to insurers are highly complementary to the existing functions of meteorological departments, such as providing advice to farmers and extension services, along with early warnings and longer-term climate monitoring. With recent advances in the satellite measurement of rainfall, vegetation, soil moisture and evapotranspiration, the range of tools available to meteorological services for interpretation, as well as for index insurance, has expanded dramatically.

Finally, **ministries of finance** perform a key role as the main actors in national budget allocations and in managing the fiscal support if there are premium subsidies.

A major study was undertaken by the World Bank a decade ago into the extent of government involvement in agricultural insurance in 65 countries.¹⁴ Box 3.2 shows the financial and other types of support that may be provided by government, and Table 3.4 shows examples by country.

Box 3.2: Main types of government support for agricultural insurance

The main forms of government support for agricultural insurance globally are:

- Promotion of **agricultural insurance pools** and supporting agencies or **technical support units**: e.g. Spain, Turkey, China, Malawi, Mongolia, Thailand.
- Provision of **agricultural insurance premium subsidies**: In higher-income countries, some level of premium subsidy is the most popular form of government support and is present in all countries, especially for MPCl: e.g. USA, Canada, Spain, Portugal, China, Mexico, Turkey, India, Japan, South Korea, Brazil. In middle- and low-income countries, premium subsidies are less common, but they are important in Morocco, Senegal and the Philippines. However, subsidies are notably absent in some countries, such as Australia, New Zealand and South Africa, as well as in low-income countries where agricultural sectors dominate and budget allocation decisions of this sort are more difficult for governments.
- **Reinsurance support**: Governments supply reinsurance support in Canada, the USA and South Korea and provide favoured access to state reinsurance funds or companies in Spain, Mexico and Brazil.

- **Administrative and operational expenses support:** This form of financial support by government is provided in the USA, South Korea, the Philippines and India.
- Governments may also provide **subsidized access to other government departments**, such as meteorological departments, statistics offices, training and education, as well as enabling legislation.

Source: adapted from Mahul and Stutley (2010).

Table 3.4: Types of government support in different countries

Forms of government financial support in 2010							
Country	Year of inception	Agricultural insurance pool (co-insurers)	Public sector MPC I insurer	Premium subsidies	Subsidies on administrative costs of crop insurance	Financial support to R&D and training	Public sector crop reinsurance
<i>Developed</i>							
USA	1930s	No	No	Yes	Yes	Yes	Yes
Canada	1970s	No	Yes	Yes	Yes	Yes	Yes
Spain	1980	Yes	No	Yes	No	No	Yes
Portugal	1979	No	No	Yes	No	No	Yes
Italy	1970s	No	No	Yes	No	No	No
France	2005	No	No	Yes	No	No	No
<i>Developing</i>							
India	1985	No	Yes	Yes	Yes	No	Yes
Philippines	1980	No	Yes	Yes	Yes	No	No
China	1950s	Yes	No	Yes	No	No	Yes
Brazil	1950s	No	Yes	Yes	Yes	No	Yes
Mexico	1990	No	No	Yes	No	Yes	Yes
Chile	2000	Yes (No)	No	Yes	No	Yes	No
Colombia	2000	No	No	Yes	No	No	No
S. Korea	2001	No	No	Yes	Yes	No	Yes
Turkey	2005	Yes	No	Yes	No	No	Yes

Source: Stutley (2010).

Table 3.4 illustrates that the main type of government support to agricultural insurance is via premium subsidies. However, as already noted, premium subsidies are only one part of a government's role in a PPP, and specific government services have other important roles to play in creating an agricultural insurance programme. Given the size of the global agricultural insurance market, with premium income in excess of \$20bn annually, it is not surprising that there is a strong need for legal and regulatory frameworks for agricultural insurance, and that these should form an important element of government policy.

3.4 KEY ISSUES AND LESSONS LEARNED FROM IMPLEMENTING INDEX INSURANCE

Undertaking a detailed analysis of the many issues and lessons learned from a century of global agricultural insurance is beyond the scope of this report. However, it may be useful to discuss some of the lessons learned from the extensive piloting of index insurance programmes in

middle- and low-income countries, which are probably the most relevant reference points for the case of Burkina Faso.

- **Index insurance is not a panacea.** In developing countries, the challenges of insuring smallholder agriculture and limited know-how in the insurance sector led to the early belief that index insurance (WII and/or AYII) would become a ‘panacea’ providing solutions for the insurance of crops. **The expected promise has not been fully met by index insurance, and this type of product has not been scaled up as was anticipated.** This contrasts with the global dominance of MPCl, which is feasible in high-income countries and for large-scale farms, is attractive to both farmers and lenders and has been widely adopted by individual farmers. Further, high-income countries have had the resources and have been willing to provide heavy premium subsidies to their agricultural sectors. In spite of its global dominance, however (see Figure 3.2), MPCl is also a very challenging and expensive product for insurers to administer.
- **Index insurance programmes can be categorized** as promoting either ‘**production**’ gains (e.g. linked to credit and inputs) or ‘**protection**’ (where linked to safety nets as social protection).¹⁵
- **Insurance tends to be of limited interest to farmers as a ‘stand-alone’ instrument.** Insurance promoting production is of most interest to farmers if it also brings other value-added services or benefits, such as access to credit, improved seeds or inputs that enable the farmer to achieve productivity gains; insurance promoting protection targets food-insecure or vulnerable households, and needs to be integrated into a resilience strategy (e.g. the R4 Rural Resilience Initiative operated by WFP and Oxfam). Hence, **agricultural insurance is most effective as one element of an integrated risk management strategy**, bundled with and linked to other components of viable supply chains, where the value proposition provided to the farmer may be wider than insurance alone.
- **Being only one element in an integrated risk management strategy, insurance may not be the most important.** Insurance should have a benefit in stabilizing income in very adverse years, but in reality its main perceived value in developing countries is as a facilitator of access to credit. However, the value of insurance as a form of indirect collateral to lenders making seasonal loans depends on the efficiency and quality of the insurance product and may not be attractive enough to lenders. Other forms of collateral can be important, notably *warrantage*, a system used in West Africa whereby grains are warehoused in local storage under supervision and a warehouse receipt is issued. However, grains stored under community *warrantage* are normally only stored for a limited period after harvest, and *warrantage* is primarily a mechanism to benefit from price increases in the lean period. *Warrantage* can provide a borrower with a certificate as collateral against loans, but it is less suited for seasonal input loans, which are needed for the following cropping season.¹⁶ *Tierce détention* is a form of collateral management agreement used by aggregators of grains in well-organized supply chains.
- **Agriculture is risky, so premium rates are inevitably high and often unaffordable within the cost and return margins available to farmers.** Hence voluntary demand for insurance is low, unless it is accompanied by other measures that offer opportunities to improve income.
- **Risk assessment** (understanding sources of risk, their frequency and severity and their impact on families, households and communities) is fundamental to planning risk management strategies, including the role of insurance. Linked to the assessment of risk is the need to understand existing systems of informal risk management and coping, which are often well developed at household and community levels. Such understanding informs the process of designing risk transfer through insurance, and helps to determine the intervention points.
- **A clear understanding is needed of both risks (which may be insurable or uninsurable) and constraints faced by farmers.** Risks are uncontrollable and unforeseen events whose occurrence and timing cannot be predicted. Constraints are known and predictable difficulties faced by farmers and beyond their individual control, e.g. lack of access to quality seeds, rural transport or timely availability of inputs.

- **Rainfall is normally the most significant risk faced by farmers growing rain-fed crops, but is only one of many risks faced by farmers.** The causes of agricultural loss of yield or crop damage are numerous and complicated, and risks are increasing. Rainfall timing and distribution, length of seasons and dry spells are critical to final yields.
- **Index insurance is technically complex** in its research and development (R&D) phase, although it can be relatively easy to distribute and operate during the implementation phase compared with indemnity insurance. Building the capacity of national stakeholders is essential if programmes are to be sustainable beyond a period of initial technical assistance from donors.
- **Weather index insurance is difficult to scale up.** WII based on weather stations requires a high density of stations and good historical weather data. Individual weather stations deployed for WII each need to be calibrated to define the triggers. This lack of easy scalability is one driver behind the interest in remote sensing, which provides data with total spatial coverage within a country (see section 3.2.3). However, there are many other benefits to developing improved weather station networks, linked to forecasting and advisory services.
- **Insurance awareness is very low amongst smallholder farmers in developing countries.** The introduction of insurance generally, and of index insurance specifically, requires careful extension and explanation, initially to those who will be extending information to householders or farmers, and then to farmers themselves. Given these constraints, it has been found very important to identify 'trusted parties' to whom farmers can relate and whose advice they respect. In India, this was achieved by respected farmer service organizations.
- **Basis risk has been identified as the biggest single drawback of index insurance.** Localized and uncorrelated risks cannot be covered by index insurance. A detailed discussion on basis risk is provided in Box 3.3.

Box 3.3: Basis risk in index insurance for agriculture

Basis risk is a key constraint for index insurance. In its widest sense, basis risk is the difference between the loss experienced by a farmer and the payout triggered. However, identifying the **differences between losses and payouts received** by farmers can be complex. Such differences depend on the index insurance methodology on which the coverage is based: for example, losses caused by pests and diseases are not covered by a WII contract. Basis risk can give rise either to underpayments or overpayments compared with the intended payment.

A key dimension of index insurance is the distinction between the average losses experienced in the coverage area as a whole (**covariate risk**) and losses experienced by individual farmers (**idiosyncratic risk**). The causes of basis risk can be related to the distance from the point of measurement of the indexed variable and the geography or size of the unit area of insurance (**spatial basis risk**), or to the timing of the start of the crop season, which may differ from the measurements established in the index insurance contract (**temporal basis risk**).

If parameters such as triggers and exits are incorrectly calibrated, or the relationship between the index measurement and the crop yield is not clear, basis risk may be attributed to product design (**product basis risk**).

Despite these complexities, the general and wider definition of basis risk remains useful. However, it must be remembered that, when determining whether basis risk has occurred, it is necessary to consider the cover intended by each index insurance methodology. This difference emphasizes the importance of clarity in the wording of the insurance policy and of educational outreach when index insurance is sold.

Source: adapted from IFAD (2017).

4 EXPERIENCES OF AGRICULTURAL INSURANCE IN SELECTED COUNTRIES

4.1 INDIA

History of the programme

India has long and significant experience of implementing crop insurance programmes. Initial attempts to develop such programmes date back to the 1970s and were based on an individual indemnity-based approach, where each individual farmer was compensated for losses occurring on his/her own farm. It soon became apparent that individual crop insurance would be challenging to manage in India's agricultural context and therefore testing began of a 'Homogenous Area' approach in 1979 under the Pilot Crop Insurance Scheme (PCIS).¹⁷ This was the first attempt to adopt AYII in India, an approach that would end up being the backbone of all following programmes. In 1985 the Comprehensive Crop Insurance Scheme (CCIS) was launched, extending crop insurance nationwide and introducing a compulsory linkage to credit, another feature that would be maintained in the schemes that followed.

Different version of the government programmes were subsequently developed and in more recent times WII schemes have also been introduced (see Table 4.1). In 2015 more than 20 million farmers were covered by India's public crop insurance scheme.

Table 4.1: Evolution of agriculture insurance schemes in India

Year	Scheme/Product design
1972–78	First ever crop insurance scheme by Government of India based on 'individual' or indemnity-based approach
1979–84	Pilot Crop Insurance Scheme (PCIS)
1985–99	Comprehensive Crop Insurance Scheme (CCIS)
1999–2015	National Agriculture Insurance Scheme (NAIS)
2003–04	Farm Income Insurance Scheme (FIIS)
2007–08	Pilot Weather Based Crop Insurance Scheme
2010–11	Pilot modified NAIS in 50 districts
2013–14 to 2015–16	National Crop Insurance Programme (MNAIS + WBCIS)
2016	Pradhan Mantri Fasal Bima Yojana (Crop insurance scheme)

Source: GIIF (2017).

Salient features of the current programme

The programme currently operating is known as Pradhan Mantri Fasal Bima Yojana (PMFBY) – literally, the ‘Prime Minister’s Crop Insurance Scheme’. Under the scheme, insurance policies are retailed by banks in mandatory linkage with agricultural credit (as for previous programmes, insurance coverage is also offered to ‘non-loanees’). The cost of policies is subsidized by both central and local governments, allowing farmers to pay fixed premium rates of 2% of the sum insured in the *kharif* (monsoon) season and 1.5% in the *rabi* season (winter crops). As opposed to previous schemes, public support is provided only in the form of premium subsidies, while reimbursement is no longer made to insurance companies of claim payments exceeding certain thresholds.

As in previous versions of the scheme, losses are established at an area level through a set of sample crop cuttings in the fields. In the current scheme the objective is to adopt smaller UAIs in order to generate a more accurate estimation of losses in the insured areas. The aim is that the reference UAI will progressively be reduced from *taluka* (sub-division) level to *gram panchayat* (village) level. This will obviously generate a significant increase in the number of crop cuts required and, therefore, the PMFBY programme intends to adopt remote sensing technology to support planning of the required yield estimation activity. The scheme also intends to adopt digital technology for geolocation, visual recording and data transfer in the execution of crop cuttings.

Box 4.1: Operational features of the PMFBY scheme

Cost of coverage

- Farmers’ contributions to premiums have been reduced to 2% annually for *kharif* crops and 1.5% for *rabi* crops, enabling small and medium farmers to benefit from crop insurance.
- The annual premium for commercial and horticultural crops is 5%.

Crops covered

Food crops (cereals, millets and pulses)

Oilseeds

Annual commercial and horticultural crops

Risks

The following crop stages and risks leading to crop loss are covered under the scheme:

- Prevented sowing/planting risk: when an insured area cannot be sown or planted due to lack of rainfall or adverse seasonal conditions.
- Standing crop (sowing to harvesting): comprehensive risk insurance is provided to cover yield losses due to non-preventable risks, including drought, dry spells, floods, inundation, pests and diseases, landslides, natural fire and lightning, storms, hailstorms, cyclones, typhoons, tempests, hurricanes and tornadoes.
- Post-harvest losses: coverage is available only up to a maximum period of two weeks from harvesting for crops that are allowed to dry in cut and spread condition in the field after harvesting against specific perils of cyclone and cyclonic rains and unseasonal rains.
- Localized calamities: loss/damage resulting from the occurrence of identified localized risks of hailstorm, landslide and inundation affecting isolated farms in the notified area.

Source: Indian Council of Food and Agriculture (2016).

Relevant indications for Burkina Faso

India's experience in agricultural insurance is a relevant reference point for any country that is intending to develop a government-supported insurance programme for agriculture.

Key features of the scheme include the following:

- The main approach chosen by the Indian authorities for the national crop insurance scheme is AYIL. WII policies are also included in the programme.
- Crop insurance policies are retailed by credit institutions. Farmers who apply for loans for crop production have to purchase mandatory crop insurance coverage.
- The extremely high penetration of the crop insurance programme is due to the compulsory linkage to credit and to the very high level of support provided in the form of premium subsidies. For the 2016–17 *kharif* and *rabi* seasons, central and local governments invested roughly \$2.8bn in the insurance programme).¹⁸

The long history of the Indian programme is characterized by a process of continuous adjustments and improvements aimed at correcting the numerous issues that have arisen in the implementation process. Some of the problems that the PMFBY scheme is intending to address include:

- encouraging the participation of small and medium farmers, since uptake is traditionally skewed towards large farms (premium subsidies have reached an extremely high level in order to make insurance affordable to all farmers);
- generating a system of yield estimation that can capture losses at the appropriate level of aggregation (under the PMFBY scheme, the size of UAIs will be reduced to village level);
- reducing the financial and management impact of the yield estimation process (PMFBY promotes the use of technological solutions that can selectively reduce the number of crop cuttings to be carried out);
- reducing the time taken for settling insurance claims (it is planned that processing, approval and payment of final claims will happen within three weeks of the receipt of yield data, which will be available within a month of harvest);
- providing better information to farmers, who may not be aware they are insured (PMFBY intends to improve awareness raising and information);
- addressing the considerable issues of fraud that have plagued the scheme (introducing sounder verification processes with the application of digital technology); and
- Improving data collection procedures at all levels of the programme.

4.2 MOROCCO

History of the programme

Morocco's experience in agricultural insurance is based on the Mutuelle Agricole Marocaine D'Assurances (MAMDA), a well-established and financially strong mutual agricultural insurance company that has been operating since 1963. MAMDA has a specific agricultural mandate but it also underwrites most lines of traditional insurance, including life and property. In more recent times it has been particularly active in providing drought insurance to Moroccan farmers. From 2000 to 2011 MAMDA managed a drought insurance programme for three types of cereal, based on assessment of drought losses at the level of the *commune rurale*. The risk was borne mainly by the state and by reinsurers. In the 2011–12 season MAMDA introduced a new *assurance multirisque* programme in partnership with the state, which it is still running today.

Salient features of the current programme

- **Type of insurance:** Multiple peril crop insurance, with area yield for small-scale farmers (level 1) and individual farmer yield-based MPCl insurance for larger-scale farmers (levels 2 and 3).
- **National agricultural risk management strategy:** The government has made agricultural insurance an important element of a national risk management strategy, though the strategy extends much more widely (see Box 4.2).
- **Subsidization:** The programme is heavily subsidized by the government under the scope of the 'Green Morocco' economic plan, at different levels according to the category of farmer (see Table 4.2).
- **Structure:** MAMDA acts as insurer and manager of the insurance scheme, bears the risk, markets the insurance and is responsible for loss adjustment.
- **Partnership with government:** The Ministry of Agriculture and Fisheries has a specialist unit to support the insurance scheme. It jointly undertakes seasonal monitoring of crop development and supports zonal (*commune rurale*) declarations of disaster to trigger a commune's eligibility for loss adjustment and potential payout.
- **Triggers:** Losses are triggered for level 1 only if the yield loss for the *commune rurale* is more than 35% of its 10-year average yield; this is assessed by taking samples within the *commune rurale*.
- **Loss adjustment:** There is a heavy emphasis on the technical strength, objectivity and independence of the loss adjustment process. There are 80 trained independent inspectors reporting to MAMDA, who carry out field visits at sowing time and during the season and who are responsible for education and prevention, as well as actual loss adjustment.
- **Technology:** MAMDA has its own remote sensing technology to support (but not replace) the field loss adjustment process.
- **Crops covered:** Cereals and leguminous crops.
- **Area covered:** 1,100,000 hectares in 2016/17.
- **Risk assessment:** Crop loss data in Morocco suggest that 41% of losses are caused by drought, 21% by pests and diseases, 10% by sirocco winds (*chergui*), 8% by high temperatures, 6% by water stress, 4% by frost, 3% by flood, 2% by hail and 5% by other causes.¹⁹

Box 4.2: Strategy for the management of agricultural risks in Morocco

La stratégie du Ministère de l'Agriculture consiste à évoluer progressivement vers un système de gestion des risques s'appuyant largement sur **une approche par anticipation**, à travers des programmes structurants de prévention des risques et de nouveaux produits d'assurance.

Cette stratégie vise les principaux objectifs suivants :

- La réduction de la vulnérabilité des agriculteurs face aux risques agricoles;
- L'amélioration des pratiques agricoles et partant, la hausse des rendements;
- L'augmentation des revenus des agriculteurs;
- La sécurisation et la promotion des investissements dans l'agriculture;
- L'amélioration du climat des affaires du secteur agricole.
- C'est dans ce cadre que le Ministère de l'Agriculture a mené une étude stratégique pour la mise en place d'un système d'assurance agricole. Cette étude a permis :
- L'identification et la hiérarchisation des risques auxquels sont confrontées les différentes filières agricoles dans les diverses régions du Maroc ;
- L'identification des pratiques et des attentes des agriculteurs en matière de gestion des risques;
- La mise en place d'un dispositif assurantiel varié, couvrant les principales filières de production agricoles et visant autant l'agriculture performante que l'agriculture solidaire.

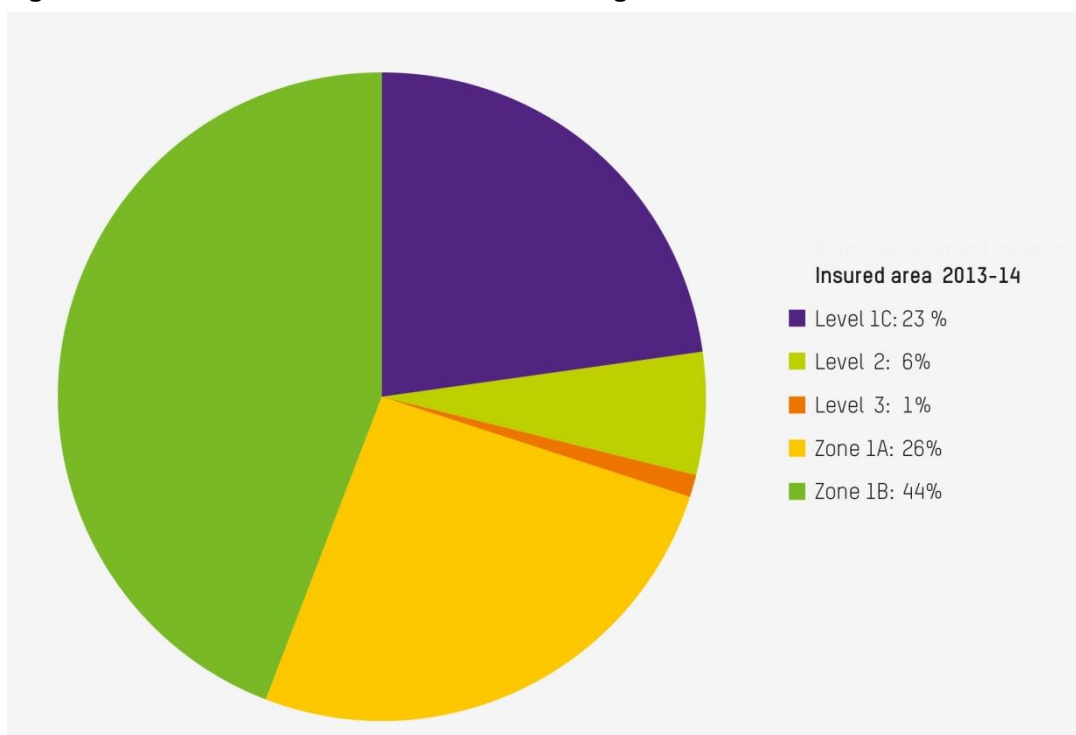
Source: Ministry of Agriculture and Fisheries of Morocco.

Table 4.2 Levels of insurance offered in Morocco

		Insured capital	Farmer's premium	% Subsidy
Level 1a	Very difficult areas (wheat yield <0.6T/Ha)	70 US\$ Dh/Ha	1.5 US\$/Ha	90%
Level 1b	Difficult areas (<1.2 T/Ha of wheat)	100 US\$ Dh/Ha	2.5 US\$/Ha	90%
Level 1c	All other areas	130 US\$ Dh/Ha	3 US\$/Ha	90%
Level 2	Farms of more than 10 Ha	330 US\$/Ha	23 US\$/Ha	68%
Level 3	Farms of more than 20 Ha	500 US\$/Ha	45 US\$/Ha	57%

Source: MAMDA Re (2014).

Figure 4.1: Distribution of area insured according to level



Source: MAMDA Re (2014).

Relevant indications for Burkina Faso

- MAMDA is an insurer that is both technically and financially strong and that specializes in an agricultural clientele, with multiple lines of insurance for the rural sector.
- The current crop insurance programme has taken nearly 20 years to evolve, through testing and learning from experience.
- The government has established an agricultural risk management strategy and has determined that agricultural insurance is a central pillar, justifying heavy levels of subsidization and other support.
- Smaller farmers receive a greater level of subsidy (of up to 90% of the premium payable) than larger farmers.
- Morocco has the financial resources to back the agricultural insurance scheme at large scale and with heavy subsidies.
- The crop insurance programme has a strong emphasis on the quality and integrity of its loss adjustment system, to avoid fraud and promote confidence. This is particularly relevant since the product is yield-based, which has more potential for fraud than a weather index-based insurance scheme. In Morocco, the loss assessment system is area yield-based for small farmers, meaning that sample crop cutting is needed to establish actual average yields in each *commune rurale*. For larger farmers, loss adjustment is individual. MAMDA is fortunate to have the resources to employ, train and monitor independent loss adjusters, which is essential to the integrity of operation of loss adjustment for such an insurance product.
- The roles of government, insurer, reinsurer and farmer representatives have been well defined, as well as operational procedures linked to the insurance policy and process. The government has established a special unit to support the insurance scheme within the Ministry of Agriculture.

4.3 SENEGAL

History of the programme

At the heart of the Senegalese experience in agricultural insurance is the Compagnie Nationale d'Assurance Agricole du Sénégal (CNAAS), a registered insurance company formed in 2008 under a PPP, with ownership divided between the government, private sector insurers and reinsurers, farmer organizations and private investors. It was established with an initial capital of FCFA 1,500,000,000.

The company's objectives (according to Articles 56 and 57 of the Loi d'Orientation Agro-Sylvo-Pastorale (LOASP)) are: (i) to insure farmers against the risks of natural disasters and the risks related to agro-silvo-pastoral activities; (ii) to insure farmers' production, income and equipment; and (iii) to work with the State of Senegal in the implementation of agricultural insurance schemes provided for by LOASP.

CNAAS is the first insurance company in the CIMA zone formed specifically to insure agricultural risks. Since 2008, it has developed its products and portfolio through many partnerships with national and international actors.

Salient features of the current programme

- **Type of crop Insurance:** CNAAS offers traditional **indemnity insurance** (MPCI and NPCI) and **index insurance** (AYII and WII). Index insurance products are based on rainfall deficit indices measured by rainfall stations under the management of the national meteorological agency ANACIM and on remote sensing indices (principally relative evapotranspiration (RE) and rainfall estimates (RFE)). Different index products are adapted to specific partner requirements.
- **Other types of insurance:** Livestock, fishing boats, poultry.
- **Subsidization:** A 50% premium subsidy is paid by the state.
- **Structure and distribution:** CNAAS operates as underwriter and manager of the insurance product lines, with distribution carried out mainly by third parties, including MFIs, and linked to the programmes of development partners.
- **Partnership with government:** There is no specialist unit specifically dedicated to supporting insurance programmes, but there is close liaison with ministries and with ANACIM, the national weather service.
- **International partnerships:** CNAAS has benefited from technical and capacity-building collaboration with national and international organizations, including the World Bank (Global Index Insurance Facility (GIIF)); WFP/IFAD; the West African Development Bank (WADB); Observatoire sur les Systèmes d'Information, les Réseaux et les Inforoutes au Sénégal (OSRIS); and USAID.
- **Index design:** Initially, index design was carried out mainly by external organizations supporting specific programmes, such as the commercial firm EARS based in the Netherlands and IRI, based in the USA (the latter supporting mainly the WFP R4 Rural Resilience Programme). An Index Insurance Working Group was formed in collaboration with WFP in 2013 (Comité pour le Développement et la Promotion de l'Assurance Indicielle (CDPAI)). CNAAS has more recently formed an Index Design Team, where it is working with international partners and national technical institutes to build internal capacity for index design.
- **Triggers:** Triggers are set for each specific index programme.
- **Sums insured:** Normally based on the production costs of growing the crop.

- **Loss adjustment:** For WII, payouts are determined by the index itself. However, seasonal assessments are made on the ground to monitor the development of crops and the final harvest. For AYII and indemnity products, field yield sampling and loss adjustment are required.
- **Crops covered:** Maize, groundnuts, rice, millet, sorghum, cotton.
- **Area insured:** 26,124 hectares for index insurance (2016).
- **Number of clients covered:** 39,047 for index insurance (2017).
- **Premium income:** CFA 470,985,186 for index insurance (2017).

Relevant indications for Burkina Faso

- Scaling up the penetration of insurance (including index insurance) has proved challenging in Senegal, even after nine years of operation. Eight million people are involved in agriculture in the country, and 100,000 are involved in agricultural insurance.
- CNAAS and all its partners have a desire to scale up penetration, for which a coordinated and integrated approach involving all parties is needed.
- Distribution and its linkage to agricultural credit are critical constraints to scaling up. Understanding the reasons for failure to repay loans and whether this is caused by climate or other reasons is important; this includes mapping defaulting clients in relation to drought.
- Insurers need to work closely with credit institutions to resolve constraints that affect both types of institution.
- Constraints identified by CNAAS to implementation at scale include:
 - capacity building within CNAAS for index design
 - capacity building for technical partners (meteorology, research, statistics)
 - building infrastructure for data collection and building databases
 - strengthening partnerships.
- Requirements for the application of technology:
 - satellite applications for new indices, including linkages between satellites and ground-based weather stations in index designs²⁰
 - use of mobile phone technology to support the distribution of insurance and for use in loss adjustment.²¹
- As Senegal is a West African country with similar agricultural systems and rain-fed drought exposure, there is much to be learned from the experience of CNAAS that is relevant to Burkina Faso. This includes the design of insurance products and the organization of the partnerships, programmes and farmers' associations needed to enable agricultural insurance as well as agricultural credit.
- As well as farmers facing similar risks, the constraints faced are similar in terms of access to credit and access to markets. The design of an integrated risk management strategy needs to consider both risks and constraints in supply chains for each crop type and the role that insurance can play.
- The experience of CNAAS in managing index insurance products for smallholder farmers, including awareness raising, education and the management of basis risk events, is very relevant to the expansion of index insurance in Burkina Faso.
- International organizations and specific development programmes, especially those linked to credit and inputs, play an important part in opening up opportunities for insurance.

4.4 SPAIN

History of the programme

Spain's agricultural insurance programme is an important example of how coordination between relevant stakeholders, including government agencies, can lead to the development of an effective risk management system. Spain has a long tradition of agricultural insurance. Fire and hail insurance were offered even before the 1920s, with a mutual insurance structure for hail protection created as early as 1917. The Spanish government supported similar entities until the mid-1950s when, due to the weak financial sustainability of such institutions (the premiums collected were consistently below the indemnities paid), it enacted a law that entrusted agricultural insurance to private initiatives. It was only in the late 1970s that the structure of the current PPP was finally identified and implemented).²² Table 4.3 provides a snapshot of the performance of Spain's insurance programme, which has become one of the main policy tools through which the government supports the farming community.

Salient features of the current programme

In Spain crop and livestock producers can purchase insurance for virtually all activities, covering the vast majority of risks. Thanks to this wide spectrum of coverage and to public support provided by the government, participation rates are very high.

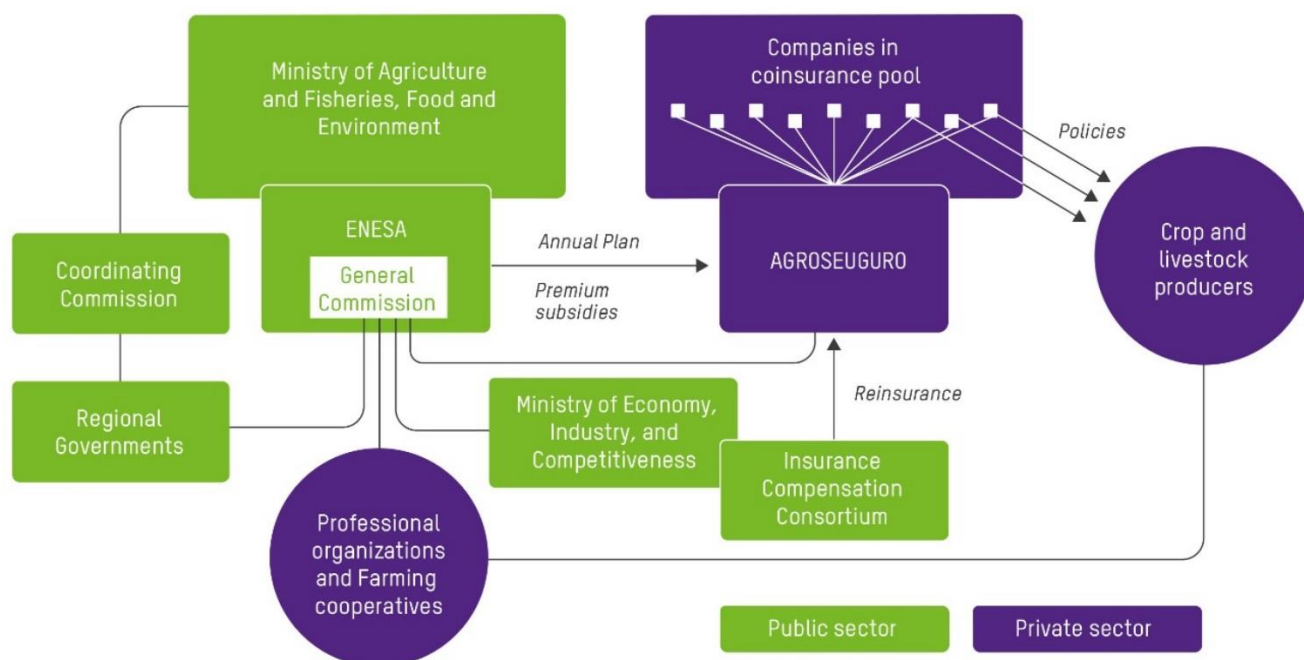
For crop production, the Spanish system is based on three main types of insurance product:

- single peril policies
- combined perils (two or more risks covered by the same policy)
- multiple peril policies (yield coverage).

In addition, various other products are offered for forestry, livestock (both indemnity- and index-based) and aquaculture.

As shown in Figure 4.2, the Spanish insurance system is structured around a complex interaction between public and private stakeholders. The private sector is represented by insurance companies, grouped in a co-insurance pool, and by agricultural producers. On the public side, the bodies involved in the system are the Ministry of Agriculture and Fisheries, Food and Environment, with its agency ENESA; the Ministry of Economy, Industry and Competitiveness, both directly with the Directorate General for Insurance and through the Consorcio de Compensación de Seguros (see below); and the regional governments (Comunidades Autónomas).

Figure 4.2: Structure of the Spanish agricultural insurance system



Source: adapted from Stoppa (2000).

The administrative heart of the system is **ENESA** (Entidad Estatal de Seguros Agrarios), a state agency for agricultural insurance that is part of the Ministry of Agriculture. ENESA coordinates the system and acts as a link between the different players. Its main functions are to draft the annual Agricultural Insurance Plans and, together with the regional governments, provide premium subsidies. As part of these activities, ENESA establishes the conditions for cultivation techniques, the insurable yield levels and the closing dates for policies. It also monitors the development and application of the insurance plans and signs an agreement with Agroseguro (see below) to implement these plans.²³ In the governance of the system, the General Commission and the Coordination Commission with the Regions, along with farmers, insurers and central and local administrative authorities, are all represented in agreed proportions.

Another key pillar of the system is the co-insurance pool managed by **Agroseguro** (Agrupación Española de Entidades Aseguradoras de los Seguros Agrarios Combinados). There are currently around 20 companies private insurers participating in the co-insurance pool, and on their behalf Agroseguro sets policy conditions and rates, controls the contracting of the policies, collects the premiums, manages public subsidies on behalf of those insured and handles compensation to clients. Insurance premium rates are set by Agroseguro on the basis of actuarial criteria that take into account risks in the different production areas. The retailing of policies is carried out by the companies through their individual commercial networks.

An important element of the Spanish system is the **Consortio de compensación de seguros** (Insurance Compensation Consortium), a state-owned company which provides reinsurance to private insurance companies. The Consortio is active in public reinsurance in all sectors in Spain and offers insurance cover for risks that are not insured by the private sector. In addition to collecting premiums from insurance and reinsurance businesses, the Consortio is financed via a compulsory fixed levy on certain lines of insurance policy stipulated by the insurance companies.

Once they are ready to be delivered, agricultural insurance policies are purchased by producers, who pay only for the portion of the premium that they are responsible for. The remaining part, subsidized by the state or by the regional governments, is paid via ENESA directly to Agroseguro.²⁴ When losses are experienced, appraisals are carried out by an independent body of loss adjusters, which operates in close coordination with Agroseguro.

It is worth emphasizing that the purchase of agricultural insurance in Spain is voluntary. Consequently, agricultural producers are free to purchase insurance coverage but, according to the provisions of the Agricultural Insurance Plans, the public sector cannot provide ad hoc support for production losses generated by risks that may be covered by an insurance policy.

Table 4.3: Performance indicators for the Spanish agricultural insurance system (2016)

Value of production insured (€ million)	12,676
Number of policies sold	423,765
Total premiums collected (€ million)	690
Share of premiums paid by producers (€ million)	446
Share of premiums subsidized by ENESA and regional governments (€ million)	244
Share of premiums paid by producers (%)	65%
Share of premiums subsidized by ENESA and regional governments (%)	35%

Source: Agroseguro (2017).

Relevant indications for Burkina Faso

- The Spanish PPP for agricultural insurance is one of the most successful examples of its kind and has created a system that provides extremely comprehensive risk coverage and has reached extremely high penetration rates (despite the fact that purchasing insurance is not compulsory for farmers). Public financial support undoubtedly plays a significant role in stimulating uptake but, in aggregate, Spanish producers still bear the largest share of the cost of insurance (65%).
- A key feature of the Spanish system is the coordination of insurance companies, which are grouped together in an effective co-insurance pool. A company that wants to engage in agricultural insurance can do so only by joining this co-insurance pool. Fruitful interaction between insurance stakeholders and the public components of the system is facilitated by the specialized government agency ENESA.
- For a country planning to set up an agricultural insurance PPP, Spain's experience is particularly interesting because in its starting phases the system had to deal with the usual lack of loss data required for policy design and actuarial pricing. Spanish policy makers decided to start offering policies despite the lack of appropriate data, while in parallel building relevant databases as market experience was developed. This approach proved to be both wise and successful, and now Spain can rely on a remarkable dataset that allows the programme to be managed according to sound insurance and actuarial principles.
- An interesting reference for countries like Burkina Faso, where drought and flood risks co-exist, is the fact that in Spain flood, given its complex dynamics, was only added as an insured peril in 1999, 19 years after the start of Agroseguro. Also, due to the localized nature of flood risk, and the potential for adverse selection where only high-risk farmers would insure, it was made compulsory for insured farmers to contribute to flood premiums.
- One of the guiding principles of the Spanish system is that it is permanently working on revisions and improvements to the programme.²⁵ This is another interesting lesson to focus on. The fact that after four decades of operation stakeholders are still continuously revising and adapting the system shows how challenging it can be to develop a programme that appropriately addresses the needs of its various components in a constantly changing environment.

5 AGRICULTURAL INSURANCE IN BURKINA FASO

5.1 INSURANCE MARKET

5.1.1 Market structure²⁶

In Burkina Faso, eight insurance companies are active in the **non-life insurance** market. The three largest in terms of premium income are the Société Nationale d'Assurances et de Réassurances (SONAR), SAHAM and Allianz, which between them share 61% of the market. Total non-life premium income in 2014 was FCFA 24.31bn (\$49.17m), plus FCFA 8.24bn (\$6.67m) of personal accident and health insurance premiums. Motor insurance accounts for 43% of market premium income. There are nine **life insurance** companies, with life insurance premiums of FCFA 17.69bn (\$35.22m).

Penetration of insurance in Burkina Faso is low on an international scale, at \$5.80 per capita, (e.g. compared with \$1,105 in South Africa). The insurance industry is governed in the first instance by the Code des Assurances, known as the **CIMA code**, the regional insurance law imposed by CIMA under the Traité Instituant une Organisation Intégrée de l'Industrie des Assurances dans les Etats Africains, known as the CIMA Treaty.

The insurance market is **regulated** by the Direction des Assurances, within the Direction Générale du Trésor et de la Comptabilité Publique. The Direction oversees consumer protection as well as market supervision, and is also responsible for overseeing the **reinsurance** arrangements of insurance companies, which also fall under the CIMA code. Insurers are required to make compulsory cessions of reinsurance to CICA Re and Africa Re, which are regional reinsurance companies.²⁷

The **insurance association** is the Association Professionnelle des Sociétés d'Assurances du Burkina (APSAB). APSAB promotes the interests of the insurance market, collects statistics and is active in education on insurance, and represents the market in relations with government. The African insurers' federation (Federation des Sociétés d'Assurances de Droit National Africaines (FANAF)) is a regional body representing the interests of insurers; it promotes training, studies and regional cooperation.

There is only one example in Burkina Faso of a **co-insurance pool**, where insurers act collectively for a particular insurance need – the insurance of bus company SOTRACO. Local actors consider that the creation of a pool is one option for agricultural insurance provision in the market, although at this point none has been developed.

Insurance premium tax is levied at different levels according to the class of business, as shown in Table 5.1. Tax on agricultural insurance premiums is levied at 12%.

Table 5.1: Insurance premium tax (%) in Burkina Faso

Property	20%
Personal accident	12%
Transport (MAT), healthcare and third party liability	8%
Export credit	0.25%
Motor third party liability (MTPL) for private vehicles	10%
MTPL for commercial vehicles	12%
Other non-life	12%

Source: Axco (2017).

5.1.2 Developments in the market for agricultural insurance

A brief chronology shows that significant work has been undertaken to analyse the needs and opportunities for agricultural insurance in Burkina Faso. In particular, the operations of the Comité Technique Interministériel de Réflexion (CTI) in 2011–13 allowed technical staff in different government ministries to develop detailed proposals, which were released in 2014.

- 2009 A request by farmers was made to the Head of State for the creation of risk management instruments for agricultural risks, such as guarantee funds or agricultural insurance, to address climate change.
- 2010 The WADB undertook a regional feasibility study for agricultural insurance, with Burkina Faso as one of the countries selected.
- 2011 PlaNet Guarantee launched a pilot project for index insurance, with assistance from GIIF.
- 2011 The national consultation Etats généraux de l'agriculture et de la sécurité alimentaire (EGASA) recommended establishing an agricultural insurance fund and climate insurance.
- 2012 The private sector asked the government to establish agricultural insurance for rural sector farmers.
- 2012 Burkina Faso joined the African Risk Capacity (ARC).
- 2013 In February an *arrêté* (decree) was approved specifying the composition, functions and scope of work of the CTI (the *arrêté* is presented in Annex 4 in French).
- 2014 Outputs from the CTI and related work provided an important new technical analysis of agricultural risks in Burkina Faso and analysis of agricultural insurance products, comparative programmes in other countries and comparative experiences in other African countries.

Technical outputs from the CTI included important studies and reports and made available a significant base of information and analysis for use by government and the private sector, both technical information on risks, risk management and insurance and data to inform future policy decisions.²⁸

The main conclusions and recommendations of the CTI in 2014 were that two structures should be formed:

- an agricultural risk management body, the Centrale de Gestion des Risques Agricoles et Alimentaires (CEGERA)

- an agricultural insurance company, the Société d'Assurance Agricole du Burkina Faso (SAABF).

CEGERA was proposed as a structure to overcome entry barriers and to provide investment and support for agricultural insurance, and risk management more widely, in Burkina Faso. It was proposed that the structure would be within government, and it would have a wide remit to address both insurable risks, such as drought and flood, and also other risks not normally managed by the insurance market such as price risks, possibly backed by other financial funds outside of agricultural insurance. Specifically, it would have a technical function in statistical data collection and management, reinforcement of meteorological networks, R&D of risk management instruments, training and management of *fonds de lissage* against price movements and *fonds de calamité*. In this respect CEGERA would become a risk management agency, harnessing technical and financial government departments and setting a framework for risk management for agriculture and the rural economy. In this respect its scope would be wider than simply acting as a TSU to insurance companies entering the agricultural insurance market.

SAABF was proposed as a specialist agricultural insurance company, to be formed as a PPP. The proposal for a specialist company recognized that agricultural insurance is technically complex and specialized, and that in the absence of expertise within the existing insurance market a specialized company is required. The company would be licensed and would operate under the CIMA code, developing insurance products and marketing them to farmers. It would receive support from CEGERA.

However, to date the recommendations of the CTI have not been implemented. Activities currently planned by the government are described in section 5.3.

The lack of development of agricultural insurance in Burkina Faso mirrors the situation in other countries in the region and also international experience. Feedback from actors in the insurance market is in line with international experiences, and indicates that Burkina Faso faces a very challenging market environment if it is to develop such insurance. Factors cited as **constraints** for insurers are:

- the fact that insurance products currently in the market are not accessible to most low- or middle-income farmers
- a lack of agricultural statistics
- the inability of farmers to pay premiums
- taxes on insurance premiums
- lack of insurance culture in the country
- low literacy rates
- limited commitment of government to agricultural insurance
- perception of very high risks in agriculture.

However, in spite of the constraints, insurers recognize that since Burkina Faso is 80% an agricultural country, farmers represent a major potential market for insurance. If solutions were found to allow agricultural and rural market insurance to be introduced, there could be significant increases in market turnover. There are currently only two agricultural insurance schemes actually operating in Burkina Faso, one for the cotton sector and one for maize, implemented by PlaNet Guarantee and insured by Allianz (see section 5.2).

5.2 CURRENT EXPERIENCE

5.2.1 Context

After the poor performance internationally of agricultural insurance programmes in the 1970s and 1980s, confidence was low for the prospects of developing appropriate solutions for managing agricultural and livestock production risks. However, in the mid-1990s new proposals aimed at pursuing more sustainable forms of public–private cooperation were put forward, and in the early 2000s the idea of using weather indices for insuring agricultural risks started to gain momentum. Both these elements provided new impetus in the quest to identify appropriate solutions for agricultural insurance in low-income countries. Research and small-scale pilot tests of index insurance started taking place in various countries and, gradually, real market transactions based on weather indices began to be implemented.

In Burkina Faso the introduction of new programmes of this sort occurred in 2010–11 when PlaNet Guarantee (PG) started designing and implementing index insurance schemes for maize and cotton. PG's contribution to the development of index insurance in Francophone West Africa has been significant. As a first mover and pioneer in the area, PG had to face the challenges inherent in creating such markets. In this respect, the lessons learned over PG's seven years of implementing experience are a key reference point for the future of agricultural insurance in Burkina Faso.

5.2.2 AYII for cotton

The index insurance programme for cotton implemented in Burkina Faso is considered a reference case at the international level. It is often presented as an index insurance success story, since it exemplifies the implementation of recommended good practices in agricultural insurance schemes.²⁹

Features that make the programme an interesting case study include the following:

- The insurance proposition is integrated into a well-structured value chain and is not retailed in isolation as a stand-alone insurance product.
- With its link to credit, the programme facilitates access to production inputs, thus addressing one of the key barriers to the enhancement of agricultural productivity.
- Being based on an AYII approach, the cotton scheme provides comprehensive coverage for the diverse set of risks that producers are exposed to.
- The design of the scheme does not alter production incentives for individual cotton growers, and the insurance policy triggers are based on criteria that are not under their direct influence.
- The database underlying the programme is sound and extensive, and it allows agricultural production risk to be appropriately quantified and transferred. In particular, given both the relatively small size of cotton producers' groups and the quality of the production data collected, basis risk is minimized.
- A longstanding and well-established relationship with the cotton processing company reduces incentives for farmers to engage in side-selling, which is one of the main problems for the sustainability of integrated value chain transactions. Where side-selling occurs, contract farming arrangements are not likely to hold and therefore the successful implementation of insurance schemes also becomes difficult (in particular where the insurance premium is pre-financed together with production inputs).

The specific objective of the cotton AYII policy developed by PG is to guarantee the reimbursement of input credit in the case of default due to a reduction in cotton yields in the

target areas. Input credit for cotton production is provided by commercial entities such as ECOBANK, the Bank of Africa (BoA) and Faïtière des Caisses Populaires du Burkina (FCPB) to groups of cotton producers (GPCs) who are members of the National Union of Cotton Producers of Burkina (UNPCB). In practice, credit is channelled through the Société Burkinabè des Fibres Textiles (SOFITEX), one of the country's main cotton companies. The cost of insurance policies is included in the loans provided to farmers, which are refunded when seasonal cotton revenues become available. In order to recover the loan amount, the credit providers are designated as the primary beneficiary of potential payouts.³⁰ The insurance policy is underwritten by Allianz, and reinsurance is provided by local and international reinsurance companies.

Although the insurance coverage names individual farmers, the policy is issued at the group level. Before the production season starts, coverage levels (insured yields) for the different groups are set. In order to reduce farmers' moral hazard behaviour, yield reference data are provided by SOFITEX in compliance with its survey procedures, area correction and yield assessments.

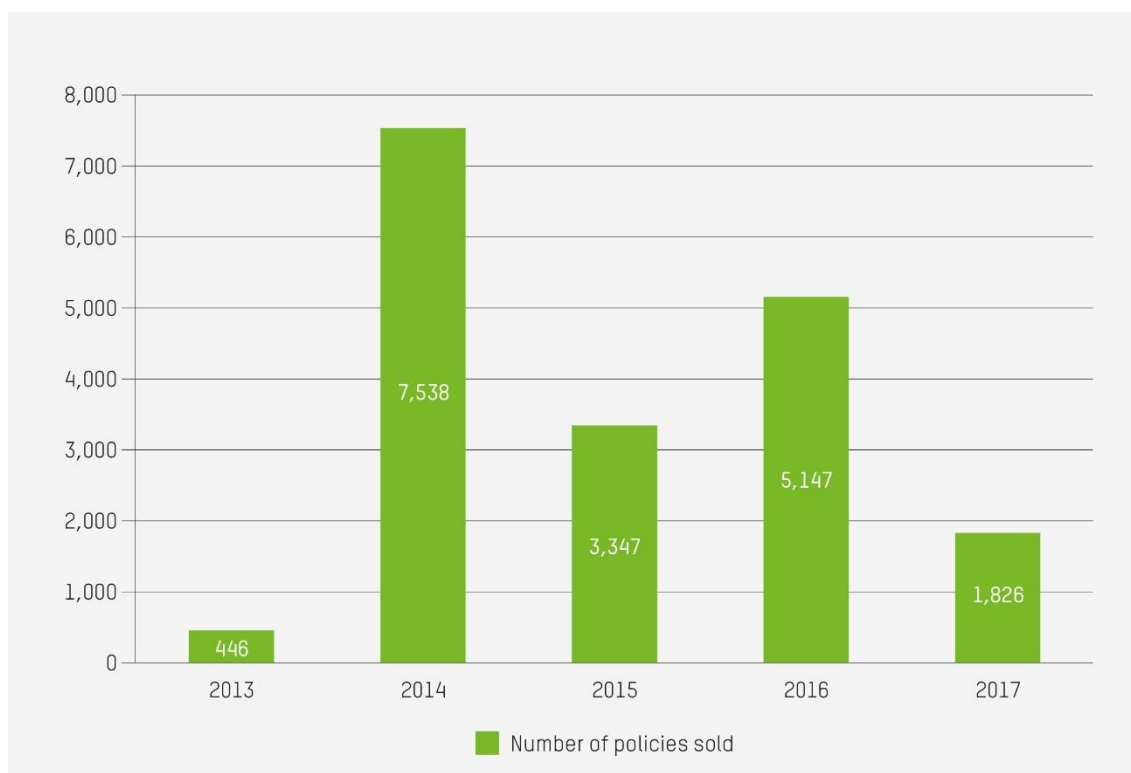
Farmers receive a payout when both of the two following conditions apply:

- the recorded GPC yield level is lower than the selected yield coverage level, and
- the recorded yield level of a 'synthetic neighbouring village' is also lower than the coverage level.³¹

In the case of an adverse event, when the index is triggered, all participating cotton producers who are part of an insured GPC automatically receive a payout, without the need for a loss assessment. To purchase area yield coverage, cotton producers pay a premium of FCFA 11,200 per hectare. The PG cotton scheme started in 2012, and the retail dynamics of its first five seasons are presented in Figure 5.1. The scheme is currently expanding from the two original regions to three new areas.

Despite its many interesting and innovative features, the cotton scheme raises some issues that are currently being debated among stakeholders. One of the main issues, highlighted by both producers and credit institutions, is that coverage is considered expensive, thus limiting the penetration of the product. Perceptions about the high cost of coverage are reinforced by the levels at which cotton yield thresholds are set in contracts, which are considered to be too low to provide appropriate coverage.³² Factors relevant to the cost of policies are the normal commercial loadings applied by insurers and reinsurers and the local premium tax (12%). Elements that could improve the penetration of products are the availability of funding for marketing, training and capacity-building activities and an updated regulatory framework that would allow for the digitalization of insurance contract documentation.

Figure 5.1: Number of cotton area yield insurance policies sold by PG



Source: PlaNet Guarantee.

5.2.3 Drought index insurance for maize³³

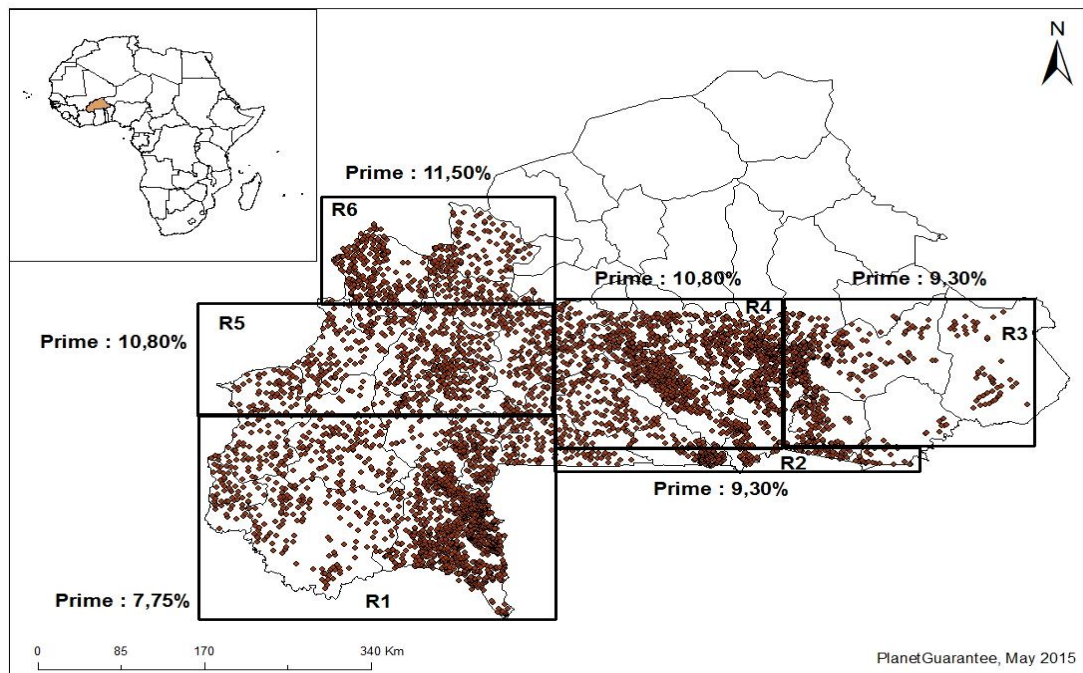
In 2012 Oxfam Intermón, the Fédération des Professionnels Agricoles du Burkina (FEPA-B) and PG established a three-party agreement with the objective of implementing an index insurance scheme to protect FEPA-B maize farmers from the impact of drought. The FEPA-B federation operates on a national scale (37 provinces) and acts as an intermediary on behalf of its members: it purchases production inputs in bulk and stores and retails agricultural products. PG was responsible for the design and management of the scheme, while Oxfam contributed to awareness raising and education on products for farmers. The insurance policy is underwritten by Allianz, and reinsurance is provided by local and international reinsurance companies.

As with the cotton programme, the general objective of the maize insurance scheme is to allow farmers to improve crop productivity by accessing appropriate production inputs. In order to do this, the insurance coverage is intended to protect farm incomes from drought events that may impact yields, thus mitigating the risks of non-repayment for credit institutions that run agricultural lending operations and that, with farmers being insured, should have greater incentives to provide credit.³⁴

The insurance product developed by PG together with its technical partners is based on data collected via remote sensing. Given the need to cover a significant geographical area and the lack of sufficient geographical coverage by ground measurement devices, and considering the cost of rainfall data actually available, PG decided to design the maize drought coverage scheme on the basis of information measured by satellite.

Among the different remote sensing approaches available (see section 3.2), PG initially selected a model based on relative evapotranspiration (RE), which was adopted in the crop seasons 2012, 2013 and 2014. In 2015 the RE approach was temporarily replaced by a model based on rainfall estimates (RFE), and then RE was reintroduced with modifications in 2016 and 2017.³⁵

Figure 5.2: Premium rates for maize drought insurance coverage in different areas of Burkina Faso

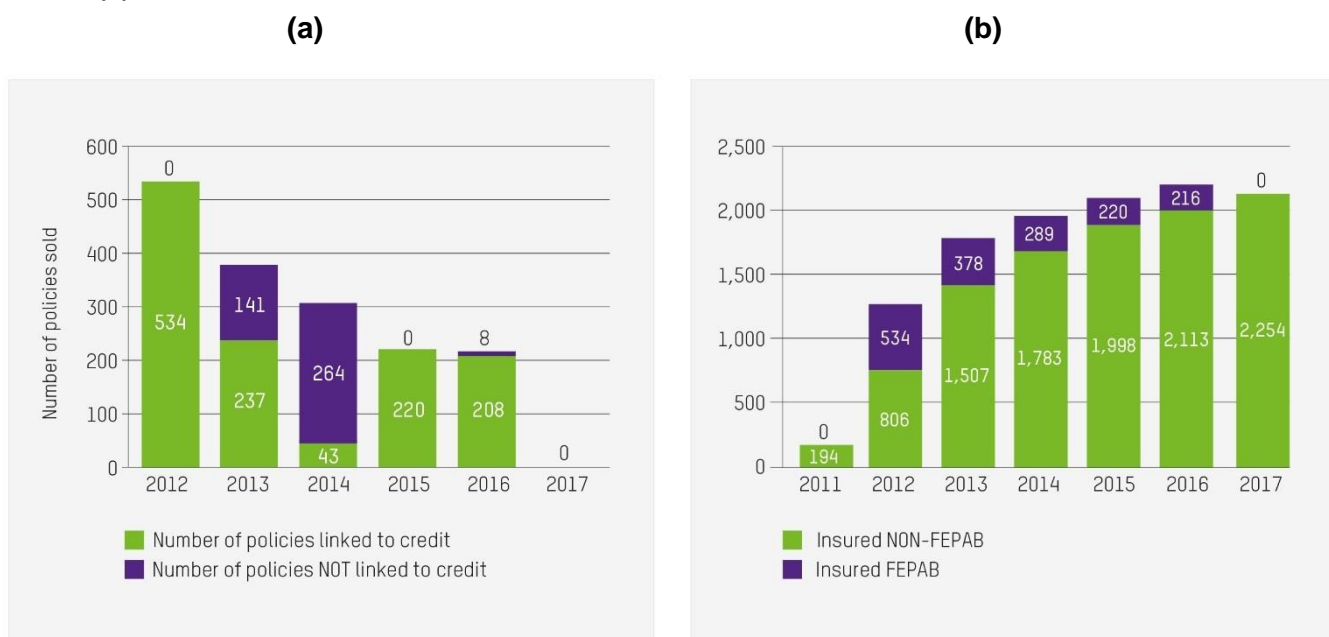


Source: PlaNet Guarantee.

Both versions of the coverage were structured on the basis of a subdivision of the crop calendar into three phases, each of which had specific triggers and payouts (see Tables A1.1 and A1.2 in Annex 1). While the RE cover was specifically designed to track the maize calendar, the RFE product was intended to be non-crop-specific and adaptable to various crops being grown in the same area.

Figure 5.3 illustrates the number of maize drought insurance policies sold by PG respectively in the FEPA-B framework (a) and across its entire portfolio (b). These two series reveal opposing trends: while PG's maize insurance portfolio shows a steady increase, the FEPA-B policies, which originally represented a significant share of the portfolio (40%), have gradually decreased to zero policies sold in 2017.

Figure 5.3: Maize drought insurance policies sold by PG in the FEPA-B scheme (a) and overall (b)



Source: PlaNet Guarantee.

Even before the nil level of 2017 was reached, Oxfam commissioned a study in 2016 with the following objectives:³⁶

- Take stock of the results of the PG/Oxfam/FEPA-B partnership from 2012 to 2015;
- Evaluate the insurance implementation process and identify its strengths and weaknesses;
- Analyze the impact of the insurance products on the income of the producers insured;
- Evaluate the performance of the indices adopted, considering also farmers' perception of basis risk;
- Make recommendations to address the shortcomings of the products in order to achieve a better penetration of agricultural insurance in the target area.

The findings of the study indicate that the progressively declining levels of interest in the maize insurance scheme among FEPA-B farmers were explicitly due to the following reasons:

- Failure of the scheme to improve access to credit and consequent challenges for farmers of paying the insurance premium at the beginning of the crop season;
- Unsatisfactory performance of the index insurance coverage in compensating insured farmers for drought losses (see Table 5.2);
- Challenges for farmers in understanding the satellite index product, combined with a lack of trust in the ability of the remote sensing approach to capture drought risk, given the poor performance of the insurance coverage.³⁷

The Oxfam study concluded its analysis with the following recommendations:

- Insurance coverage must be linked to production credit to form an integral part of the package provided to producers.
- A dedicated awareness-raising campaign should be carried out in order to correct some fundamental misinterpretations regarding the payout mechanisms of the insurance contract.
- Administrative and political authorities in Burkina Faso should be sensitized about the need to introduce premium subsidies and tax exemptions for agricultural insurance products.

Table 5.2: Awareness of producers of bad years and compensation

Year	2012	2013	2014	2015
Bad years according to the producers surveyed	Slight deficit to normal	Significant deficit	Slight deficit	Slight deficit
Compensation	Strong compensation	Very weak compensation	Weak compensation	No compensation

Source: Oxfam (2016).

The uptake of maize insurance in Burkina Faso for the overall PG portfolio has followed a different pattern from that of the FEPA-B scheme. In other programmes in which PG has retailed the maize drought product, penetration has been higher and overall it has been growing. The maize scheme developed in the framework of the PG/Oxfam/FEPA-B partnership seems to be a useful example of a situation in which the virtuous circle developed for the cotton index insurance scheme has not materialized.

The main purpose of the maize programme was to improve access to credit by managing crop production risks but, unfortunately, the link between farmers and credit did not seem to be sufficiently strong. The performance of the indices adopted seems to have been sub-optimal, and this led to reduced confidence in their ability to actually offset the drought risk and also potentially reduced the interest of credit providers. However, in the other schemes in which PG offered maize policies, the weaknesses of the product did not fatally compromise the programme, and policies are still being sold. Other factors contributing to decreased uptake in the FEPA-B scheme include the cost of the coverage, the challenge for farmers of paying the premium at the beginning of the crop season and misperceptions about the product's features. However, stakeholders consider that the real missing link has been the connection with credit operations in the framework of an appropriate value chain proposition.

When assessing the maize scheme, farmers and their representatives ask why it is not possible to develop an insurance product that is closer to what is offered in the cotton scheme: i.e. comprehensive coverage that focuses on yield reductions based on objective parameters or, if limited to covering weather risks, a policy based on measures of weather variables that are understandable and verifiable by farmers themselves. Section 6 explains in more detail why the features of the cotton scheme are not directly applicable to maize and other crops, and makes suggestions for steps that both the private and public sectors can take to support the development of appropriate risk management schemes for farmers who grow maize and other crops.

5.3 PLANNED INITIATIVES IN BURKINA FASO

5.3.1. Pilot test by the Ministry of Agriculture, SONAR and MAMDA

An accord has been entered into between Burkina Faso and Morocco whereby MAMDA, the Moroccan mutual agricultural insurer (see section 4.2), will provide recommendations and technical assistance to an index insurance pilot scheme via a joint working group. Details have not yet been finalized, but in outline the pilot is intended to be set up as a PPP in which SONAR will act as insurer and MAMDA will provide technical assistance to the Ministry of Agriculture and other government entities. Distribution will be through linkages to value chains for maize and sorghum crops in the regions of Centre-East, Centre-West and Boucle du Mouhoun. Agricultural banks will be linked to the initiative, and donors will be approached for financial support.

One issue to be determined is exactly which type of index insurance product (either AYII or WII) will be proposed. As noted in section 3, there are considerable differences between the operational requirements for each type of insurance, and AYII is a more attractive option to farmers and credit providers. However, AYII is dependent both on historical yield data at local level and on effective implementation of yield sampling in the period for which the insurance policy is operational. Undertaking field crop yield sampling for loss adjustment in each unit area of insurance will be an important implementation task if AYII is selected. If WII is selected, key decisions will include the type of index measurement to be adopted (ground measurement by weather stations or several choices of satellite methodologies). Drought and flood are the potential climate risks to be insured, dependent on the technical recommendations made by MAMDA.

5.3.2 UNDP initiative

The United Nations Development Programme (UNDP) is developing a project in which index insurance will be introduced for small farmers in areas where a network of automatic weather stations has been, or will be, installed for wider climate monitoring purposes, with financing from the Global Environment Fund (GEF). The project is in an advanced stage of preparation, and the first tests were scheduled to start in May 2018 in the Sahel region of Burkina Faso (Gorom-Gorom) and in Boucle du Mouhoun (Safané and Tchériba).

5.3.3 Potential IFAD GCF initiative

IFAD is preparing a West African regional proposal to the Green Climate Fund (GCF) for climate services, one component of which relates to index insurance. IFAD will link agricultural insurance to another programme it finances, the Agricultural Value Chains Promotion Project (PAPFA), with smallholders benefiting from the strengthening of supply chains in five crop types including rice, sesame, cowpeas and vegetable crops. Index insurance is foreseen for rice, sesame and cowpeas. The main target regions are Cascades, Boucle du Mouhoun and Hauts Bassins. PAPFA will be introduced in 2018 and will operate for a period of six years. If the project is approved by the GCF, it is understood that IFAD will subsidize insurance premiums for its duration.

5.3.4 Potential links with World Bank projects

The World Bank has both an active and a prospective portfolio of projects, targeting the strengthening of agricultural productivity, food security and value chains. While there is no specific component for insurance within these projects, the World Bank office in Burkina Faso is well aware of risk management needs, and in the past has worked on an insurance feasibility study for the cotton sector. Dialogue with the World Bank on both national and regional projects could be valuable, as its objectives overlap strongly with the objective of improving access to credit for smallholders through an integrated approach of strengthening value chains.

6 CONSTRAINTS AND OPPORTUNITIES FOR THE IMPLEMENTATION OF AGRICULTURAL INSURANCE PROGRAMMES

6.1 THE NEED FOR A COMPREHENSIVE APPROACH TO AGRICULTURAL RISK MANAGEMENT

Burkina Faso has reached a key phase in the search for appropriate insurance solutions within an agricultural risk management strategy. In the past 8–10 years significant experience has been accumulated, and the growing interest in agricultural insurance is stimulating different players to implement new initiatives.

The time seems ripe for key stakeholders to take strategic decisions and to pursue a coordinated and comprehensive approach to risk management. In this respect, the Government of Burkina Faso certainly has a key role to play but all other relevant players, such as farmers' representatives, insurance companies, credit institutions, international organizations and NGOs, should also make a significant contribution.

As indicated in the preceding sections, after decades of trials and experience at the international level, both the 'entirely public' and the 'entirely private' approaches to implementing agricultural insurance have shown their limitations. At the same time such experiences indicate that, if properly structured, PPPs can generate synergies that allow each component to contribute to a more effective and efficient intervention (Figure 6.1). However, the set of possible arrangements for an agricultural insurance PPP is virtually unlimited and there is no predefined approach that can be suggested, so each country should assess the solution which best suits its specific needs.

To this end, the following sections review some of the main decision points to be considered when planning the development of an agricultural insurance programme.

Figure 6.1: Roles of the public and private sectors in different types of agricultural insurance programme



Source: Iturrioz (2010).

6.2 IS INSURANCE THE RIGHT TOOL TO PROTECT FARM INCOMES?

The first question that stakeholders should consider is whether insurance is the right or the only tool for pursuing the intended objectives. In the agricultural development community a clear consensus has been reached on the fact that insurance is not a panacea that is able to address all risks and constraints in value chains and that its use should be recommended only when specific feasibility conditions apply.³⁸ For example, the key **protection** role that insurance can play against natural calamities in subsistence farming could alternatively be handled by dedicated social protection schemes that can still use macro (government)-level climatic indices to trigger payouts, avoiding farmer-level insurance contracts. Micro-level agricultural insurance is difficult to implement in subsistence farming conditions, where there is poor financial inclusion, low insurance awareness and high variability of productivity between individual farmers. Where insurance is seen as a tool for the **promotion** of productivity, its primary function is seen as unlocking access to credit. However, if not implemented in close collaboration with credit institutions in order to ensure that insurance products encourage the availability of credit, the scheme may fail to deliver as intended, and other mechanisms of collateral enhancement, such as *warrantage*, could play a role in reaching such objectives. Hence, accurate feasibility analyses and risk assessments to ascertain the real potential of insurance or other potential tools are always required.

6.3 WHICH TYPE OF INSURANCE PRODUCTS SHOULD BE SELECTED?

6.3.1 Indemnity-based or index insurance products

As illustrated in section 3, insurance products that are relevant to this discussion can be classified into three main typologies: MPCl, AYll and Wll.³⁹ Each of these types of products has distinct features. In general terms, the more comprehensive the cover provided and the more localized the coverage of insurance products, the more attractive they are to farmers. Hence, generally speaking, farmers tend to prefer individual farmer MPCl to index products, and prefer AYll to Wll. However, not all types of product can be implemented in all situations, and section 3 indicates why MPCl, internationally the most widespread product, is not suited for implementation in smallholder agriculture.⁴⁰ The index approach to agricultural insurance was introduced specifically to address the implementation challenges of MPCl but, despite the solutions it offers, it also brings new challenges. AYll is a very interesting insurance product and the results achieved in India's huge programme speak for themselves (section 4.1).⁴¹ However, the successful application of AYll requires homogenous production conditions, suitable historical databases and, above all, accurate yield estimation processes. The procedures for establishing yield references for settling AYll payouts are rarely available, and setting them up requires significant investment by all stakeholders involved. Wll, the latest innovation, has been introduced in an attempt to further address the constraints presented by both MPCl and AYll. However, given that in terms of coverage Wll is comparable to an NPCl indemnity product, it does not offer comprehensive protection against the entire set of production risks and its use is therefore recommended only where weather risks are the main and prevalent source of loss of production. While the challenges of MPCl and AYll are mainly operational, Wll is also technically challenging to design and basis risk is a significant shortcoming. **However, despite its limitations, Wll is often the only form of insurance protection that can be offered to smallholder farmers and, for this reason, it is important to continue improving its operational features in order to allow it to be implemented when the appropriate conditions apply.**

6.3.2 Operating Wll

Wll products can be operated on the basis of data collected through ground measurement devices, such as weather stations, or via remote sensing. Given the need to cover large regions and the lack of sufficient geographical density of weather stations, products implemented in Burkina Faso to date have been based mainly on remote sensing (RE and RFE indices). According to the 2016 Oxfam study, the performance of these indices has not been satisfactory and stakeholders are asking whether an approach based on rainfall measured by stations at ground level would be more effective.⁴² The point is supported by knowledge of other index insurance initiatives that are investing significant resources in the use of indices based on data collected by weather stations.⁴³

Weather station networks have not been expressly developed for insurance purposes and station density is usually not sufficient to provide adequate widespread coverage for risk management applications. However, increasing the density of stations is possible and the cost of new-generation automatic weather stations is becoming progressively more affordable. Nevertheless, experience indicates that issues related to the enhancement of weather station networks are not limited to the cost of purchasing additional equipment, and that what proves to be more challenging are the requirements and costs of continued management and maintenance of the additional stations (often located in remote areas), which requires intensive effort and a specialized workforce.⁴⁴

There might also be margins for improving the performance of products based on data collected via remote sensing. Technology is evolving rapidly and specific investigations indicate that, in

addition to the actual quality of remote sensing data, the ability to design insurance products is extremely relevant.⁴⁵ Hence, efforts to design and implement improved remote sensing products could also generate interesting new opportunities. As recommended by the WRMF study,⁴⁶ this may also include attempts to combine different remote sensing methodologies and even hybrid products that include both remote sensing and ground-measured data.

In summary, given the significant complexities involved in addressing agricultural risks, the identification of the appropriate insurance product for each specific situation is a challenging and specialized process. Selecting the right product is highly dependent on the existing context, both in terms of the risk profile of the crops to be insured and of the expertise and infrastructure available.

Burkina Faso is now at a point where new initiatives based on different methodological approaches are going to be tested. This means a positive outlook for agricultural insurance applications and a good opportunity for the country to leverage the different initiatives to improve knowledge on the use of agricultural risk management products.

6.4 HOW CAN THE GOVERNMENT HELP?

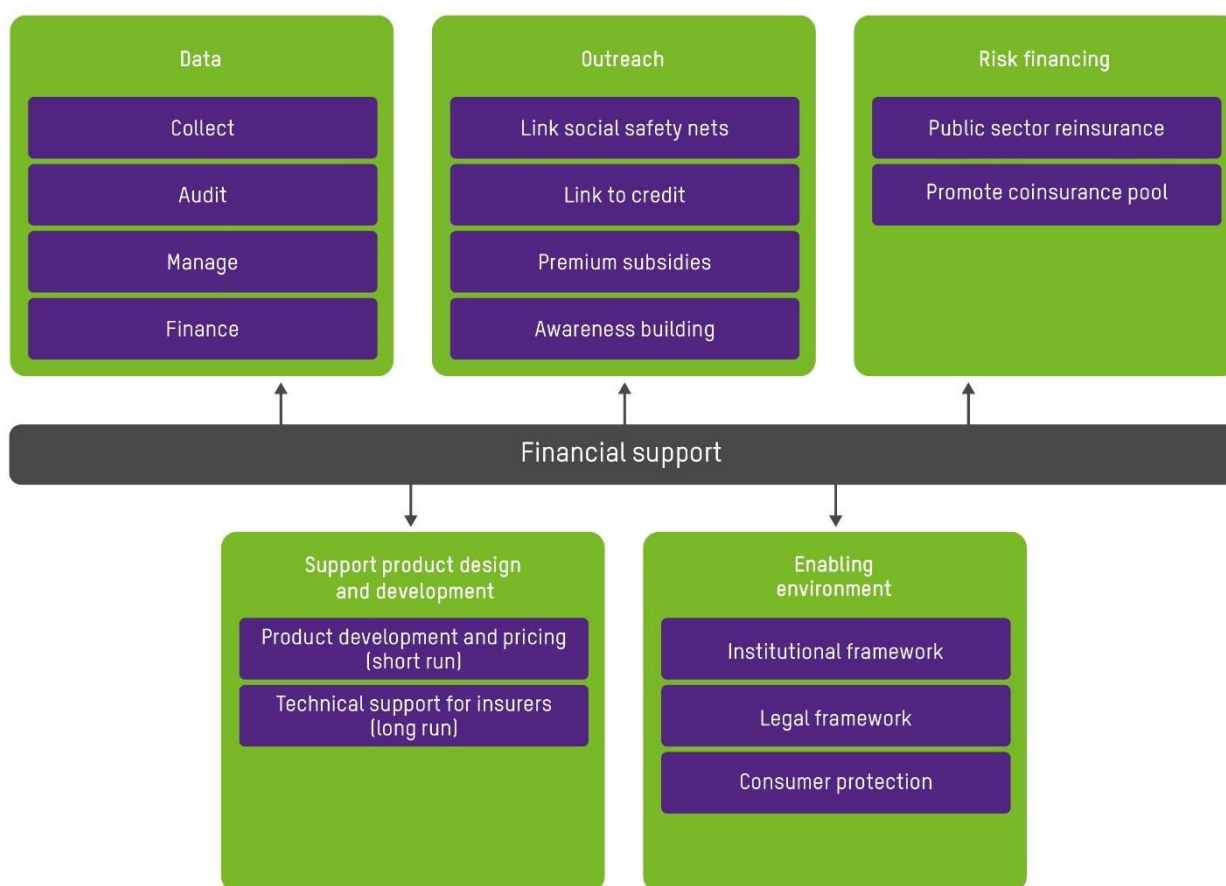
6.4.1 Comprehensive support for an agricultural insurance framework

Whether or not agricultural insurance is implemented in a PPP framework, governments have important functions to play. Fundamental activities such as data collection and dissemination or the development and enforcement of legal and regulatory frameworks are specific prerogatives of the state authority and are essential for any insurance programme. As indicated in section 3, if governments want to take a more active role and interact with private sector players in promoting agricultural insurance systems (i.e. engage in a PPP), there are various additional functions that can be carried out. These include:⁴⁷

- providing a legal and regulatory framework
- enhancing data and information systems
- education and capacity building
- research and development (of products)
- public premium subsidies
- catastrophic risk sharing/risk financing.

With more specific reference to the provision of financial support, Figure 6.2 illustrates potential activities that would strongly benefit from public funding, and which go well beyond subsidizing premiums. Promoting the development of a dedicated data collection and management system, supporting the design and development of appropriate insurance solutions, reaching out to farmers and other stakeholder to increase awareness, engaging in targeted risk financing and supporting the establishment of appropriate public and private structures are all useful ways in which a government can support agricultural insurance schemes and which complement the simple subsidization of premiums.

Figure 6.2: Public funding for agricultural insurance schemes



Source: World Bank Group.

6.4.2 Premium subsidies

Focusing specifically on premium subsidies, the country case studies in section 4 indicate that reaching relevant scale has been possible thanks in part to public support aimed at reducing the cost of policies. Some countries consider the penetration of agricultural insurance to be so important that they have opted to subsidize more than 90% of the premium cost of insurance products (see section 4). This has been considered necessary in particular in situations where insurance has been made a mandatory requirement for accessing production credit; in such cases, reducing the cost of insurance has become a prerequisite to avoid crowding out the provision of input credits.

In the agricultural policy debate, premium subsidies are a very sensitive topic. While their role in stimulating the penetration of insurance is clear, there are also side effects that need to be considered.

In the first place, the assumption that subsidies can be used initially to address typical insurance market failures and then be progressively removed seems to be unrealistic. As Skees and Collier (2012) state, '[...] dependency created by insurance premium subsidies has been consistently demonstrated by experience with products, such as crop insurance and flood insurance, in both developed and developing countries across the globe'.⁴⁸ In fact, experience shows that when premium subsidies are removed, insurance markets collapse. In addition, just like many other agricultural policy tools, premium subsidies have distortionary effects and can crowd out alternative risk transfer mechanisms or risk mitigation strategies.⁴⁹

In summary, when contemplating the introduction of premium subsidies, which can indeed play a big role in scaling up insurance policies, an accurate consideration of other impacts should be undertaken. In this respect, an obvious starting point is to assess the costs of subsidies for the state budget. Tables 6.1 and 6.2 have been formulated to provide an order of magnitude for the potential cost of introducing large-scale insurance subsidies into the maize value chain in Burkina Faso. The scenarios presented are structured around increasing insurance penetration (Table 6.1) and increasing levels of premium subsidy support (Table 6.2).

Table 6.1 shows that for levels of insurance uptake ranging from 1% (the size of a pilot scheme) to 30% of total maize area (a considerable penetration rate), the cost of supporting the scheme, on the basis of a 50% premium subsidy level, rises from FCFA 23m to FCFA 684m annually.

On the other hand, Table 6.2 shows that, if the number of hectares insured is fixed at a level of 10% (quite a reasonable proportion for a new insurance programme), the cost of varying premium subsidy levels from 10% to 70% would range between FCFA 46m and FCFA 319m.⁵⁰

The ideal level for a potential premium subsidy rate is not predetermined by any golden rule. It is clearly a political decision that should be guided by: a) the perceived importance of promoting agricultural insurance in the framework of the country's agricultural policy; b) the estimated impact on farmers' willingness to pay for insurance; and c) the expected return on the public investment, as compared with other potential uses of the same resources. Different countries have selected different rates of premium subsidies on the basis of specific political objectives and rationales.

Table 6.1: Potential aggregate cost of premium subsidies for varying level of hectares insured

Cost of production inputs = value of load = sum insured (FCFA)	50,000	50,000	50,000	50,000
Reference premium rate	10%	10%	10%	10%
Premium cost per ha (FCFA)	5,000	5,000	5,000	5,000
Total maize cultivated area (2016)	911,728	911,728	911,728	911,728
Assumed % of hectares insured	1%	10%	20%	30%
Area insured (ha)	9,117	91,173	182,346	273,518
Total premium (FCFA)	45,586,400	455,864,000	911,728,000	1,367,592,000
Premium subsidy rate (FCFA)	50%	50%	50%	50%
Amount of premium subsidy (FCFA)	22,793,200	227,932,000	455,864,000	683,796,000
Amount of premium subsidy (€)	34,746	347,457	694,915	1,042,372

Source: Authors.

Table 6.2: Potential aggregate cost of premium subsidies for varying level of premium subsidy rate

Cost of production inputs = value of load = sum insured (FCFA)	50,000	50,000	50,000	50,000
Reference premium rate (%)	10%	10%	10%	10%
Premium cost per ha (FCFA)	5,000	5,000	5,000	5,000
Total maize cultivated area (2016)	911,728	911,728	911,728	911,728
Assumed % of hectares insured	10%	10%	10%	10%
Area insured (ha)	91,173	91,173	91,173	91,173
Total premium (FCFA)	455,864,000	455,864,000	455,864,000	455,864,000
Premium subsidy rate (FCFA)	10%	30%	50%	70%
Amount of premium subsidy (FCFA)	45,586,000	136,79,200	227,932,000	319,104,800
Amount of premium subsidy (€)	69,491	208,474	347,457	486,440

Source: Authors.

6.4.3 Tax exemptions

Even before deciding to allocate direct support to insurance schemes through premium subsidies or other means that promote insurance uptake, various countries have opted to exempt agricultural insurance policies from the imposition of taxes (e.g. Senegal). This course of action has usually been taken by public administrations who have noted the high cost of insuring agricultural risks and have realized that insurance uptake is a direct function of reducing such costs. Tax exemptions should be considered a direct subsidy to agricultural insurance products, but they are easy to introduce and they have a strong fiscal rationale: the residual amount of foregone tax revenues may be more than compensated for by the increase in value added due to a higher number of insurance transactions and an increase in input purchase and crop production levels that otherwise would have not taken place.

6.5 WHAT PUBLIC AND PRIVATE INSTITUTIONAL ARRANGEMENTS SHOULD BE ADOPTED?

While contributing to reducing the cost of insurance coverage has a key impact on penetration rates, the actual impact of premium subsidies may be more effective if they are provided within a well-structured framework. As shown in the country cases presented in section 4, setting up an appropriate institutional framework is one of the drivers of successfully implementing an agricultural insurance programme.

The three pillars on which an agricultural insurance PPP framework is based are the public sector, the insurance industry and farming communities. On the public sector side different levels of engagement can be pursued. Figure 6.3 shows potential options in which the government is involved to different degrees. Such options can range from very light engagement, in which the government provides some technical support through a simple aggregation of staff from selected ministries, up to the development of a dedicated government agency for agricultural risk management that is endowed with dedicated resources and oversees and manages all agricultural insurance programmes. In addition, further expansion of government participation in an agricultural insurance PPP can be achieved by taking an active role in financing reinsurance, as actually happens in a number of countries (e.g. USA, Spain, Morocco, Mexico).⁵¹

The insurance industry also has different ways in which it can interact with the government and farming communities (Figure 6.4). Insurance companies can obviously work independently, but they can also develop different types of integrated structures that range from a simple market association to a co-insurance pool, up to a single insurance entity that is established to take responsibility for all business related to agriculture in a specific country. The implications of the different types of model are quite important and all have advantages and disadvantages (see section 3.3 and Annex 3). Successful schemes have been structured around fully integrated models (e.g., Spain, Morocco, Turkey), but also with relatively independent market players (e.g. USA). Depending on the specific market and regulatory conditions, each country should develop an approach to the insurance industry that best suits the national situation.⁵²

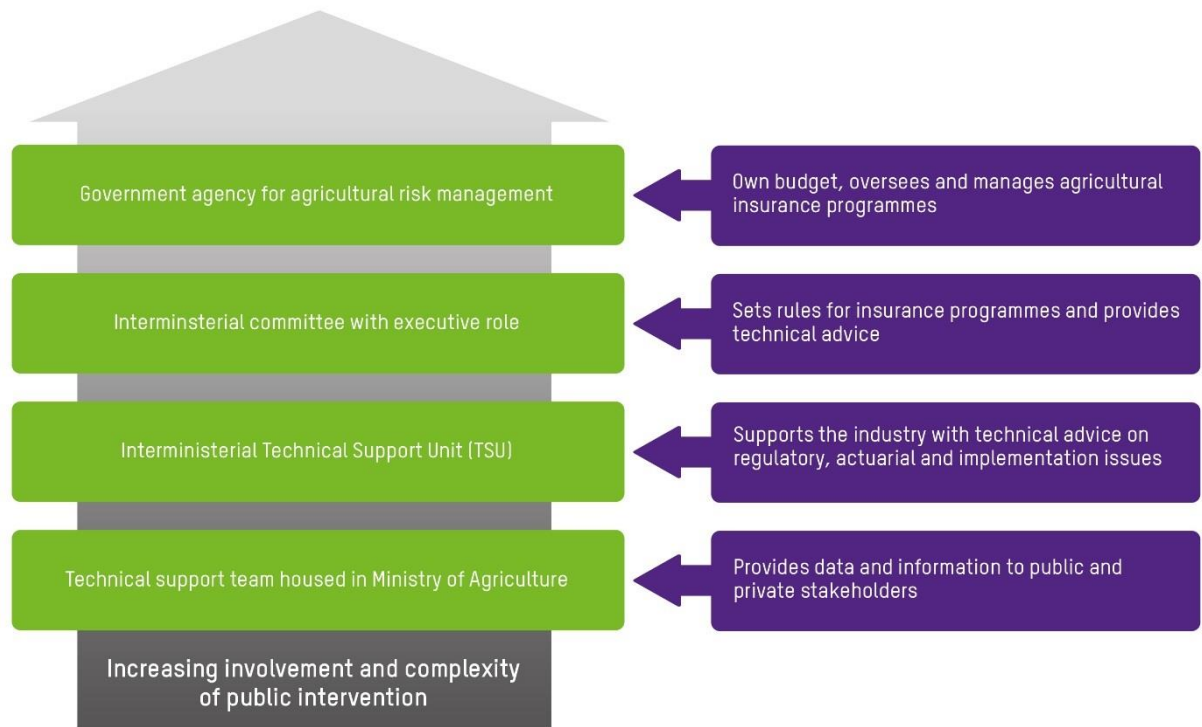
Proposals by the CTI and the way forward

As indicated in section 5, valuable proposals for Burkina Faso were put forward in 2014 by the Comité Technique Interministériel de Réflexion (CTI). The CTI's recommendation was to set up two dedicated entities: a risk management body, the Centrale de Gestion des Risques Agricoles et Alimentaires (CEGERA), and a national insurance company for agricultural risks, the Société d'Assurance Agricole du Burkina Faso (SAABF).

To date, these recommendations by the CTI have not been implemented. However, the Ministry of Agriculture is currently focusing on developing trials of specific agricultural insurance products together with insurance company SONAR and with the technical assistance of MAMDA, the national mutual insurance company of Morocco (see section 4).

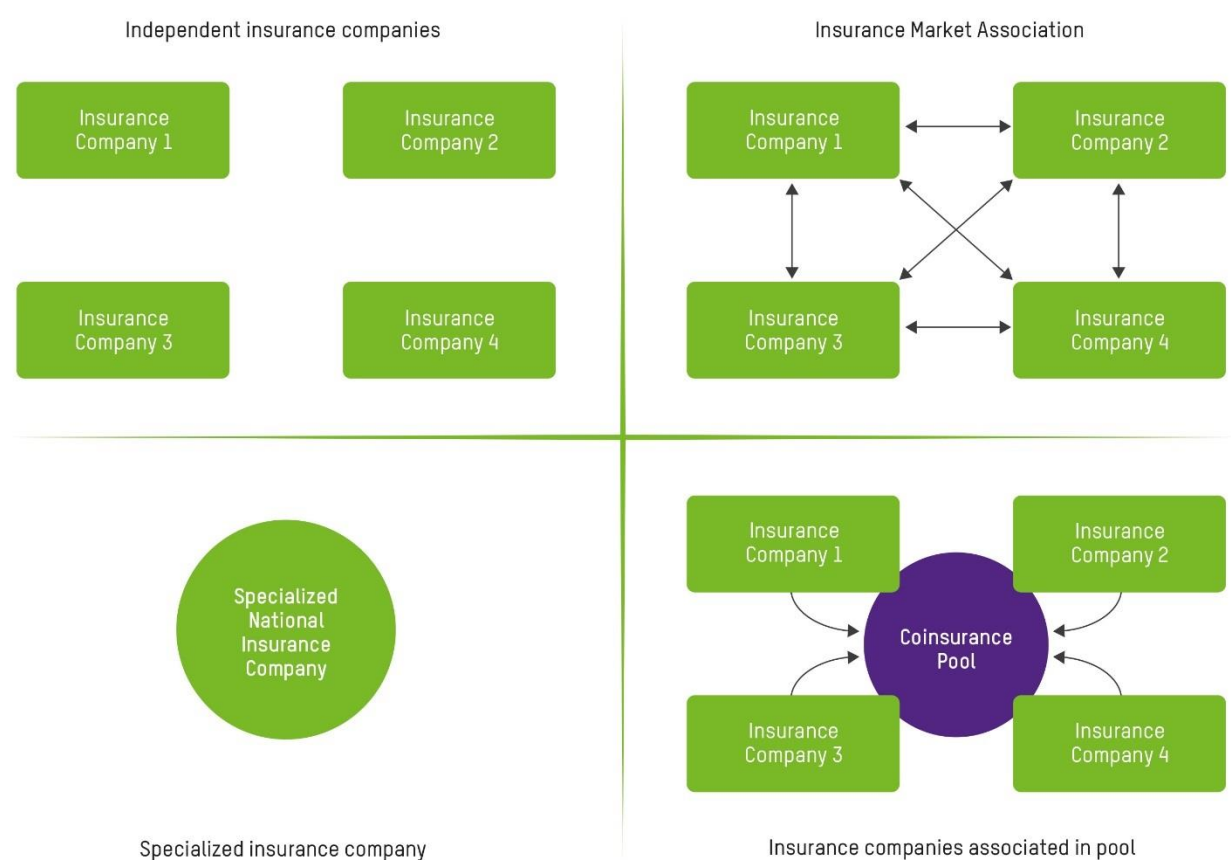
The CTI's suggestion to set up the CEGERA and SAABF entities is well considered, since two dedicated structures of this kind could provide decisive impetus for the implementation of an agricultural insurance framework in Burkina Faso. As Figures 6.3 and 6.4 indicate, the CTI suggestion leans towards a model in which both the government and the insurance industry adopt the most integrated type of structures possible. It should be stressed that pursuing such an integrated approach right from the start of an agricultural insurance programme may present challenges, and other well-established national schemes have reached that level of integration only by making gradual progress over many years. The CTI's recommendations are forward-looking but, in order for them to be successful, there needs to be strong support from all stakeholders involved, in both the public and private spheres. This would include detailed operational plans and accurate estimation of the fiscal and human resources required. Whether or not the approach suggested by the CTI is adopted by stakeholders, a first important step towards an improved understanding of the agricultural risk management dynamics and needs in Burkina Faso could be to establish a coordination forum for all the insurance initiatives that are likely to take place in the near future (see section 5.3), with the specific objective of implementing appropriate monitoring and evaluation (M&E) activities that will allow knowledge about the use of agricultural risk management products to be maximized.

Figure 6.3: Potential structures for public support to agricultural insurance programmes



Source: Authors.

Figure 6.4: Possible aggregation structures for insurance companies⁵³



Source: Authors.

7 SUMMARY AND CONCLUSIONS

THE ROLE OF INSURANCE AND PRECONDITIONS NEEDED FOR INSURANCE IMPLEMENTATION

When considering the use of agricultural insurance, the first questions that stakeholders should assess are whether insurance is the right tool for pursuing the intended objectives and whether preconditions for its appropriate application are in place. Insurance is not a panacea that will address all risks and constraints in agricultural value chains, and its use should be recommended only when specific feasibility conditions apply. Accurate feasibility analyses and risk assessments to ascertain the real potential of the tools suggested are always required. International experience suggests that index insurance has the best chance of meeting objectives of income stabilization and providing value-added to insured farmers where it is integrated into operationally effective supply chains, and where there are strong farmers' organizations. Farmers face many risks and also face structural constraints, most often a lack of access to credit, lack of quality seed and fertilizers, poor access to markets and inadequate potential profit margins. Where these highly constrained circumstances exist, insurance as a stand-alone instrument has no chance of influencing productivity and income gains, which are central to smallholders achieving an improved margin of food security and surplus production to generate income. Thus the context in which agricultural insurance is developed and marketed is a vital element in planning its development. In Burkina Faso such constraints are severe for most smallholders, mainly because of poorly developed supply chains for cereals. In these circumstances, lenders are unlikely to extend credit even if an insurance programme is put in place, since farmers may not have the necessary opportunities to achieve productivity gains or a margin to cover the repayment of credit. Similarly, unless farmers' organizations are well structured, the introduction of insurance becomes more challenging in terms of group registration of farmers and education on insurance and financial services.

SELECTING THE RIGHT INSURANCE PRODUCTS FOR MAIZE AND OTHER CROPS IN BURKINA FASO

Given the experience of implementing WII for maize production in Burkina Faso, stakeholders are interested in understanding whether different agricultural insurance products could offer better performance. Alternative solutions to WII could be MPCl or AYII products (as adopted in the cotton insurance scheme). MPCl products, however, which account for approximately two-thirds of premium volumes worldwide, are exposed to severe problems of adverse selection and moral hazard that are difficult to address in smallholder farming environments. They also tend to incur high transaction and loss adjustment costs that are significantly higher in a context of small and scattered production units. **Hence, MPCl is usually not considered a viable option for covering agricultural risks in smallholder agriculture.**

AYII is an interesting product that indemnifies farmers on the basis of the average yield of a pre-identified area. In order to be implemented successfully, AYII has specific prerequisites. It needs homogenous production conditions, suitable historical databases and accurate yield estimation processes. Inspired by the large scale achieved in India's agricultural insurance scheme, various countries are considering developing AYII programmes. However, setting up the procedures for establishing area yield references requires significant financial and professional resources, and if production areas are not homogeneous, in both cultivation practices and yield performance, AYII may not be a suitable option. **The conditions that led to the implementation of AYII for cotton in Burkina Faso (in particular the existence of objective yield measurements) are currently not available for maize and other crops, and**

it would therefore be necessary to engage in significant structural investments in order to generate the right conditions for its implementation.

While the challenges of MPCl and AYll are mainly operational, Wll is technically difficult to design and the chances of incurring basis risk events tend to be high. **Despite its limitations, however, Wll is often the only form of insurance protection that can be offered to smallholder farmers, and for this reason it may be useful to continue improving its features in order for it to be implemented in the best possible conditions.** In particular, a key improvement to be adopted in Wll schemes would be to develop measures aimed at mitigating the occurrence of basis risk events by planning how such events should be managed or compensated.⁵⁴

GROUND MEASUREMENT VS REMOTE SENSING FOR Wll

The drought coverage for maize adopted in Burkina Faso was designed on the basis of remote sensing data, which is the only approach that allows for widespread geographical coverage. Stakeholders have wondered whether an approach based on rainfall measured by ground-level stations could achieve a better performance. Since weather station networks have not been developed expressly for insurance purposes, station density is usually not sufficient to provide adequate coverage for risk management applications. Increasing the density of weather stations is possible, but issues related to the enhancement of weather networks are not limited to the cost of purchasing additional equipment. The requirements and costs of continued management and maintenance of the stations (often located in remote areas) is generally more challenging.⁵⁵ The lack of historical data may also pose problems in designing products and setting coverage levels.

It should be mentioned with respect to products based on data collected via remote sensing that there are significant margins for improving their performance. Technology is evolving rapidly and research indicates that the ability to design insurance products has a strong influence on performance, and so there could be progress to be made in this area as well.⁵⁶

On the basis of current knowledge, it is not possible to state which approach for operating Wll performs better, partly because selection of the right product is highly dependent on the context in which products will be implemented, both in terms of the risk profile of the crops and the expertise and infrastructure available. One possible suggestion is to invest more resources in appropriate product design, which might include attempts to combine different remote sensing methodologies or to generate hybrid products that include both remote sensing and ground-measured data.

In the very near future, new initiatives based on different methodological approaches are going to be tested in Burkina Faso.⁵⁷ This creates a positive outlook for agricultural insurance applications and provides a good opportunity for the country to leverage the different initiatives to improve knowledge around the use of agricultural risk management products.

THE USE OF PREMIUM SUBSIDIES IN AGRICULTURAL INSURANCE PROGRAMMES

The majority of countries in which agricultural insurance programmes have reached scale have adopted premium subsidies to make policies more affordable to farmers. Stakeholders may ask whether this type of support should not be adopted in Burkina Faso as well.

In the agricultural policy debate, premium subsidies for insurance are a very sensitive topic. While their role in stimulating the penetration of insurance is clear, there are side effects that need to be considered. Just like other agricultural policy tools, premium subsidies have

distortionary effects and can crowd out alternative risk transfer mechanisms or risk mitigation strategies. In addition the usual justification, according to which subsidies can be used initially to address typical insurance market failures and can then be progressively removed, is probably unrealistic. Experience shows that when premium subsidies are removed, the level of penetration that was reached thanks to premium support is likely to fall. **Hence, premium subsidies can indeed play a relevant role in scaling up insurance policies, but accurate analyses of their overall impact should be carried out.**

In considering the potential introduction of premium subsidies, the level at which they are set is also a key decision point. The ideal level of premium subsidy rates is not predetermined by any golden rule, but is a political decision that should be guided by the perceived importance of promoting agricultural insurance in the framework of the country's agricultural policy, the estimated impact on farmers' willingness to pay for insurance and the expected return on public investment, as compared with potential alternative uses of the same resources. A useful starting point is to assess the potential impact of subsidies on the state budget. When considering the introduction of premium subsidies, other important considerations include whether the suggested subsidies are provided as a percentage rate of the cost of the policy or as a fixed amount; how insurance premium rating is carried out, in order to avoid unjustified increases in premium costs once subsidies become available; and whether to introduce limits on the subsidies that each farmer can benefit from. These and other issues will have a significant influence on the distributional features of public support provided through premium subsidies.

TAXES ON AGRICULTURAL INSURANCE

The penetration of agricultural insurance products can also be encouraged by exempting policies from the imposition of taxes, which is another way of reducing the cost of insurance cover. Tax exemptions are a direct subsidy to agricultural insurance products; however, they are easy to introduce and they have a strong fiscal rationale: the residual amount of foregone tax revenues may be more than compensated for by the increase in value added due to a higher number of insurance transactions and an increase in input purchases and crop production levels that otherwise would have not taken place. Dedicated cost-benefit analyses can help governments to assess the merit of reducing or exempting tax on agricultural insurance. **Hence, while the effect on the state budget may be marginal, the potential impact of supporting agricultural insurance through tax exemptions may be significant.**

GOVERNMENT SUPPORT TO AGRICULTURAL INSURANCE AND INSTITUTIONAL FRAMEWORKS

Governments can support the development of agricultural insurance programmes in various ways that go well beyond subsidizing premiums. These include promoting the development of dedicated data collection and management systems; supporting the design and development of appropriate insurance solutions; reaching out to farmers and other stakeholders to increase awareness; engaging in targeted risk financing; and supporting the establishment of appropriate public and private structures and other measures that may be required in specific situations. **Government interventions are key for the development of an advanced approach to agricultural risk management programmes and allow potential premium subsidization policies to be more effective and to have greater impact.** Some of these interventions are actually preconditions for a feasible implementation of insurance programmes: the example of data collection and management systems, without which it is impossible to implement area yield schemes, is a case in point. Facilitating the development of appropriate institutional frameworks and sectoral arrangements is another important role that government can play. In terms of public structures, the government can get involved to different degrees: from a very light engagement, where it provides some technical support through a simple aggregation of staff

from selected ministries, up to the development of a dedicated government agency for agricultural risk management that is endowed with dedicated resources and oversees and manages all agricultural insurance programmes. On the private sector side, insurance companies can obviously work independently, but they can also develop different types of integrated structure that range from a simple market association to a co-insurance pool, up to a single insurance entity that is responsible for all business related to agriculture in a specific country. **The implications of the different types of institutional model are quite important, and all have advantages and disadvantages. Depending on the specific market and regulatory conditions, the role of government is instrumental in orienting the selection and implementation of the approach that best suits national needs.**

CURRENT DEBATE AND THE WAY FORWARD

Burkina Faso has reached a key phase in the search for appropriate agricultural risk management solutions. In recent years significant experience has been accumulated and the growing interest in agricultural insurance is encouraging different players to implement new initiatives. The time seems ripe for key stakeholders to take strategic decisions and to pursue a coordinated and comprehensive approach.

In this respect, the national debate on the potential institutional structures for a national agricultural insurance programme has been quite active, and valuable suggestions were put forward in 2014 by the CTI, which recommended the establishment of an agricultural risk management body, CEGERA, and a national agricultural insurance company, SAABF.

Whether or not the approach suggested by the CTI is adopted, **a first important step towards an improved understanding of the agricultural risk management dynamics and needs in Burkina Faso could be to establish a coordination forum for all the insurance initiatives that are planned to take place in the near future.** Such a forum could develop appropriate M&E activities that would allow knowledge on the use of agricultural risk management products to be maximized and make informed suggestions for the directions to be taken in implementing a comprehensive national approach to agricultural insurance.

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ANNEX 1

Drought index insurance for maize in Burkina Faso: crop calendar subdivision in phases
(source: Oxfam)

Table A1.1: Breakdown of a 100-day maize production process for coverage based on relative evapotranspiration

Start of the season	Level of coverage	Variable based on the start of the growing stage: ER ≥ 65%	
Phase	As % of the sum insured	Characteristics	Duration
	30%	Seed failure	
1	75%	Growing stage	40 days
2	100%	Flowering stage	30 days
3	100%	Ripening of grain	30 days

Table A1.2: Breakdown of a 110-day maize production process for coverage based on rainfall estimates

Start of the season	Level of coverage		
Phase	As % of the sum insured	Characteristics	Duration
1	80%	Growing stage of crops	50 days
2	80%	Flowering stage of crops	30 days
3	80%	Grain ripening of crops	30 days

ANNEX 2

Synthèse des suggestions des producteurs enquêtés pour l'amélioration de l'impact de l'assurance agricole (source: Oxfam)

Les principales suggestions faites pour améliorer l'impact de l'assurance :

- Faire un suivi/ évaluation de champs au cours de la campagne agricole
- Donner l'information sur le sinistre période par période
- Faire visiter les champs par un agent assermenté ou le chef de zone d'agriculture de la localité et ne pas se fier seulement aux satellites
- Accorder des lignes de crédit pour faciliter l'accès aux intrants agricoles
- Elargir l'assurance aux autres risques telles que les inondations, les incendies, les dégâts d'animaux
- Donner plus de tee-shirts aux assurés pour les motiver
- Faciliter l'accès des femmes au crédit
- Indemniser les producteurs au moins à 50% de leur investissement en cas de déficit
- Sensibiliser les paysans sur l'utilité de l'assurance et les conditions d'accès à l'assurance
- Vulgariser les pluviomètres dans toutes les zones pour faciliter la compréhension
- Lier l'assurance au crédit agricole

ANNEX 3

Advantages and drawbacks of independent insurance companies and of co-insurance pools (source: Stutley, 2013)

INDIVIDUAL PRIVATE INSURANCE COMPANIES

Advantages

- Private insurers can maintain their own market identity and share.
- Private insurers can set their own priorities (crops, regions, risks, types of farmer to insure).
- Greater competition over product pricing.
- Greater choice for farmers between companies.

Drawbacks

- Difficulties of coordinating government policy and technical, operational, financial support to six, seven, eight or more private insurers.
- Need for a risk management institution to coordinate the PPP.
- Lack of economies of scale in product R&D, sales, marketing and loss assessment.
- Each company has to make its own reinsurance arrangements (less local risk retention, higher reinsurance costs).
- Less likelihood of investment in infrastructure and in scale-up of the PPP.
- Less standardization of products and potential for under-cutting of rates.

CO-INSURANCE POOLS INSURANCE

Advantages

- Individual companies have limited ability to retain risk – pooling enables greater local retention.
- Economies of scale in terms of start-up and fixed and variable operating costs.
- Reduced cost of reinsurance due to risk diversification (pooling effect).
- Ability to maintain uniform underwriting standards and premium rates.
- Coordination of government support and services is much easier when dealing with a single entity.

Drawbacks

- Reduced competition, especially on market premium rates.
- Pool option is highly dependent on cooperation of private insurers.

ANNEX 4

Constitution of the Comité Technique Interministeriel de Réflexion

(Source : Arrêté Conjoint n° 2012 - /MAH/MRA/MEDD/ MEF/MICA/MASSN/MATDS portant création, attributions, composition et fonctionnement d'un Comité Technique Interministériel de Réflexion sur la mise en place d'un mécanisme d'assurance agricole et d'un fonds d'indemnisation agricole.)

Titre I : De la création

Article 1 : Il est créé au Ministère de l'Agriculture et de l'Hydraulique un Comité Technique Interministériel de Réflexion sur la mise en place d'un mécanisme d'assurance agricole et d'un fonds d'indemnisation agricole contre les calamités naturelles et les risques climatiques divers encourus par les exploitations Agro- Sylvo-Pastorales, en abrégé : CTI/AFIA.

Article 2 : Les attributions, la composition et le fonctionnement du CTI/AFIA créé à l'article 1 ci-dessus sont régis par les dispositions du présent arrêté.

Titre II : Des attributions

Article 3 : Les attributions du CTI/AFIA sont :

- Entreprendre les démarches nécessaires afin d'assurer une large implication de tous les acteurs et personnes ressources concernés par la gestion des calamités naturelles et des risques climatiques divers encourus par les exploitations Agro- Sylvo-Pastorales : les agriculteurs, les agents d'assurance, les services de la météorologie, les départements ministériels, les structures de contrôle et ou de régulation, les systèmes bancaires, financiers et juridiques, la société civile, le monde universitaire ... etc. ;
- établir l'état des lieux et la classification des outils privés de gestion des risques existants, pour déterminer leurs avantages, leurs inconvénients et les modalités de leur extension à la gestion des calamités naturelles et des risques climatiques divers encourus par les exploitations Agro- Sylvo-Pastorales ;
- capitaliser les études sur la mise en place d'un mécanisme d'assurance agricole indexée et d'un fonds d'indemnisation agricole en vue d'élaborer un référentiel des procédures opérationnelles d'interventions en matière de gestion des calamités naturelles et des risques climatiques divers encourus par les exploitations Agro- Sylvo-Pastorales ;
- déterminer le processus d'élaboration et de mise en œuvre d'une solution d'assurance agricole basée sur des indices simples à rémunération fixe, accessibles aux clients potentiels (exploitations agricoles familiales, PME/PME Agro- Sylvo-Pastorales et autres) ;
- Proposer des mécanismes ou des instruments permettant le transfert des implications des calamités naturelles et des risques climatiques divers encourus par les exploitations Agro- Sylvo-Pastorales, vers le marché national des assurances ;
- Identifier les clients potentiels et les indices (cumuls pluviométriques, variations de température, vitesse des vents et autres) simples et à rémunération fixe, dont la seule matérialisation peut déclencher le processus d'indemnisation des calamités naturelles et des risques climatiques divers subis par les exploitations Agro- Sylvo-Pastorales;
- Identifier les calamités naturelles et les risques climatiques divers à assurer, le système d'assurance à mettre en place ainsi que le rôle des systèmes bancaires, financiers et juridiques;
- identifier les risques les plus significatifs que pose le climat pour le secteur du développement rural au Burkina Faso (sécheresses, inondations, attaques des déprédateurs, invasions acridiennes, perturbation des cycles saisonniers, vents violents et hausses de la température...) ;
- Analyser les incidences directes ou indirectes des risques climatiques identifiés, sur le secteur du développement rural et les prestataires de service au monde rural ;
- réfléchir sur les opportunités et les défis liés à l'assurance agricole pour le secteur du développement rural au Burkina Faso, au regard de nos réalités climatiques, économiques et culturelles ;

- Proposer un référentiel et un cadre législatif adapté permettant aux agents d'assurance, une gestion efficace des risques divers encourus par les exploitations Agro- Sylvo-Pastorales du fait des calamités naturelles et des risques climatiques;
- formuler des recommandations à l'endroit des décideurs, pour la mise en place d'un mécanisme d'assurance agricole et d'un fonds d'indemnisation agricole contre les calamités naturelles et les risques climatiques divers encourus par les exploitations Agro- Sylvo-Pastorales et suivre leur mise en œuvre.

Titre III : De la composition

Article 1 : Le CTI/AFIA est composé ainsi qu'il suit :

- un représentant du Cabinet du Ministre de l'Economie et des Finances ;
- un représentant du Cabinet du Ministre de l'Agriculture et de l'Hydraulique;
- un représentant du Cabinet du Ministre des Ressources Animales ;
- un représentant du Cabinet du Ministre de l'Environnement et du Développement Durable ;
- un représentant du Cabinet du Ministre de l'Administration Territoriale, de la Décentralisation et de la Sécurité ;
- un représentant du Cabinet du Ministre de l'Industrie, du Commerce et de l'Artisanat ;
- un représentant du Cabinet du Ministre de l'Action Sociale et de la Solidarité Nationale ;
- Le Directeur Général des Assurances (DGA/MEF) ou son représentant ;
- Le Directeur Général de la Promotion de l'Economie Rurale ou son représentant ;
- Le Directeur Général des Productions Végétales ou son représentant;
- Le Directeur Général des Productions Animales ou son représentant;
- Le Directeur Général des ressources en Eau ou son représentant;
- Le Directeur Général de la Météorologie Nationale ou son représentant;
- Le Directeur Général de l'Information et du Suivi Ecologique ou son représentant;
- Le Secrétaire Permanent de la Coordination des Politiques Sectorielles Agricoles ou son représentant;
- Le Directeur des Etudes et de la Planification du Ministère de l'Agriculture et de l'Hydraulique;
- Le Directeur des Etudes et de la Planification du Ministère des Ressources Animales ou son représentant;
- Le Directeur des Etudes et de la Planification du Ministère de l'Environnement et du Développement Durable ;
- Le Président du Bureau National de Coordination des Chambres Régionales d'Agriculture ou son représentant;
- Le président de la Confédération Paysanne du Faso ou son représentant;
- Le Président de l'Association Burkinabè des Assureurs ou son représentant;
- Le Président de l'Association des banques du Burkina ou son représentant;
- Le Coordinateur National de PlaNet Guarantee Burkina ou son représentant.
- Le Secrétaire Exécutif du Conseil National de la Sécurité Alimentaire ou son représentant;
- Le Secrétaire Permanent du Conseil National de Secours d'Urgence et de Réhabilitation ou son représentant.

Article 2 : A la demande du Président du CTI/AFIA, les structures membres font parvenir par tout moyen approprié l'identité complète, les qualités et l'adresse et le contact multimédia de leur représentant.

Les représentants désignés par leur structure respective sont nommés membres du CTI/AFIA par arrêté du Ministre de l'Agriculture et de l'Hydraulique.

Article 3 : Le CTI/AFIA peut faire appel, en qualité d'observateur avec voix consultative, à toute personne ressource dont l'expertise doit être requise.

Titre IV : Du fonctionnement

Article 4 : Le CTI/AFIA est présidé par le représentant du Cabinet du Ministre de l'Agriculture et de l'Hydraulique.

Son Secrétariat Technique est assuré par la Direction Générale de la Promotion de l'Economie Rurale du Ministère de l'Agriculture et de l'Hydraulique.

Article 5 : Le CTI/AFIA se réunit sur convocation de son Président, sur proposition du secrétariat technique ou à chaque fois que de besoin.

Article 6 : Les lettres de convocation des séances de travail du CTI/AFIA doivent obligatoirement spécifier l'ordre du jour, le lieu et la date desdites séances.

Les lettres visées à l'alinéa précédent sont transmises aux membres du CTI/AFIA, à la diligence du Secrétariat Technique dudit Comité, au moins quinze (15) jours avant la date effective de la session, accompagnée des documents de travail et du compte rendu provisoire de la session précédente. Les membres du CTI/AFIA doivent faire parvenir leurs observations écrites qui seront débattus au cours de la session, au Secrétariat Technique.

Article 7 : Les décisions du CTI/AFIA adoptés à la majorité simple. En cas de partage des voix, celle du Président est prépondérante.

Article 8 : Le Secrétariat Technique du CTI/AFIA prépare les documents de travail ainsi que l'organisation pratique des travaux du CTI/AFIA. A ce titre, il assure, en collaboration avec le Président :

- la présentation des dossiers techniques à l'examen des membres du CTI/AFIA;
- l'organisation matérielle des travaux ;
- la rédaction des rapports provisoire de chaque séance et du rapport final des travaux du CTI/AFIA;
- la diffusion des résultats des travaux aux membres.

Titre V : Des dispositions diverses et finales

Article 9 : Le CTI/AFIA dispose de quatre vingt dix (90) jours pour compter de la date de signature du présent arrêté pour déposer les résultats de ses travaux auprès des Ministres signataires, sous la forme d'un projet de rapport en Conseil des Ministres auquel sont annexés des projets de décrets portant respectivement création d'une agence d'assurance agricole et d'un fonds d'indemnisation agricole contre les calamités naturelles et les risques climatiques divers encourus par les exploitations Agro- Sylvo-Pastorales.

Le projet de rapport en Conseil des Ministres est présenté audit conseil par le Ministre en charge de l'Agriculture.

Article 10 : Les frais de fonctionnement du CTI/AFIA sont pris en charge par le Budget de l'Etat alloué à la Direction Générale de la Promotion de l'Economie Rurale du Ministère de l'Agriculture et de l'Hydraulique et par tout autre financement autorisé par les lois et règlements en vigueur au Burkina Faso.

Article 11 : Les fonctions de membres du CTI/AFIA sont gratuites. Toutefois, les frais engagés par les membres à l'occasion des travaux du CTI/AFIA, sont pris en charge conformément aux textes en vigueur au Burkina Faso.

Article 12 : Le présent Arrêté prend effet pour compter de sa date de signature.

Article 13 : Les Secrétaires Généraux du Ministère de l'Agriculture et de l'Hydraulique, du Ministère des Ressources Animales, du Ministère de l'Environnement et du Développement durable, du Ministère de l'Economie et des Finances, du Ministère de l'Industrie, du Commerce et de l'Artisanat, du Ministère de l'Action Sociale et de la Solidarité Nationale, du Ministère de l'Administration Territoriale, de la Décentralisation et de la Sécurité sont chargés chacun en ce qui le concerne, de l'exécution du présent arrêté conjoint qui sera publié et communiqué partout où besoin sera.

NOTES

- 1 Oxfam (2016). Rapport d'étude pour l'évaluation de l'impact de l'assurance agricole sur les producteurs de maïs de la zone FEPA-B.
- 2 WTO. Burkina Faso Country Profile.
<http://stat.wto.org/CountryProfile/WSDBCountryPFView.aspx?Language=E&Country=BF> (accessed 1 March 2018). Historically, trade in cotton has been the main component of Burkina Faso's exports. However, in more recent times the development of mining activities (gold in particular) has reduced the relative share of agricultural products in the total value of exports.
- 3 Oxfam (2016). Rapport d'étude pour l'évaluation de l'impact de l'assurance agricole sur les producteurs de maïs de la zone FEPA-B, op. cit.
- 4 J.R. Skees and J. Hartell (2006). Innovations in risk-transfer markets in agriculture for natural hazards. In Risk Management in Agriculture for Natural Hazards. ISMEA. Insurability conditions, as presented by Skees and Hartell, quoting Rejda, are the following:
 - determinable and measurable loss;
 - accidental and unintentional loss;
 - calculable expected frequency and magnitude of loss;
 - those potential insured can be accurately classified into roughly homogeneous pools;
 - large number of independent exposure units.
- 5 CABFIN (2017). Materials from course 'Agricultural Insurance in Developing Countries: Operational Principles and Good Practices'. Boulder Rural and Agricultural Finance Program. Turin, Italy, July 2017.
https://www.bouldermicrofinance.org/boulder/EN/RURAL/course/362_-_blank
- 6 P. Hazell, C. Pomareda and A. Valdez (eds) (1986). Crop Insurance for Agricultural Development: Issues and experience. John Hopkins University Press, Baltimore, MD.
- 7 Swiss Re (2013). Partnering for food security in emerging markets. SIGMA Study No 1/2013.
http://www.swissre.com/media/news_releases/nr_20130116_improving_food_security.html
- 8 O. Mahul and C.J. Stutley (2010). Government Support to Agricultural Insurance: Challenges and Options for Developing Countries. World Bank. <https://openknowledge.worldbank.org/handle/10986/2432>
- 9 CABFIN (2017). Materials from course 'Agricultural Insurance in Developing Countries: Operational Principles and Good Practices', op. cit. The discussion presented in this section focuses essentially on insurance for crops and does not cover livestock products.
- 10 Strictly speaking, revenue insurance products should be considered hybrid indemnity-index products since the price component of the coverage is usually based on a price index, such as is found in a commodity market.
- 11 For indemnity products the analysis is focused on MPCl, since NPCl products are not as relevant in this context.
- 12 IFAD and WFP (2010). The Potential for Scale and Sustainability in Weather Index Insurance for Agriculture and Rural Livelihoods. By P. Hazell, J. Anderson, N. Balzer, A. Hastrup Clemmensen, U. Hess and F. Rispoli. Rome.
<https://maintenance.ifad.org/documents/38714170/40239486/The+potential+for+scale+and+sustainability+in+weather+index+insurance+for+agriculture+and+rural+livelihoods.pdf/7a8247c7-d7be-4a1b-9088-37e0ee6717ca>
- 13 See also section 6.5 and Figure 6.4 for potential aggregation structures of insurance companies.
- 14 O. Mahul and C.J. Stutley (2010). Government Support to Agricultural Insurance, op. cit.
- 15 See IFAD and WFP (2010). The Potential for Scale and Sustainability in Weather Index Insurance for Agriculture and Rural Livelihoods, op. cit.
- 16 F. Ilboudo, B.K. Bayel, T. Le Cotty, S. Yameogo, R. Guissou and A. Kaboré (2014). Second rapport d'étude diagnostique sur les risques agricoles et alimentaires et les outils de gestion au Burkina Faso. Direction Générale des Etudes et des Statistiques Sectorielles (DGESS), Ministère de l'Agriculture et de la Sécurité Alimentaire.
- 17 Agriculture Insurance Company of India Limited (AIC) (2017).
<http://www.aicofindia.com/AICEng/Pages/Global%20Navigation/Evolution.aspx>
- 18 Indianexpress.com (2017). Crop Insurance: A flagship scheme that may flatter to deceive.
<http://indianexpress.com/article/india/crop-insurance-a-flagship-scheme-that-may-flatter-to-deceive-4768640/>
- 19 Source: Ministry of Agriculture and Fisheries of Morocco.
- 20 See the recent publication by the IFAD-WFP Weather Risk Management Facility for a detailed analysis of the potential of remote sensing for index insurance in smallholder agriculture. IFAD and WFP (2010). The Potential for Scale and Sustainability in Weather Index Insurance for Agriculture and Rural Livelihoods, op. cit.
- 21 Mobile phone technology has already been adopted in various agricultural insurance schemes (see, for example, the experience of Kilimo Salama in Kenya, one of the first movers in this area). Other interesting applications of technology that could assist in managing agricultural insurance policies include real-time data transfer via mobile phone connections; digital video recording of yield assessments; GIS mapping; GPS geo-referencing; and remote sensing performance indicators to guide in loss assessments. Among others, these applications are being tested in

India's agricultural insurance scheme, since advanced technology solutions are seen as a means of simplifying and expediting the data collection and loss adjustment monitoring processes.

- 22 I. Machetti Bermejo (2015). El sistema de seguros agrarios combinados en España. ConsorSeguros, N. 2, April 2015, p.2. <http://www.conorsegurosdigital.com/almacen/pdf/el-sistema-de-seguros-agrarios-combinados-en-espana.pdf>
- 23 ENESA's institutional activities also include study and research tasks; assistance to the agricultural sector in all matters relating to insurance; and arbitration of potential disputes between participating stakeholders.
- 24 Premium subsidies vary significantly according to the type of production activity, the location of the production unit and the status of producers (e.g. young farmer, professional farmer, etc.).
- 25 I. Machetti Bermejo (2015). El sistema de seguros agrarios combinados en España, op. cit., p.6.
- 26 Information in this section is derived from local actors, and from Axco's Non-Life Market Report for Burkina Faso (2017).
- 27 'Cessions' refers to the portions of the obligations in an insurance company's policy portfolio that are transferred to a reinsurer (Investopedia).
- 28 Examples include DGPE (2013). Les systèmes d'assurance agricole en Afrique de l'Ouest et au Maghreb. Analyse et proposition d'une feuille de route pour un système d'assurance agricole au Burkina Faso; and Ilboudo et al. (2013). Second rapport d'étude diagnostique sur les risques agricoles et alimentaires et les outils de gestion au Burkina Faso, op. cit.
- 29 While praising the features of the scheme, international experts also use the case to show how the specific conditions that exist in the Burkina cotton scheme do not necessarily apply to insurance for other types of crop production.
- 30 The scheme also features a semi-voluntary distribution channel.
- 31 The purpose of the 'double trigger' procedure is to avoid moral hazard and/or fraud given the relatively small size of GPCs, which could, theoretically, lead to collusive behaviour. The synthetic village regroups all GPCs within a radius of 5km.
- 32 In agricultural insurance terminology, the threshold is the production level at which an insurance payout is triggered. If the threshold is 80% of the average production level, payouts begin to be triggered when the actual recorded production is below the 80% threshold. The lower the threshold, the lower the coverage provided. In assessing the insurance proposition, the client will determine if the cost of the coverage is acceptable for a specified threshold.
- 33 The contents of this section are based on information provided by PlaNet Guarantee and on the findings of Oxfam (2016). Rapport d'étude pour l'évaluation de l'impact de l'assurance agricole sur les producteurs de maïs de la zone FEPA-B, op. cit.
- 34 Farmers not requesting credit are also eligible to purchase insurance coverage.
- 35 The data for the RE coverage are collected by Meteosat-9 and have a resolution of roughly 3km x 3km. The RFE product is based on the ARC 2 dataset and has a resolution of 10km x 10km.
- 36 Oxfam (2016). Rapport d'étude pour l'évaluation de l'impact de l'assurance agricole sur les producteurs de maïs de la zone FEPA-B, op. cit.
- 37 In some areas, the lack of specific provisions for covering flooding or waterlogging events was also an element that reduced the interest of farmers in the proposed insurance coverage (see Annex 2 – in French – for a summary of the indications collected from farmers in the Oxfam study).
- 38 World Bank (2011). Weather Index Insurance for Agriculture: Guidance for Development Practitioners. Agriculture and Rural Development Discussion Paper 50.
- 39 In the context of this analysis, NPCI products and insurance products for livestock production are not discussed.
- 40 MPCl products are subject to severe problems of adverse selection and moral hazard, which are difficult to manage in smallholder farming environments, and also tend to have high transaction and loss adjustment costs that significantly increase in a context of small and scattered production units.
- 41 Although the size of the programmes is obviously not comparable, Burkina Faso's cotton AYII scheme is also an interesting international reference case.
- 42 Oxfam (2016). Rapport d'étude pour l'évaluation de l'impact de l'assurance agricole sur les producteurs de maïs de la zone FEPA-B, op. cit.
- 43 A case in point is that of PlaNet Guarantee's schemes in Senegal, where the indices are based on data collected by ground measurement stations. In addition, the Canadian government has pledged to provide support for the



installation of over 200 new automated weather stations that would significantly increase Senegal's capacity to implement ground-level WII (personal communication with M. Dubreuil).

- 44 IFAD and WFP (2010). The Potential for Scale and Sustainability in Weather Index Insurance for Agriculture and Rural Livelihoods, op. cit.
- 45 IFAD (2017). Remote sensing for index insurance: Findings and lessons learned for smallholder agriculture, by E. Coleman, W. Dick, S. Gilliams, I. Piccard, F. Rispoli and A. Stoppa. Rome. https://www.ifad.org/documents/38714170/39144386/RemoteSensing_LongGuide_2017.pdf/f2d22adb-c3b0-4fe3-9cbb-c25054d756fe
- 46 IFAD and WFP (2010). The Potential for Scale and Sustainability in Weather Index Insurance for Agriculture and Rural Livelihoods, op. cit.
- 47 Government of Kenya (2014). Kenya: Situation Analysis for a National Agricultural Insurance Policy (NAIP).
- 48 J. Skees and B. Collier (2012). Rethinking The Role Of Index Insurance. In E. Makaudze (ed.). Weather Index Insurance for Smallholder Farmers in Africa – Lessons learnt and goals for the future. Conference Proceedings.
- 49 Ibid.
- 50 Scenarios presented in Tables 6.1 and 6.2 refer to potential insurance policies purchased by farmers classified in the 'Moderne' and 'Irrigué' categories, for whom the cost of purchasing production inputs is estimated at an average of around FCFA 50,000. The adopted premium rate of 10% is consistent with the rates charged in the current maize insurance scheme in Burkina Faso.
- 51 For a detailed analysis of public support to reinsurance of agricultural risk management schemes, see O. Mahul and C.J. Stutley (2010). Government Support to Agricultural Insurance: Challenges and Options for Developing Countries, op. cit.
- 52 Integrated operational models for insurance companies require specific regulatory exemptions since regulations may not allow the aggregation of market players, due to the potential for collusive behaviour.
- 53 See section 3.3 for more details on the possible aggregation structures of insurance companies, and section 4 for some examples of how such aggregations have been implemented in different agricultural insurance programmes.
- 54 IFAD (2017). Remote sensing for index insurance, op. cit.
- 55 IFAD and WFP (2010). The Potential for Scale and Sustainability in Weather Index Insurance for Agriculture and Rural Livelihoods, op. cit.
- 56 IFAD (2017). Remote sensing for index insurance, op. cit.
- 57 See section 5.3 for a summary of planned initiatives.



Research reports

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