

FIRST LINE OF DEFENCE

Assessing the potential of local food reserves in the Sahel

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Despite existing literature on the different modalities of food reserves, there is a dearth of specific analysis focusing on the potential of the first line of defence against food insecurity. The aim of the present study is to address this gap by analysing recent experiences, reviewing the factors that can determine or condition their failure or success, and assessing innovative instruments (such as linking local reserves to national food reserves, index insurance and stabilization funds) that could also contribute to their improvement.

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ACRONYMS

AAAE	Association Aidons l'Afrique Ensemble
CIMMYT	International Maize and Wheat Improvement Centre
ECOWAS	Economic Community of West African States
FEPAB	Fédération des Professionnels Agricoles du Burkina Faso
FSR	Food security reserves
HARITA	Horn of Africa Risk Transfer for Adaptation
LFR	Local food reserves
SDC	Swiss Agency for Development and Cooperation
WFP	World Food Programme
WRS	Warehouse Receipt Systems

EXECUTIVE SUMMARY

Despite existing literature on the different modalities of food reserves, there is a dearth of specific analysis focusing on the potential of the first line of defence as a key instrument against food insecurity. The aim of the present study is to address this gap by analysing recent experiences, reviewing the factors that can determine or condition the failure or success of local food reserves, and assessing innovative instruments (such as linking local reserves to national food reserves, index insurance and stabilization funds) that could also contribute to improving their performance.

This study argues that local food reserves have a number of distinctive features that make them particularly well placed to positively contribute to food security strategies in the Sahel. Local food reserves are firmly grounded in the local dimension of food security and can play a key role as part of both community and national food security strategies. They are tailored to each specific context and their objectives can be adapted in accordance to the concrete needs of the communities they serve.

The first part of the report explores the ways in which local food reserves can contribute to food security (from mitigating the effects of price hikes to protecting livelihoods and assets, helping to overcome geographic isolation and empowering populations), and analyses the fragility of local food reserves in terms of their vulnerability to price risk and climate risk as well as the challenges linked to their promotion, planning and design.

The second part of the report seeks to determine the factors and conditions required to create an enabling environment in which local food reserves can operate effectively. States have the legal obligation to ensure that the right to food is fulfilled and supporting LFR should be seen as part and parcel of this fundamental commitment as well as an effective way of strengthening community-based approaches to food security.

LFR do not constitute a simple blueprint solution that can be applied everywhere. They are not viable in every context and require certain conditions to adequately function. One of the key requirements is securing the commitment and support of governments to accompany their development and provide assistance as required.

The final section proposes a series of recommendations for governments and producer organisations. Governments are encouraged to endorse measures geared towards linking LFR to national reserves, procuring food products locally, tackling climate and price risks, strengthening links with social protection strategies, improving the institutional capacity of LFR, developing monitoring systems, promoting the legislation of LFR, introducing smart subsidies, promoting the development of new technologies and encouraging household storage as zero line of defence. Producer organisations are encouraged to create federations, facilitate information exchanges between LFR, share costs of centralised control, share support and advice services, act as buffer stocks and mutualise risks.

This report is the result of four research processes: a) an extensive desk review of existing literature and secondary sources on local food reserves and related instruments, b) an econometric study assessing the potential of stabilisation/compensation funds to tackle price risk vulnerability; c) Oxfam experiences in Africa; d) a primary study involving fieldwork in Burkina.

1 INTRODUCTION

In recent years, the challenges of food security have largely focused on two issues of growing concern for the international community. On the one hand, the devastating effects of food price volatility on the most vulnerable populations, which have caused over 300 million people to fall under the poverty line; and on the other hand, the recurrence of acute food crises that continue to reverse positive development trends in sub-Saharan Africa.

Within this context, food reserves are being reassessed by civil society organisations as an instrument that can potentially address both issues at different levels and in a range of ways; a. as part of the solution to price hikes (serving as a key tool in the fight against food price instability) and b. as part of the solution to recurrent food crises in regions like the Horn of Africa and the Sahel (as an emergency food security instrument).

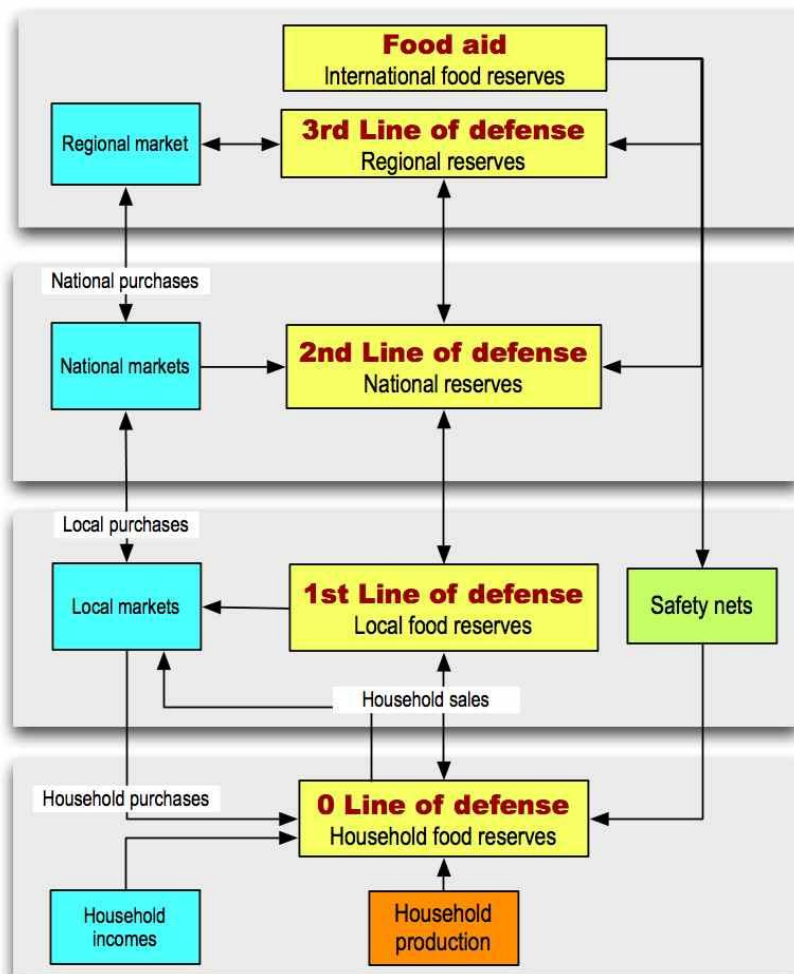
The global debate on food reserves is evolving in parallel with the renewal of development paradigms that traditionally offered global solutions to issues marked by local specificities. There has been a decisive shift from global development blueprints that were applied globally in all contexts to a focus on tailored approaches that place communities at the heart of development initiatives. Ownership and local participation are now widely accepted as key factors that are crucial for the success of any development initiative. Translating these principles into practice remains a major challenge.

ECOWAS has proposed a system of food reserves against food insecurity based on four lines of defence (Hub Rural, 2012, p.9):

1. The first line of defence includes local food reserves, generally organised at the community or village level, at the district level or by producer organisations;
2. The second line of defence is composed of the national security stock and/or strategic reserves, placed under the responsibility of States or within a specific arrangement agreed by the States or a pool of financial partners;
3. The third line of defence is composed of regional stocks with various components envisaged;
4. The fourth line of defence includes existing solidarity and international assistance mechanisms (UN humanitarian agencies, development partners, international NGO).

Despite existing literature on the different modalities of food reserves, there is a dearth of specific analysis focusing on the potential of the first line of defence against food insecurity. The aim of the present study is to address this gap by analysing recent experiences, reviewing the factors that can determine or condition their failure or success, and assessing innovative instruments (such as linking local reserves to national food reserves, index insurance and stabilization funds) that could also contribute to their improvement.

Figure 1: Food reserves and lines of defence



Source: Gabriel Pons Cortès & Itziar Gómez Carrasco

The debates on local food reserves are often dominated by the fact that their history to date is marked by uneven performance records and by a wide range of complex problems described as endemic by the most critical observers. This study will argue that the first line of defence has a number of distinctive features that make it particularly well placed to positively contribute to food security strategies in the Sahel. It will ultimately seek to determine the factors and conditions required to create an enabling environment in which local food reserves can function effectively.

This report is the result of four research processes: a) an extensive desk review of existing literature and secondary sources on local food reserves and related instruments; b) an econometric study assessing the potential of stabilisation/compensation funds to tackle price risk vulnerability; c) Oxfam experiences in Africa; d) a primary study involving fieldwork in Burkina.

2 BACKGROUND

The food crisis witnessed in 2007–8 brought about a series of sharp price increases that had profound effects on the most vulnerable segments of the population. According to Oxfam (2008), these increases caused 290 million people across the World to fall under the poverty line. In 2010, a further price increase caused an additional 44 million people to fall into deep poverty.

Food crises constitute a recurrent phenomenon for the countries of the Sahel. These crises often include the transmission of a global crisis to the region (the effects of transmission depend on the amount of imports, the grains affected and how tradable are, the amount of local harvest, the trade measures taken etc.).

In the semi-arid areas of Burkina, Mali and Niger, the effects of the 2008 and 2010 crises were particularly dramatic, given the fact that the majority of the population were net buyers of food. Furthermore, these three countries periodically witness recurrent food crises linked to natural and climate-related disasters, plagues and price hikes which have devastating effects on the population of the region, causing high rates of malnutrition, endangering livelihoods and making the population chronically vulnerable.

The growing vulnerability of the population of the Sahel is often inaccurately perceived as being exclusively linked to hazardous natural disasters that only require concrete humanitarian action at a given moment in time. As argued above, the reality is far more complex than this. Increased poverty, vulnerability and food insecurity constitute chronic problems that require comprehensive responses that go beyond addressing only urgent humanitarian concerns. Effective responses should also strengthen the capacity of vulnerable populations to overcome the dramatic effects of food crises while at the same time preserving their livelihoods.

The experience of recent years has called into question the effectiveness of food security strategies with an excessive focus on short-term emergency responses and insufficient links to wider development goals (see Trench et al, 2007). Since 2008, key actors are increasingly recognising the need to close the gap between humanitarian and development interventions in order to effectively meet medium to long term resilience objectives that go beyond the immediate emergency needs of communities¹. LFR can potentially contribute to ongoing efforts to bridge this gap.

BUILDING RESILIENCE

Building resilience has taken the centre stage of current food security debates. Oxfam defines resilience as ‘the ability of an individual or community to anticipate, absorb and recover from shocks with little or no external help, as well as being able to maintain their wellbeing despite changes that take place over a longer time period’².

Ongoing discussions on resilience place increasing emphasis on the need to take a course of action that is aware of risks and vulnerabilities. As a result, new strategies are being developed with a view to combining humanitarian and disaster risk reduction with long-term development efforts.

The need for a ‘twin-track’ approach to food security and hunger reduction that meets both immediate food needs and medium- to long-term resilience was first advocated by FAO (quoted in Jaspars & Wiggins, 2009). This approach emphasises the need to create opportunities to improve livelihoods, while at the same time ensuring direct action against hunger through programmes to enhance immediate access to food (FAO, 2003). Local food reserves are well-

suited to contribute to this comprehensive approach given their potential to be part of medium to long-term solutions by helping to protect livelihoods and enhance resilience.

The first line of defence deserves renewed attention as an instrument that can potentially support efforts to enhance resilience. This paper explores the ways in which local food reserves can help to meet the urgent needs of the most vulnerable as well as longer term issues linked to protecting livelihoods (by improving access to food, addressing market failures and empowering communities amongst other measures).

GOOD FOOD SECURITY GOVERNANCE AND THE RIGHT TO FOOD

Good food security governance constitutes one of the key challenges faced by policy makers in the region. The principles of responsiveness, accountability, transparency, participation and equality are crucial to ensure that food security programmes designed according to the twin-track approach described above, meet the needs of the most vulnerable (FAO 2011a, p. 4).

Guaranteeing the right to food involves securing both the availability of food and the accessibility of food (FAO 2011b, p. 4). The responsibility of ensuring the right to food rests primarily with the state, since it is up to the state to create the legal, political and institutional environment in which the right to food can be fulfilled. The political and institutional context is thus key to understanding why certain food security policies work or fail (FAO, 2011a, p. 37).

Effectively addressing food insecurity involves enhancing agricultural productivity while facilitating food access to the most vulnerable. The debate about productivity has featured prominently in the G20 meeting held in Mexico in June 2012. Productivity is not only about agricultural extension, innovation and better practices. There is growing recognition of the fact that institutions, rules and political processes play a key role in the quest for sustainable agricultural growth, increased food security and the promotion of livelihoods (FAO 2011a, p. 4).

These factors create an 'enabling environment' for food security policies to work effectively and meet the needs of the most vulnerable populations. Ensuring local and community participation is key to understanding the needs of those affected and ensuring wide support and ownership of the initiative (FAO, 2011a p. 28). Hence any effective response must be firmly grounded in a thorough understanding of the local context and the microeconomic level. Without ensuring this, macro solutions will continue to fail the most vulnerable populations.

Any proposal that aims to improve food security must ensure a certain level of administrative capacity, and managing local food reserves is no exception. Local and national governments must improve their capabilities in order to coordinate, apply new standards and upgrade their administrative capacity. In Colin Poulton's words, "unless governance standards improve, the food system will be stuck between state and market failure" (Poulton et al, 2006).

Understanding how local food reserves can potentially address these challenges constitutes one of the key goals of this paper.

3 UNDERSTANDING THE PROBLEM TO BE ADDRESSED AT THE LOCAL LEVEL

Building resilience entails ensuring that the most vulnerable can escape the poverty trap illustrated in Figure 2. This figure outlines only the problems faced by small producers in unimodal semi-arid areas like the Sahel, not the constraints of those who are unable to produce and should benefit from social protection measures. It is not surprising that most of the factors that hinder small producers from being self-sufficient are the same that prevented them from taking advantage of high prices during the last crisis to produce more and increase their income.

The causes that prevent the availability of sufficient production for an entire year are varied (Intermón Oxfam, 2010), the most immediate cause being the absence of adequate storage that ensures the preservation of the grain (circle 1). As a result, producers often prefer to sell at low prices just after the harvest in order to avoid damaging the grain. This entails losses for producers, since they have to buy grain at higher prices later in the season. Providing an estimate of post-harvest losses is usually a guess-like analysis. The APHLIS³ estimated that the percentage of losses in Eastern and Southern Africa ranged from six per cent to eight per cent before transportation to storage (World Bank, 2011, table 2.5 p. 17). The value of grain losses in sub-Saharan Africa could reach \$4bn a year, out of an estimated annual value of \$27bn in 2005–2007 (World Bank 2011, p.18).

The urgent need for cash after the harvest (2) constitutes the second main reason why producers are forced to sell at low prices (3). Intermediaries or middlemen play a key role in this process. Although they are often portrayed in a negative light and are suspected and mistrusted, the fact is that intermediaries constitute a key part of the system. Middlemen exist when there is scope for them to play a role in the chain. Beyond reaping benefits that often exploit small producers, they can also play a positive role organising sales, facilitating access to markets and providing valuable technical advice in certain cases. In the absence of other sources of funding and credit, intermediaries may also finance production (Intermón Oxfam, 2010).

At the same time, it is also true that in the absence of the necessary bargaining power to negotiate with intermediaries, the prices obtained by producers tend to be low. As a result of this, high retail prices usually fail to benefit small farmers. This can make crops non-competitive⁴, which in turn, provokes a situation where no investment is made in order to improve the yield. The risk of cheap imports, international food aid and the prohibition of exports (4) worsen this problem, since producers do not tend to invest if they run the risk of suffering additional losses in the event of further price decreases.

Apart from the above mentioned reasons for limited investment, producers may also lack the necessary funds to cover the costs of sowing (5). The absence of market credit, or guarantees, can prevent producers from investing, or can cause them to acquire debts with intermediaries, thereby increasing their overall dependence. Intermediaries take advantage of the producers' need for cash and their lack of storage space to justify offering low prices.

In addition, production is low because without insurance, the risk of losses due to climatic reasons (6) and food price volatility (7) further discourages investment. High climate variability increases the risk aversion of small holders (8).

The fact that the areas cultivated are small is coupled with the lack of machinery (8) and inadequate cultivation techniques (9). Poor quality seeds, inadequate level of nutrients and pests also diminish the harvest.

When the stocks run out and a period of scarcity arrives (10), the reserves are depleted. This causes producers to borrow from lenders, sell their assets (11), and migrate (12) in order to obtain income to purchase food. Migration takes place precisely during the sowing season

4 DEFINING EXISTING TYPES OF LOCAL FOOD RESERVES

The problem of selling off at a low price (*bradage*, in French) has been tackled in two different ways:

1. Through the promotion of household storage, with or without post-harvest credit.
2. Through local food reserves (see definition below).

Several organisations (such as the SDC, Swiss Agency for Development and Cooperation) have successfully promoted household storage for many years through post-harvest programmes⁶). Granting credit in combination with household storage has the advantage of avoiding community storage costs (since each family stores grain at home), but would be subject to greater risk of default (notably the moral hazard of producers arguing that they cannot pay when faced with a bad harvest). To avoid this moral hazard, guarantees are requested, but these are only viable when families have assets. In Africa, the problem faced by producers in this respect is the severe lack of collateral for agricultural credit. Land cannot be offered as such since the usual type of property ownership is communal (Coulter, 2005).

In terms of combining household storage with post-harvest credit, one of the few documented experiences to date is an initiative in Madagascar, whereby in 2008, nearly 40,000 tonnes of paddy were stored (mainly distributed in 7,000 small domestic stores) and the households had access to five loan products (storage loans, production loans, hire purchase, commercial loans and social emergency loans). The system of storage credit has been positively rated and it is argued that it has the advantage over WRS (see definition on p. 15) of being “highly decentralized, self-regulating and low-cost” (Coulter, 2009, p. 25).

It can be assumed that the transaction costs of controlling the collateral of scattered households would be higher than those incurred by community storage. Improving home storage could also be justified on the grounds that it would establish healthy competition with cereal banks: the latter would be needed and used depending on their capacity to offer reliable services geared towards improving home storage.

In Kenya and Malawi, a pilot initiative inspired by the Post-Cosecha project in Central America has been implemented by the CIMMYT⁷ with a view to providing alternative storage to smallholder farmers. The project has mainly focused on the provision of training sessions in metal silo construction. Since 2008, 105 silos have been produced and distributed in the districts of Embu and Homa Bay (Kenya) and 45 in the districts of Dowa and Mchinij (Malawi) (CIMMYT, 2011).

Although the initiative only targeted smallholder farmers, a number of schools and urban communities have also begun to use metal silos, recognising the advantages of buying grain when prices are low and being able to use the grain as required throughout the year. In light of the success of this pilot initiative, several countries have expressed their interest in developing similar initiatives across the continent (CIMMYT, 2011).

LOCAL FOOD RESERVES: KEY FEATURES AND OBJECTIVES

Local food reserves (LFR) have existed for centuries as fundamental parts of traditional survival strategies developed by communities. LFR are formal or informal collective initiatives set up and managed⁸ by small producers with the objective of increasing availability and access to food (food security reserves), or of increasing income by buying grain from producers when prices are low and selling it when prices are more profitable ('commercial local food reserves'). Although their fundamental objectives differ, both types of reserves ultimately try to improve the conditions of producers by managing the price cycle.

LFR in deficit areas: LFR located in deficit areas primarily seek to increase food access and availability. In these areas, local reserves function by buying from farmers after the harvest and selling the same grain during the lean season in the community at a lower price (or distributing the stored grain in the form of a loan). The producers who sold grain to the LFR have to re-buy it when the lean season arrives, as they run out of grain.

LFR in surplus areas⁹: Increasing income is the main objective of LFR established in surplus areas. These reserves operate in a similar manner to LFR in deficit areas but with a different objective in mind, since they seek to obtain the highest possible prices during the lean season and share the profits gained with producers (once the maintenance costs are deducted). If effectively managed, both types of reserves can also help to reduce the vulnerability of net food buyers caused by seasonal market fluctuations and supply shocks by releasing stocks when prices rise as a result of low levels of supply.

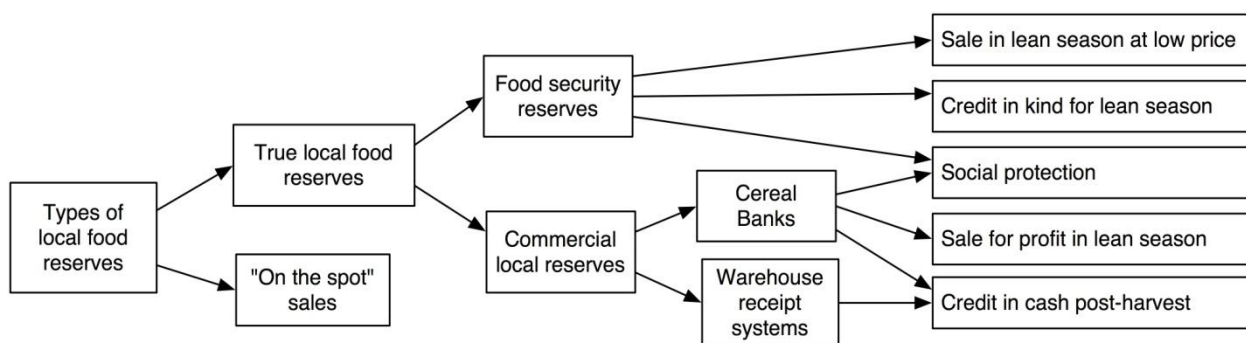
Local food reserves pursue different objectives and can take different forms according to their context. They can pursue commercial or social non-lucrative objectives. Certain types of local reserves (notably food security reserves) seek to protect the most vulnerable by guaranteeing access to food free of charge or at affordable prices throughout the year (particularly during the lean season). Their social function and the services they provide to those most in need constitute their guiding principles, even if they still need to strike a difficult balance between financial sustainability and social rationale to remain economically viable. Other forms of local reserves (notably WRS) are primarily guided by commercial objectives and function as businesses that seek to make a profit. It has been noted that LFR have been particularly vulnerable to the joint pursuit of social and business objectives (Coulter, p. 4, 2006, Domingo, 1995 and Teysier, 2002).

The community base of LFR facilitates grassroots level action and grants LFR the flexibility to tailor their composition and the services they offer to each local context. It is difficult to find "pure" types of LFR. Most local food reserves combine multiple objectives and there is neither widely agreed classification nor agreement on which name refers to which function. For the purposes of the present study, we propose the classification shown in Figure 3.

'True' LFR are those which fulfil the following three conditions:

- They have the objective of taking advantage of price changes using community (as opposed to household) storage. This is done in two ways: by diminishing price margins for consumers (mostly in the case of deficit areas), or by increasing it for sellers (mostly in the case of surplus areas).
- There is a price risk associated with the price cycle, which is borne at least partially by the organisation.
- They operate as businesses (including food security reserves), since they have a balance at the end of the season and can go bankrupt if they sell at a lower price than they initially bought.

Figure 3: Types of local food reserves



Source: Gabriel Pons Cortès & Itz'ar Gómez Carrasco

LOCAL FOOD SECURITY RESERVES

Local food security reserves¹⁰ (FSR) have the objective of securing stock access and availability during the lean period by keeping an inventory of readily available stocks that can be sold to the community at rates below market prices.

Some FSR provide credit in kind during the lean season: the beneficiary or member takes a loan in kind and has to pay it back after the harvest. The interest rate is usually very high¹¹, in order to take into account the price variation between the moment when the loan is taken (during the lean season, when prices are high) and the moment when it is repaid (post-harvest, when they are low).

Others¹² only sell the grain during the lean season and as a result, the beneficiary has to find some alternative activity (horticulture or livestock sale) in order to buy the grain. In this case, the only price risk that remains is that of the reserve selling at a price under the rate originally paid when the lean season arrives. Credit default is absent, because the reserve is invariably sold.

In Burkina Faso, the Association "Aidons l'Afrique Ensemble" operates a group of 21 FSR in the department of Rambo. FSR stock between January and March and sell between June and September. Since the association does not grant credit to buy the grain and cash is required to cover grain needs during the lean period, it distributes fruit trees (mainly mango and nere) to complement food needs and provide additional earnings to beneficiaries (AAAE, 2011).

These kinds of LFR are mainly located in deficit areas and hence, stock procurement has to be carried out outside the region. Many FSR buy grain in surplus areas as a recurrent form of procurement. When FSR are part of networks, exchanges from surplus to deficit areas are also arranged.

Box 1: The Naam Federation

In Burkina Faso, the Naam network is composed of 368 FSR located in 19 provinces across the country (serving almost 500,000 people). The presence of FSR in both deficit and surplus areas allows for sales and exchanges to primarily take place within the network (although the Federation resorts to reserves located outside as required).

The Naam Federation has improved access to food in the following ways:

1. By moderating prices to ensure that they are at least equal to those found in the nearest market (but usually lower);
2. By introducing retail sale that allows small quantities to be sold directly at the FSR level (a particularly valuable service for the poor and vulnerable);
3. By cutting down transportation costs;
4. By having positive indirect effects on income generating activities (through local procurement at higher prices and by encouraging increased local trade);
5. By providing occasional food aid to the most vulnerable at times of extreme need.

The existence of the FSR has brought about other important advantages for the community. It has diversified the type of food available and provided the possibility of buying small quantities, thereby improving both the diet of the community and the access of the most vulnerable. The quality of products has also improved as a result of better storage conditions.

In addition, two key services are offered: a) a series of capacity-building activities that have trained 4,400 management committees members between 2004–7; b) a unified credit system based on a single line (in the name of the federation) to help overcome the problem of credit default.

Source: COTA (2009, p.67)

COMMERCIAL LOCAL FOOD RESERVES

Two main kinds of commercial local food reserves exist, cereal banks and warehouse receipt systems (WRS). The main distinctive feature of both types of food reserves is that their key objective is to increase income. They involve storing producers grain until the end of the season in order to ensure better prices, as well as providing some form of credit (with grain as collateral).

The main difference between cereal banks and warehouse receipt systems (WRS) is that cereal banks have some kind of revolving fund that allows them to finance the credit or buy the grain. If funds come from a bank or a micro-finance institution, then the reserve can be considered a form of WRS (whether the grain is certified as collateral independently or not). Hence, the two key defining issues are: a) who is storing the grain; and b) who provides the funds for the credit. These two defining features will be developed in the section below.

Cereal banks¹³

Cereal banks pursue three main objectives: a) to protect farmers from losing out as a result of the price cycle (i.e. 'over-selling' at low and re-buying at high prices); b) to avoid exploitation from middlemen; c) to support farmers with a surplus in the search for a better market for their grain (Coulter, 2006, p. 9). This type of local reserve can take a wide variety of forms, one of the defining features being whether they are established in surplus or deficit areas.

By definition, cereal banks have the objective of increasing income for their members. The diversity of services delivered in surplus areas is higher than in deficit areas. As in the case of

FSR, cereal banks can provide credit in kind during the lean season¹⁴, while at the same time also buying grain or granting credit in exchange. Credit is a service delivered by most of the cereal banks located in surplus areas.

Commercial LFR resort to a wide range of internal arrangements in order to:

1. Define who the owner of the grain is. Cereal banks can buy the grain from the producer, in which case they bear the whole price risk, or they can give credit to the producer with the grain as collateral, in which case it is the producer who bears the price risk. The grain stored serves the same purpose as money in financial banks since the cereals constitute liabilities.
2. Organise sales during the lean season. Two options are the most common: “on-the-spot” joint sales organised by commercial LFR at a single moment in time or individual sales negotiated on a one-to-one basis throughout the cycle.

This variety represents the different solutions that are found in order to bear the price risk (discussed at length in the section on Vulnerability to price risk).

The type of ownership constitutes another defining feature. Cereal cooperatives have full legal recognition and status, which entails that their rules are legally binding. However, community cereal banks are established to serve the entire community without exception. Hence, all individuals who belong to the community adhere to the cereal bank. They are established with the objective of serving the community at large and are run by community leaders without any form of legal agreement.

Warehouse receipt systems

Warehouse receipts (WR) are documents issued by warehouse operators as evidence that specified commodities of stated quantity and quality, have been deposited at particular locations by named depositors (Coulter & Onumah, 2002).

WR systems (WRS, *warrantage* in French) link a producer's association (such as a cereal bank or a cooperative), an organisation that certifies that the grain is deposited and extends the receipt, and a bank (which provides credit with receipts as collateral). The storage is made by way of 'safe custody'. This implies that the operator of the warehouse is liable for any loss in the value of the grain through theft, fire and other catastrophes but he has no legal or beneficial interest in it. In case of liquidation, the legal title remains with the depositor and hence, the creditors are not entitled to claim the property of the cereals stored (Onumah, 2003, p. 3)

WRS work in the following way (Chetaille, 2011, fig 2):

1. The producer brings the grain to the warehouse at the start of the season.
2. The warehouse issues a receipt (*certificat de dépôt* or *warrant*).
3. The producer negotiates a credit with the bank (using the receipt as collateral) that is valued at the current price of the grain in the market.
4. At the end of the season, the buyer (together with the producer) pays the value of the product in the bank.
5. The bank gives the receipt to the buyer.
6. The buyer gives the certificate to the warehouse and the bank pays the producer the value of the stock after deducting the value of the credit and corresponding interests.
7. The warehouse gives the grain to the buyer.

WRS can therefore grant producers access to more capital and at a more reasonable cost, thereby contributing to breaking barriers between the formal banking sector and indigenous trading sectors (Coulter et al, 1997, p. 3). WRS can be seen as a more sophisticated and formal type of commercial LFR. The main difference between WRS and cereal banks is that they avoid

the problem of decapitalization of the revolving fund, because the credit risk rests with the bank, which covers it with the receipt. However, ensuring that there is collateral of standard quality has transaction costs, which are borne by the producer. In order to protect themselves from the price risk, banks only fund 60–70 per cent of the crops' value. As a result, this price risk ultimately falls upon the producer. (Chetaille, 2011, Afrique Verte 2010).

In Niger, WRS began to operate as part of a FAO-funded Intrans Project in 1999. At present, credit services still rely on microfinance institutions because banks are reluctant to offer this service as a result of the high risk entailed. In Burkina, experiences are recent and scarce, having been initiated in most cases less than five years ago.

In a case study covering four systems, Chetaille et al (2011) showed that although WRS were able to increase the income of the producers by 20 per cent losses due to price risk in one year discouraged most of the users. Another case in the same study showed that the differences between harvest and lean season prices could be as little as 6.5 per cent, leaving a short margin for profit.

“On-the spot” joint sales

In West Africa, there is a modality of joint commercialisation that cannot be considered food reserves, known as ‘commercialisation groupée’¹⁵. A group of peasants (who usually own a warehouse) gather their grain inventories during the harvest season and sell them jointly with the aim of gaining better prices.

Despite the fact that joint commercialisation pursues similar goals and its functioning is almost identical to that of more ‘classical’ LFR, it cannot be considered a classic food reserve. Joint commercialisation does not fulfil two of the basic features that characterise classic food reserves, a) it does not try to take advantage of price changes using shared storage (since they usually engage in short term sales and hardly store); b) until the sale is made, each producer bears the price risk without taking any credit for their part of the inventory.

Hence, the main differentiating factor is that joint “on-the spot” commercialisation has individual, not communal or cooperative risks. As a result, it usually functions in surplus areas and with less vulnerable producers (i.e. those who are able to keep some part of the harvest until the prices rise).

5 HOW CAN LOCAL FOOD RESERVES CONTRIBUTE TO FOOD SECURITY?

BY MITIGATING THE EFFECTS OF PRICE SPIKES

Food security reserves can potentially play a crucial role in tackling price spikes. Although mobilising local reserves could moderate high prices during lean years (Dembéle, 2007, p.5), the same factors that affect national reserves also affect LFR: stock levels are higher in good years (when the likelihood of the reserve being called upon to meet food shortages is low), than in bad years (when the likelihood of needing the reserve is high) (Lynton-Evans, 1997, p.12). Hence, it can be argued that in this respect, LFR are more pro-cyclical than counter-cyclical.

This raises the issue of exchanges between surplus areas and deficit areas and risk pooling. Trading between different geographic areas is known as 'spatial arbitrage', which is considered to be one of the main factors that have caused cereal banks to fail in the context of West Africa. The difficulties that producers have found when competing with private traders and understanding the complexities of private trade have resulted in thin net margins (in the best cases witnessed) and losses for many cereal banks (Coulter, 2006, p. 10).

In LFR, mitigating price risk is understood in terms of reducing excessive price differentials between harvest and lean season (which allow consumers to access grain at fair prices during the lean season and producers to increase their earnings). Members obtain more favourable prices (mainly in FSR) or they obtain better purchasing prices all year round (mainly in commercial local food reserves). However, given their small size relative to the market, LFR are unable to mitigate price spikes at the national level¹⁶.

BY STRENGTHENING BROADER FOOD SECURITY STRATEGIES

The improvement of agricultural practices is according to Coulter the most 'revolutionary change' that LFR can potentially offer, due to the powerful synergies that exist between reducing cost of inputs (where this service exists), improving prospects of recovering credits and enhancing output markets (Coulter 2006, p.19).

NGOs that establish LFR also offer other complementary services as part of broader food security strategies that build on the work of existing organizations. For instance, in Burkina, the AAAE¹⁷ offers credit for ox ploughing (Baziomo, 2011). The combination of ox ploughing with the improvement of agricultural practices has resulted in larger areas of cultivation, less working time and higher yields (up to 500 kg/ha more in maize, 200 kg/ha more in millet and 100 kg/ha more in sorghum).

In Tanzania, certain cereal banks have also offered ox-carts and iron ploughs¹⁸ (according to experiences from Oxfam programmes).

LFR also serve to gather people around an issue of common interest (better grain prices) and provide a forum in which to discuss and search joint solutions to common problems (notably some of the obstacles that prevent small producers from breaching the gap between subsistence and market engagement). This makes LFR a powerful tool with the potential to support broader food security strategies.

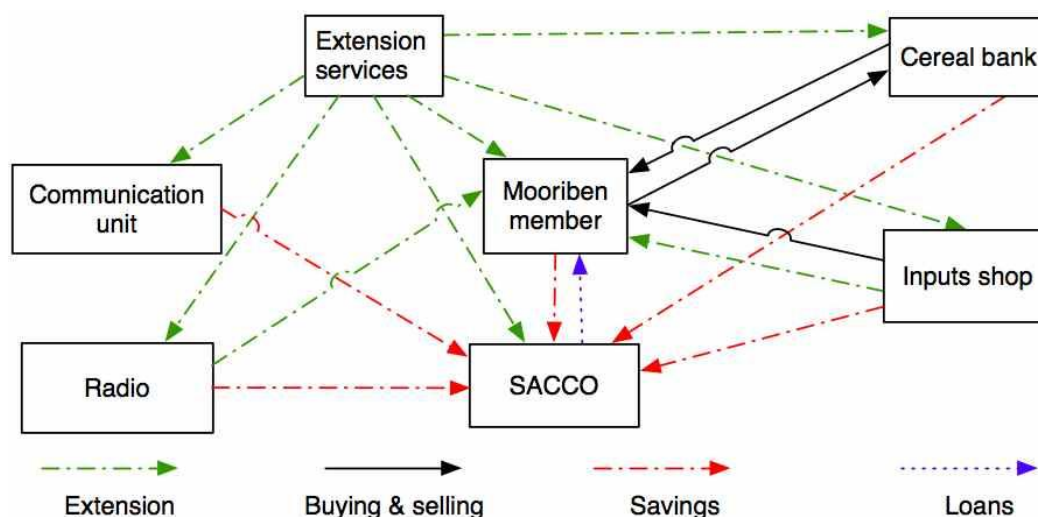
Some organisations have also incorporated nutrition programmes grounded in LFR, whereby cereal is used to produce a type of flour that is then enriched using different nutrients and then distributed for free among vulnerable families to improve their children’s diet¹⁹.

The Mooriben federation in Niger has successfully developed an integrated service system (see figure 4) that supports wider food strategies in a number of ways. Members of the network have access not only to LFR but also to a range of services that include community radio, information on issues of interest for smallholders, credit support, warrantage, inputs sale and technical support (Benegouch, 2010).

BY CARRYING OUT SOCIAL PROTECTION INITIATIVES

Certain LFR have social protection objectives that primarily rely on the efforts of people associated with their activities. The case of the Mooriben Federation in Niger constitutes an interesting illustration of this type of practice. LFR in the Mooriben network request each member to contribute at least 5kg for the creation of a ‘*stock secur*’ at harvest time. At the level of each LFR an overall percentage must be contributed (usually around 10 per cent of surplus production but defined according to the overall volume available). Mooriben’s mobilisation strategy is based exclusively on the resources of the network groupings and their members. In addition, the network also covers the transportation costs for the distribution of grain to those most in need. In light of the positive impact of this initiative on the most vulnerable, Mooriben plans to establish this type of stock in every grouping by 2014 (Mooriben, 2009, p. 12).

Figure 4: Mooriben service network



Source: redrawn from Benegouch (2010)

Although the Naam Federation has not formally introduced concrete social protection measures, retail sales (improving accessibility for the poorest), diversification (broader range of products and possibility of creating small markets for them), credit sales and occasional donations (although both disallowed by the rules) have had positive effects on the wellbeing of the most vulnerable (Sonet and Nacoulma, 2009, p. iv).

In Burkina, the AAE has incorporated a series of measures that aim to support the most vulnerable members of the community (classified under 14 concrete categories). Grain is regularly distributed free of charge according to various quotas established on a case-to-case

basis (household size being a key criterion). When additional grain is received from donors, a more extensive distribution plan is carried out.

These are some of the social protection initiatives that are conducted by LFR independently of government schemes. Strengthening the links between these two types of social initiatives would lessen the burden of LFR and also provide mutual benefits by improving the response of both LFR and government in the field of social protection. Further details are included in section 7.

BY INCREASING THE INCOME OF SMALL PRODUCERS

As noted above, both food security and commercial LFR can provide post-harvest cash. This factor is important, since it can prevent the grain from being sold-off and thus increase the income of producers. The extent to which this is possible largely depends on the quantities sold and margins offered by the LFR.

LFR can also help to provide fairer income for producers. These measures can promote market confidence, which can in turn provide incentives for small producers to invest and improve production (tackling n° 3 and 5 in figure 2).

Small producers can benefit from increased incomes as a result of two main factors:

1. Increased yields resulting from better agricultural practices (as explained above).
2. Speculative storage (temporal arbitrage).

It is the first of these factors that has more weight supporting increases in income. Since most producers are only in a position to sell small quantities of grain (one or two bags), an increase in percentage over such small quantities does not make a substantial difference. However, no matter how small this margin is, the producer may still consider it a good incentive to increase production²⁰.

BY PROTECTING LIVELIHOODS AND ASSETS

The functions of LFR described throughout this section can significantly contribute to the protection of livelihoods and assets. Apart from meeting emergency needs, LFR can serve medium-long term development goals by allowing communities to pursue their economic activities during the lean season, thereby protecting their livelihoods and preventing migration.

As discussed earlier in this paper, temporary seasonal (hunger-gap based) migration constitutes a key problem in food insecure contexts. The lean season coincides with the sowing season and hence, migration at a defining time for the next harvest aggravates the overall situation, reinforcing the vicious circle of poverty. Vulnerable households lose part of the workforce required for sowing when small producers migrate in search for a wage to cover basic food needs.

Evidence from Tanzania (Oxfam programmes), Niger (Soumaila & H. Wada, 2009) and Burkina Faso²¹ (Oxfam field work 2012) suggests that by allowing communities to pursue their economic activities, LFR can play a pivotal role in efforts to prevent migration during the lean season.

In contexts marked by idiosyncratic risks (i.e. situations where only certain individuals or sub-groups are affected by a crisis and not the community at large), LFR can prevent small producers from selling their assets (land, livestock, seeds, etc.) by providing cereal credits²² and allowing retail sales²³ so that small quantities of grain can be purchased.

However, LFR lack the capacity to act on a large during slow onset food crises. This is due to the fact that LFR are vulnerable to climate factors that affect most inhabitants of the area. If the harvest is bad for the entire population, LFR will find resisting to these shocks difficult (this issue is detailed in the section on vulnerability to climate).

This would be the case for commercial LFR in particular, since it is usually based on local production. Local FSR in deficit areas could nevertheless avoid these problems since they obtain the grain outside the affected areas (depending on the duration of the drought) if the purchasing capacity of their beneficiaries remains intact.

In most cases, LFR can only effectively protect assets as part of local strategies that address idiosyncratic shocks, but cannot guarantee this protection when faced with the complexities of covariant shocks²⁴.

BY HELPING TO OVERCOME REMOTENESS AND ISOLATION

One of the key factors that limit access to food is geographical remoteness (and distance to markets). The particular role that local stocks can play as first line of defence deserves special attention since their specific characteristics make them particularly apt to work effectively in isolated areas.

The Sahel region is extensive and many communities face high transport costs that worsen the price problem in the lean season. Furthermore, beyond the issue of the lack of an appropriate road network, there is the fact that the lean season coincides with the period when the roads are at their worst due to the rainy season.

Studies in northern Burkina Faso have shown that while in deficit areas, the main concern is access to food; in surplus areas, the poor state of the roads and the lack of transport constitute the two key concerns for producers who seek to channel their crops to other areas (COTA, 2009, p. 21). Furthermore, the issue of transportation does not only influence prices but also the availability of food in the local market.

As first line of defence, local food reserves can help communities in emergency situations since their proximity and familiarity with the local environment ensure not only the rapid release of food but also the appropriateness of the food distributed (biologically and culturally) (S.Wiggins & S. Jaspars, 2009).

In non-crisis contexts, LFR can also provide considerable support to small producers. For example, it has been noted that not having to travel to the city to buy food already constitutes a clear advantage that has positive effects on the wellbeing of small producers and their families. Evidence from Burkina Faso highlights a number of ways in which LFR contribute to wider food security objectives through measures aimed at overcoming remoteness and isolation. By bringing food closer to the communities, LFR allow small producers to devote additional hours to work; they also reduce transportation costs, prevent the risk of theft on the roads and lessen the risks caused by poor road conditions during the rainy season (COTA, 2009, p.66).

BY EMPOWERING POPULATIONS

Power to (individual capacity)²⁵

LFR have the potential to promote self-management (understood as the ability to plan and take responsibility for one's own actions) in various ways. The grassroots approach implicit in the

structure and functioning of LFR necessarily requires the participation and involvement of the community. In fact, many of the successful LFR build on the premise that community members must take their part of responsibility in the quest for food security. Although the levels of involvement and engagement vary across the board, in LFR, members are usually involved at all levels (from the construction of storage facilities and contribution of initial stocks to the establishment of rules and sales agreements). These particular features make LFR structures that can effectively support self-management practices among small producers.

Power over (decrease dependence)

LFR promote self-sufficiency by strengthening the position of small producers and reducing their dependence by supporting the development of markets in which small producers retain a fairer share of market power (S. Wiggins & S. Jaspars, 2009). They can also help to balance power relations and empower small-scale producers by limiting the concentration of market power in the sale and distribution of food. Local procurement schemes serving safety nets can also support these efforts.

Power with (changing things with others)

LFR can also promote social cohesion at the community level by serving as community centres where issues of common interest are discussed. Providing this type of forum can help to build community spirit and ownership of the local reserve, in ways that positively impact its management and overall performance while also bringing about new initiatives for improving the community at large.

Naam Federation, AAAE and Mooriben carry out capacity building activities for members within the framework of the LFR, which also help to improve management practices.

Democratisation

In theory, LFR should have democratic practices such as free and fair selection of leaders, a role for the weakest members in decision-making and transparency in information flow. To what extent this is a reality for LFR is a question that exceeds the scope of this study.

It is worth noting that there is a downside to these positive empowerment arguments given the exclusive nature of certain cereal banks. In certain contexts, cereal bank members become local elites: they buy grain from their members at better prices (or they provide bonus payments as benefits) but they offer lower prices to non-members. Ensuring inclusiveness is often a challenge for LFR, since it involves balancing the local contribution of members with the commercial reserves' pursuit of extended impact and scope.

BY PROMOTING WOMEN'S PARTICIPATION AND EMPOWERMENT

LFR can provide a space for women's participation and empowerment. Experiences in Burkina Faso (AAAE and Naam Federation) show the positive role that women can play as active members of management committees of LFR. They receive training and help to circulate information about LFR among other women in ways that encourage the involvement and access of women.

In Niger, there are examples of special types of LFR established and tailored only for the most vulnerable women of the community in order to ensure that production continues and no exodus takes place during the lean season. In this experience, credit is granted at a seasonal interest rate of 10 per cent and reimbursement is linked to migrant funds from family members working

abroad (since it usually coincides with the period when cereals are at their most expensive). This constitutes an important handicap (Soumaila & H. Wada, 2009).

In Burkina Faso, the AAAE offers micro-credits for women (a fixed individual total of 25,000 CFA at a seasonal rate of 10 per cent) through a *Caisse d'Épargne et Crédit Villageoise de Développement*, to be granted in October and reimbursed gradually by June. The programme has already benefited 600 women since 2007 with a reimbursement rate of 100 per cent²⁶. The managers link this high rate to two factors: a) beneficiaries are carefully selected by a local committee at the village level; b) beneficiaries are grouped in teams of 5 and agree to cover each other in case of default. The management committees of this same association tend to encourage women members to share information about services available (notably LFR) among women in order to convey messages more effectively by building trust (interview with FSR Management Committees, June 2012).

Women's participation and access is also conditioned by complex socio-cultural factors that determine certain everyday practices. In the case of access to LFR, for example, it was noted that in certain communities, buying grain is considered to be a male task when the quantity to be bought is large (a 100kg bag or more). However, men are sometimes ashamed to go to LFR when they can only afford to buy small quantities. In such situations, it is the women of the family who buy the grain (interview with AAAE animateur, June 2012).

Nevertheless, although the experience of women's participation in LFR is positively rated, it has been noted that the issue of illiteracy often means that certain key decisions ultimately lie with men. Given the limited availability of data available on issues related to women's participation, this programme will conduct future research to complement existing findings.

6 UNDERSTANDING THE FRAGILITY OF LOCAL FOOD RESERVES

The fragility of local food reserves can only be adequately understood when the complexity of the obstacles they face is duly considered. Their weaknesses can be grouped under two main categories: a) vulnerabilities (to price and climate risk) and b) challenges (related to the promotion, planning and design of LFR and to their management and organisation).

VULNERABILITY TO PRICE RISK

Price risk can be defined as the unexpected variation of the market value of a commodity that impacts on the income expectations of the economic agents involved in producing, trading or consuming it.

It is important to distinguish price risk from price variation, since the latter is necessary in order to cover maintenance, storage and transport costs. If the price is not higher at the end of the season than at the beginning, no producer will be willing to store. Price variation between seasons is also necessary in order to give signals to farmers to invest more or less in a crop, according to its abundance or scarcity in the market. This difference in price across different moments in time is known as temporal arbitrage.

The same logic applies to price variation between different locations, since if the price is not higher far from local markets, there will be no incentive for small producers to move grain to deficit areas. These differences in price across geographic locations are known as spatial arbitrage, which constitutes a key challenge for cereal banks. Evidence from Kenya suggests that without free or subsidised transport and contacts with the NGOs supporting cereal banks in other locations, it will be difficult to manage spatial arbitrage (Coulter 2006, p. 38).

In the case of cereals, the price risk is not the same for producers than for intermediaries or local food reserves. For producers, price risk means that sudden changes in input prices or drops in cereal prices can compromise the profitability of the crops. If they have enough cash to retain the harvest for a few months (or they belong to a cereal bank), the price risk is then the same as that borne by the intermediary or the LFR (i.e. to have lower prices around the lean season than during the harvest season).

For local food reserves, as for any intermediary, price risk means that prices at the end of the season may be lower than the prices witnessed at the beginning. To understand how this affects LFR, see figure 5 (the first and second seasons represent normal price cycles, and the third season would be an abnormal or inverted cycle).

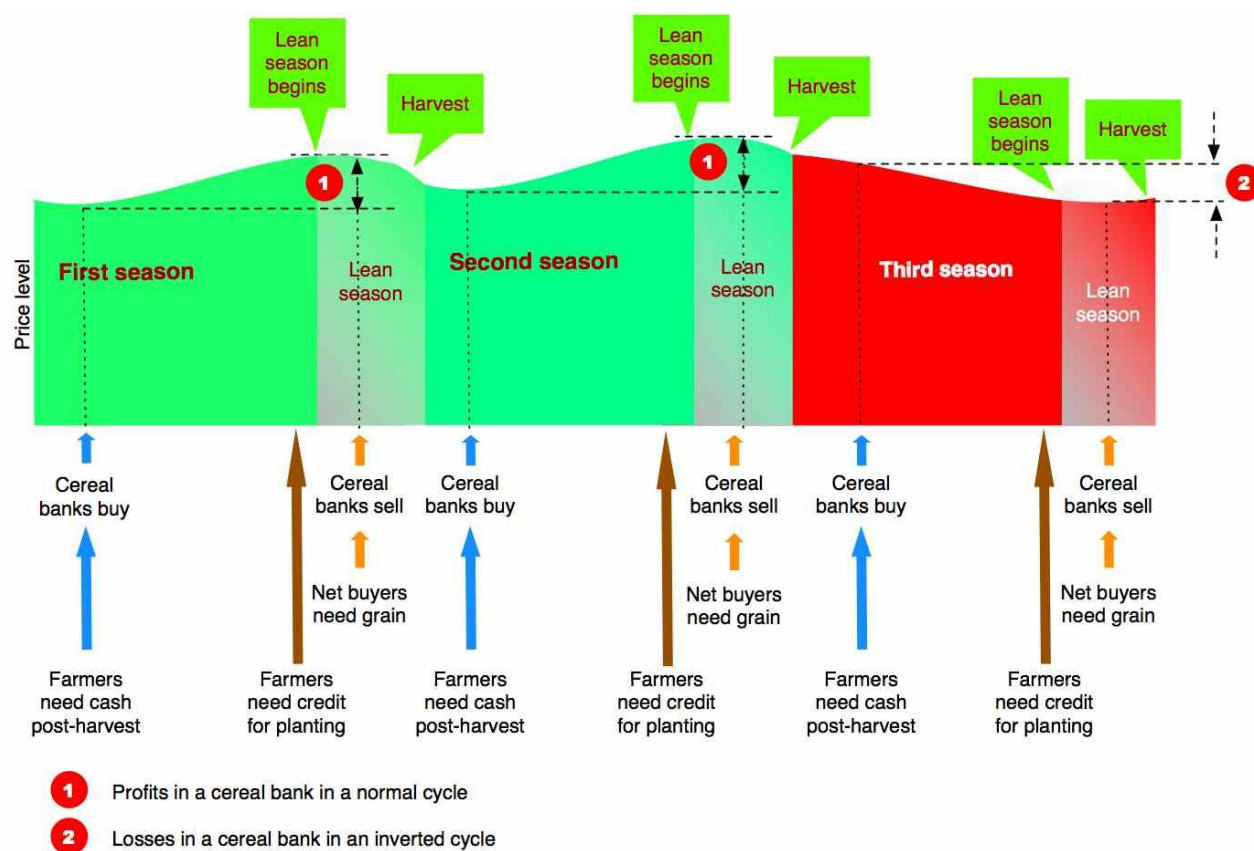
This inversion in the normal cycle can happen one year out of four in the landlocked Sahelian countries, according to preliminary calculations made for this research report on the basis of statistical data.

Several likely reasons explain this cycle inversion:

- Two consecutive good harvests; beginning of the season with higher prices than usual, compensated by the entry of grain at the end of the season; higher initial stocks in hands of private sector, or lower prices in the international markets.
- State intervention is probably a more frequent reason for cycle inversion across the board. When faced with volatile prices, the state can adopt various strategies. It may try to control high prices (usually at the end of the season) by prioritising consumption at lower prices (through imports, export bans, or food aid), in an effort to avoid damaging the majority of people who are net-buyers. Export restrictions may be the only way exporting countries have

of preventing the effects of price hikes on international markets having similar effects on their domestic markets. In such cases, exports restrictions must only be allowed with the objective of ensuring sufficient internal availability of grain to cover domestic needs but must be forbidden beyond this point (Galtier, 2012).

Figure 5: How inversion in price-cycles affects cereal banks



Source: Gabriel Pons Cortès & Itziar Gómez Carrasco

The case of export bans in Tanzania, for instance, provides a clear illustration of this practice. Studies demonstrate how export bans imposed by the state (Chetaille et al, 2011, Jenin, 2011) cause prices to fall in the lean season, which in turn produces losses for the cereal banks (although a price band could cause the same effect if applied during the lean season). Although it is understandable for the state to seek ways of ensuring low prices for the majority of the population, once the implications of this type of policy are considered, the advantages are far from clear. These consumer-oriented measures are detrimental to cereal banks, since they undermine their potential to function as tools to transform net-buyer producers into net-sellers (at least in rural areas). Hence, low prices at the end of the season actually jeopardise the performance and effectiveness of the main solution that communities have found in order to overcome the problems depicted in figure 2 (namely LFR, WRS and marketing cooperatives).

How price risk impacts on WRS

WRS also suffer price risk, the difference being that this risk is mainly borne by the producer. Since in WRS the bank grants the credit to the producer, it is usually assumed that the price risk is equally shared between both parties.

However, a research study conducted by Afrique Verte (2010, p.25) shows that in fact in the scenario described above, the risk is overwhelmingly supported by the producer:

- Banks win more than the producer in 62 per cent of cases.
- Producer organizations win more than the bank only in 26 per cent of cases.
- Profits are similar for both in 12 per cent of cases.

Banks try to cover themselves against price risk by granting credit that only represents 60-70 per cent of the true value of the grain deposited by the producers. This ensures that the bank will only suffer losses in rare circumstances, while the producer will most likely lose as a result.

VULNERABILITY TO CLIMATE

Climate, and specially drought, is one of the most serious problems affecting LFR. When harvests fail, they are affected in the following ways:

- There is a large number of credit defaults.
- Inventories are lower due to crop failure
- The turnover is lower because of low inventories.
- De-capitalisation occurs as a result of the three points mentioned above.

It is often argued that a natural compensation (or 'natural insurance') between price and climate risk exists: lower harvests in bad years are usually compensated by higher prices and as a result, price risk and yield risk are compensated (at least in part). Any losses or reductions incurred in the production are lessened by incomes raised as a result of higher prices.

However, it can also be argued that such natural insurance has an inverse effect, given that producers have to buy large quantities on the market to feed their families when the harvest is poor and prices are high as a result (Galtier 2009, pp. 10-11). According to a review conducted in Eastern and Southern Africa by Barret (2008, table 1, p. 308), this is what actually happens in over 70 per cent of the countries reviewed. Natural insurance is, therefore, a myth, for the many small producers who are net food consumers unable to grow enough to feed their families year-round.

Box 2: Oxfam's participation in index insurance initiatives

Oxfam is currently participating in several initiatives on index insurance.

The oldest one is HARITA in Ethiopia, an innovative scheme that aims to provide access to a commercially viable insurance to the most vulnerable farmers. This initiative grants the possibility of paying the insurance premium through 'insurance for work' schemes in partnership with local community partner Relief Society of Tigray, reinsurance from Swiss Re, and support from the Rockefeller Foundation. Farmers engage in community-identified projects to reduce risk, such as improved irrigation and soil management. The project expanded to over 1,300 households in five villages in 2010, and over 13,000 households in forty-three villages in 2011. In 2011, seven villages experienced drought conditions and 1,810 farmers received a payout.

HARITA has been integrated into a wider initiative, R4 Rural Resilience Initiative²⁷, a partnership between Oxfam America and WFP, which aims to replicate the comprehensive framework on how to manage climate risk. It will extend its work to Senegal and two other countries still to be determined over the coming year.

In Mali and Burkina, PlaNet Guarantee, Allianz and Oxfam are piloting an index insurance project, which aims to reach 60,000 farmers in West Africa. The project uses satellite data to assess the amount of rain with a view to develop methods that provide as little basis risk as possible. In Burkina, PlaNet and Intermon Oxfam are currently implementing a project for 5,000 farmers who are members of FEPAB. Insurance constitutes a compulsory requirement when taking an agricultural loan within the framework of this project.

It is important to highlight that index insurance is designed to protect the individuals against default, but not LFR, which would equally suffer from the negative effects of the problems stated above (namely b,c and partially d). Hence designing a type of insurance especially tailored to the needs of LFR would be required in order to provide much-needed support to the development of LFR and contribute to their sustainability.

PROMOTION, PLANNING AND DESIGN

Promotion

The experience of past decades suggests that whenever LFR have been promoted on a high scale as part of ambitious top-down initiatives, they have failed to work. On the contrary, long-term, slow and patient processes with external support (such as the Naam Federation in Burkina Faso) show good performance over many years when the business model is not too risky.

In many cases, the creation of LFR has been more grounded in a political decision than in the materialisation of an effective demand from the communities (Dembele 2007, p.5). This top-down approach has often provoked a lack of ownership that has paved the way for corruption²⁸, limited participation and ultimately, the failure of many LFR.

For instance, in the 1990s, the Tanzanian government built 1,000 warehouses with a capacity of 300 tonnes, which were not used by farmers because they did not trust the organizations created to manage them. Since then, many of these warehouses have been transformed into WRS managed by private sector (Coulter, 2007).

The misuse of public money can also be a problem. A documented example shows how a project funded by the Government of Japan for the construction of 101 warehouses in Mali resulted in a series of financial irregularities that amounted to a total of 1,32 billions of francs CFA – more than € 2m (Diarra, 2011 p.72).

The arguments developed in this paper raise the question of whether large amounts of funding could successfully be allocated to the promotion of cereal banks with enough guarantees of efficiency and ownership. The recommendations included in the final section of this paper suggest some of the required conditions for this type of initiative to succeed.

Planning and design

LFR have often been designed and established on the basis of an inaccurate information analysis. As a result, many LFR have been misguided from the outset.

The sustainability of local reserves is bound to their capacity to be seen as worthwhile by the communities they serve and the sense of ownership is extremely important. If the local reserve is truly considered to be a key instrument in the quest for food security it will receive the required level of support to give it the best possible chance of becoming effective and sustainable.

In the absence of adequate guidance and technical support from the initial stages, LFR have been faced with a generalised lack of management capacity, poor infrastructures, insufficient bylaws and constitutions to effectively support their development (Dembele 2007, p.5).

LFR are not different from many other producer organizations and cooperatives which combine social and commercial objectives. In fact the same caveats that apply to the promotion of cooperatives can apply to LFR. Chirwa et al (2005) recommend the following:

- Clear rules should establish norms of behaviour by officials and members, with systems for monitoring and applying sanctions. Financial audit systems are particularly important.

- Governance structures determining the relationship between voting rights or control, equity investment and use of farmer organisation services need to evolve to match the critical market and resource opportunities and constraints facing farmer organisations.
- Most grassroots farmer groups need support from higher tier membership, governmental, non-governmental or commercial organizations, but this support needs to be carefully targeted at clubs' needs and opportunities, recognizing that capacity building is a long-term process.
- Farmer groups and higher tier organizations are susceptible to political interference; therefore, clear rules must be agreed and enforced to prevent subversion through political influence.

MANAGEMENT PROBLEMS

Management-related problems are at the heart of the failure of many LFR. Issues such as the absence of rules, high turnover of managers, lack of accountability, insufficient capacity and weak monitoring (Blein, 1999) are among the most commonly cited causes that seek to explain the problematic functioning of LFR. They also represent some of the major challenges that LFR have to overcome in order to strengthen their position and improve their overall performance.

Many of these problems in fact stem from poor design and planning, as well as from the absence of feasibility studies prior to the creation of LFR. The poor capacity and training of management committee members as well as their lengthy administrative and operational procedures also constitute a determining factor for the failure of many LFR (Kent, 1999 and Diop et al, 2006).

LFR tend to be managed blindly according to customary uses (buying post-harvest and stocking to sell during the lean season). Managers often fail to think strategically about market conditions and lack the capacity to react on the basis of more extensive and complex information that would improve the overall functioning and prospects of the LFR.

Strategic thinking is key to ensuring that LFR address temporal and spatial arbitrage as effectively as possible. Adequate prevision and foresight play a fundamental role in ensuring that LFR function under the best possible conditions. The evidence of the Naam Federation (Blein, 1999) shows the extent to which these factors contribute towards the success and viability of LFR. The most viable LFR are those that manage to plan purchases ahead and succeed in securing the most advantageous prices and stocking conditions.

As noted earlier in this paper, cereal banks struggle with spatial arbitrage – trading between geographic locations – (Coulter, 2006) and temporal arbitrage. The experiences of Mooriben and the Naam Federation provide clear testimony of the challenges involved in buying grain both from a logistical perspective (transportation costs and road access) and from the point of view of securing strategic purchases (conditioned by access to price data that ensures informed decisions in the best possible conditions).

One question that arises is whether, given the price risk involved, buying post-harvest and selling the complete stock in the lean season constitutes the best strategy for commercial LFR. Kouyate et al (2002) show that traders in Niger do not accumulate large inventories, but carry out quick rotations instead, as a result of their lack of working capital as well as the price risk they face. Blein (1999 p, 58) provides a compelling illustration of the limited margins that a single rotation entails. In his example, a commercial LFR with a capacity of 15 tonnes, that only completes a single rotation a year, must secure a margin of 17 per cent to ensure that the commercial LFR' working capital remains stable (in absolute terms). This margin must reach 20 per cent to ensure the stabilisation of the purchasing power of the working capital (bearing in mind inflation and the increasing cereal price trends). Margins that fall under this percentage inevitably entail the gradual decapitalization of stocks. Hence the importance of ensuring that decisions are well-informed and based on overarching strategies as opposed to mechanical

operational processes (such as ‘always buy once at the beginning and sell once at the end’, instead of ‘what the market tells us to do’).

Credit default

Providing credit services constitutes one of the main reasons behind the establishment of LFR. In many contexts, granting credit represents one of the most desired objectives but at the same time, it tends to be the most troublesome. Indeed, credit default is one of the key factors that lead to the failure of LFR.

The issue of granting or not granting credit is one of the main strategic decisions that LFR have to take. The reasons for credit default are highly complex since it is not only the result of bad management. It can also be due to factors such as crop failure, cultural issues, moral hazard (sometimes caused by development cooperation) and many other causes. In Burkina Faso, the Naam Federation decided to avoid giving credit to consumers after realizing that credit default was the main risk for the sustainability of LFR.

AAAE took a similar decision and resorted to the establishment of an independent micro-finance institution (*Caisse d'Épargne et Crédit Villageoise de Développement*) to manage credits without binding them to LFR.

It seems that the only viable solution to the problem of credit default to date has been to create independent credit structures that undermine the original principle of using grain as a form of guarantee. This constitutes a clear reflection of the level of difficulty that offering successful credit services entails when tied to LFR structures that are vulnerable and have limited capacity.

Costs

Promoters also tend to overestimate the gains to be made through the speculative storage of grain (Coulter, 2006). This happens as a result of the lack of feasibility studies available. These studies would normally help to unveil costs that are not usually taken in account. Typical costs include store maintenance, staff (when paid), pest control as well as financial costs (the interest of the capital used to buy the grain). A small percentage (usually between 2.5–5 per cent although often higher) must also be discounted for spoiled grain.

Financial costs represent an important part of the total running costs of LFR. In Niger, for instance (Afrique Verte 2010) the interest rate is a monthly 2.5 per cent. The total percentage during the period stored is 15 per cent. Once the 2.5 per cent of spoiled grain is deducted, a price increase of 17.5 per cent is required only to cover spoilage plus financial costs. According to the same study (based on millet prices) in 24 samples out of 34 the price in lean season was 17.5 per cent higher than during the harvest. This implies a rate of failure of 29 per cent, a percentage that is far from negligible since it requires the producer to provide additional money to the sale of his/her grain in order to pay the credit.

Store maintenance as well as the size of the store matter, as in any business with fixed costs. Four cases studies by Chetaille et al (2011) show that costs can vary from €1.4/100kg of maize up to €6.5/100kg of paddy. But this study interestingly shows that the smallest cereal bank (200 t) has the lowest costs, compared to the highest €6.5/100 kg of paddy with 800 t). This could be explained due to the modality of organisation: small LFR can be competitive if they have less fixed costs and if staff works on a voluntary basis.

Apart from physical costs, the functioning of LFR requires substantial transaction costs (non-physical costs linked to information, bargaining and contract enforcement) that can be more important since they can deter wider participation. In addition, there are also other participation costs involved. According to Coulter (2007), there are various hidden costs linked to participation in LFR:

- The costs linked to the fact that individuals lose autonomy within their group.

- The opportunity cost of time spent in meetings and communications with other group members.
- The costs of enforcing "agreed behaviour" on staff, officers and group members. This may involve introducing protocols for spraying, rejecting products according to standards and banning "side-selling" in compliance with contractual commitments (as well as settling disputes and applying sanctions as required).

These hidden costs constitute an obstacle for small producers who could potentially store 2–3 bags of cereal, since they may act upon the false impression that it is not profitable to belong to a LFR. In order to ensure the participation of the most vulnerable, LFR must be able to offer other services such as agricultural extension or credit that compensate the cost of participation.

This is particularly important in light of the fact that small producers have limited access to price information and as a result, they often sell below market prices. The costs and losses borne as a result of participating in a LFR must be weighed against the losses caused in the absence of the information required to secure fair prices (Chetaille, 2011).

Poor quality of grain

There is a traditional problem of poor quality of grain and lack of standards and grades in rural areas, a problem affecting not just the LFR, but farmers at large. It is caused, among other things, by the lack of trust between farmers and middlemen: the first do not deliver quality (mixing even debris and stones with the grain) and the latter do not pay the exact weight (cheating with the measures).

Once in the LFR, there can be additional losses of grain due to technical mismanagement. This problem of quality of grain -referred to as 'quality risk' by Chetaille (2011) ranges from serious conservation problems -inability to control pests, sometimes because of fake pesticides, drying techniques, moisture, filth or to the lack of the standards and grades required to participate in tenders and commodity exchanges.

In terms of grain conservation, it must be noted that despite the fact that one of the key objectives of LFR is to improve the quality of storage (see figure 2) many cereal banks fail to successfully control the conditions of the grain.

One of the aims of the *Purchase for Progress programme* (P4P, see box 3) was to improve the quality of grain of farmers in order to integrate them in value chains. The hypothesis is that there is a quality market, which pays a premium for better grain. For the moment, the WFP is the one paying the premium for quality, but it is not clear that other buyers would do the same. This hypothesis is still to be tested in many countries. Factors such as the emergence of middle classes and changing consumer preferences could improve the demand for better quality grain (World Bank, 2011).

Certain new technologies that are being developed to improve the quality of grain offer new opportunities for farmers. For example:

- The super-bag (an airtight plastic bag that kills pests through the respiration of grain that consumes the oxygen) and other modified atmosphere methods (GrainPro, Eco2...).
- The blue box, a small kit developed by P4P containing a set of grain quality testing equipment and tools to screen food quality at the field level. The blue box contains grain-sampling equipment; grading equipment and an aflatoxin test kit.

7 DEFINING AN ENABLING ENVIRONMENT FOR LOCAL STOCKS TO FLOURISH

WHAT ARE LFR USEFUL FOR?

Local food reserves can play a key role as part of both community and national food security strategies. The fact that they are firmly grounded in the local dimension of food security makes them particularly well placed to effectively address local needs and adapt to changes. Local food reserves are tailored to each specific context and their objectives can be adapted in accordance to the concrete needs of the communities they serve.

LFR can be an effective tool in the face of idiosyncratic risks. They can support the needs of certain individuals and small groups in circumstances where the effects of a shock do not affect the entire population (i.e. when only part of the population requires the services of the LFR). LFR can also support the most vulnerable populations in normal years by facilitating their access to food at lower prices.

However, in the fight against covariant shocks (drought, floods, price hikes) causing recurrent food crises, the limitations of LFR must be acknowledged, since these shocks affect local production directly and make this instrument inefficient in the face of these macro-shocks. This is also true of situations where the inversion of price cycles causes LFR to go bankrupt. In light of these shortcomings, it can be argued that when faced with covariant shocks, it is at the level of national food reserves that food insecurity issues can be most effectively addressed. Nevertheless, it is important to acknowledge a) the protective role in defence of household economies when faced with personal shocks; and b) the need to re-launch these defence structures after a high intensity shock or a price inversion phase.

HOW TO PROMOTE, PLAN AND DESIGN LOCAL FOOD RESERVES?

Ensuring ownership

One of the conclusions of this paper is that LFR deserve to be promoted. It is important to introduce this section by distinguishing between promotion and support. Promotion means the creation of new LFR, not supporting existing ones. How these new LFR should be promoted is crucial. We have seen above that top-down approaches tend to lead to a lack of ownership that can be highly problematic.

The first factor to take into account is the fact that LFR must be ran as businesses. Donors advocate for private sector involvement in the management of reserves and for the inclusion of the poor peasants in the value chain. LFR accomplish both objectives since they belong to local producers and they arise (or should arise) from their own initiatives. Therefore they should be treated as private sector. The risk of failure can be high, as in any other private initiative and the same caveats apply as in any other agro-industrial initiative.

Secondly, any kind of donation to build the warehouse or constitute a revolving fund needs a strong counterpart of local contribution. In Oxfam's experiences in Tanzania the warehouses were built by the 'shareholders' (their contribution to the building was divided into shares equal

to the time devoted). The level of ownership was excellent, with the only secondary effect being the fact that some groups were reluctant to include new membership, as the new members had to equal the contribution of old members in cash. Oxfam contributed the building materials and expert support in the construction, and in some cases, the working capital.

Improving planning and design

LFR do not constitute a simple blueprint solution that can be applied everywhere. They are not viable in every context and require certain conditions to adequately function (for instance, in cases of highly competitive and open grain markets, LFR are not suitable because intra-seasonal price variations can be lower). This means that feasibility studies are a requirement for any new LFR.

Special attention should be given to analyse the particular context in which LFR are to be developed (notably whether the reserves are to operate in a deficit, surplus or intermediate (*à équilibre précaire*) areas in order to ensure adequate planning and design.

SHOULD THE EXISTING LFR BE SUPPORTED?

The main strength of LFR lies precisely in what they can achieve when tailored to each local context. This community-based approach necessarily requires a level of institutional support that has been missing in many past experiences.

Given their potential to make a positive contribution to food security strategies and the importance of promoting community-based solutions, LFR deserve to be supported in ways that ensure the creation of an enabling environment in which they have the best possible chance of realising their potential and developing. Although their uneven performance records mark the history of LFR, it must also be acknowledged that LFR have primarily been established in contexts that lacked the necessary conditions for them to effectively function.

The political contexts LFR have operated in have often been characterised by inadequate and unaccountable governance systems that were unable to provide the institutional support required for LFR to develop. These factors, coupled with an unfavourable economic climate, have substantially weakened the potential role of LFR.

States have the legal obligation to ensure that the right to food is fulfilled and supporting LFR should be seen as part and parcel of this fundamental commitment. Given the systemic failure of market forces to guarantee food access for all, alternative measures should be established to feed those who lack purchasing power and are neglected by market strategies (Oxfam, 2011). States should lead these efforts but should work in close partnership with CSO and other key actors in order to ensure the participation and ownership of those concerned. Supporting LFR would be an effective way of strengthening community-based approaches to food security.

Certain conditions are required for the creation of an enabling environment that allows LFR to thrive. One of the key requirements is securing the commitment and support of governments to accompany their development and provide assistance as required.

WHAT THE STATE SHOULD DO TO SUPPORT LOCAL FOOD RESERVES

Link LFR to national reserves

The absence of strong links between local and national reserves has significantly weakened the potential of LFR to play an effective role as a food security instrument in the past. National and local reserves can act in a combined way to tackle price spikes. LFR can react to price increases by selling at low prices during the lean season although their capacity tends to be very limited. National reserves can potentially strengthen and extend this capacity without affecting the overall functioning of LFR. Where LFR do not exist, States can react by scaling up state-owned shops '*à prix modéré*'. However, articulating the relationship between the two in a complementary manner constitutes a challenge.

In Burkina Faso, the government has recently set up a pilot network of FSR known as '*boutiques témoin*'. These reserves share the objectives of the FSR described above (namely ensuring access to food for the most vulnerable) but their current functioning illustrates some of the key challenges of this type of reserve. Various respondents²⁹ have pointed out that in the absence of clear eligibility criteria (such as benefiting from social protection schemes), any person can access the store and buy grain at a social price on a first-come-first served basis. Apart from being detrimental for those most in need, this situation has paved the way for speculation and profitable re-sales for those who are better off. The fact that the state chooses to duplicate an existing structure instead of strengthening FSR, highlights the need for a more integrated approach to food security that gives due consideration to local initiatives as key instruments with the potential to reinforce government policies.

In the absence of national food reserves, governments should work to avoid excessive interference in price cycles through policies such as imports or food aid, and should also provide the necessary mechanisms to bail out troubled LFR (but only with cash to avoid other negative side effects of intervention).

Feed national reserves through local procurement

In the context of food security programmes, local procurement refers to foodstuff purchases made by governments, donors or UN programmes (such as PAA – Food Purchase Programme- in Brazil or P4P -Purchase for Progress-, in 21 other countries) at the local (or regional) level. Four key potential advantages (BEST, 2011) of local versus external procurement are worth highlighting: a) local products arrive more quickly; b) they are culturally sensitive and adapted to local tastes; c) local procurement can stimulate local production by providing a market for products; d) it can also promote investment and improve the overall conditions of small producers. However, this type of purchase must be made bearing in mind the market situation, since when prices are high, continued local procurement can have negative effects on food markets³⁰. Generating a situation that supports increased prices can have the opposite effects for net consumers and must therefore be monitored carefully.

In the above-mentioned programmes, the food products coming from local procurement replenish national reserves or WFP programmes. Since recirculation for national reserves can potentially damage markets, direct links between local procurement and social protection (such as school feeding) can reduce these problems³¹.

Box 3: Purchase for Progress as an example of local procurement

P4P aims to build the capacities of smallholder low-income farmers by increasing their productivity and marketing of staple food commodities and channelling them to meet WFP needs of these products.

Since the 1980s, WFP's purchases of grain in developing countries have increased by an average of 60 per cent, reaching 80 per cent in many cases. However, these purchases originally lacked targeted local procurement measures in support of smallholders. In response to this gap, the P4P programme was developed with the aim of increasing smallholders' capacity to access the market and experimenting with WFP's procurement mechanisms without placing its needs at risk.

This pilot initiative is being implemented in 21 countries, reaching over 1,000 farmers' organizations and more than 500,000 farmers. Between 2008 and 2011, WFP concluded contracts for over 207,000 tons valued at \$75m.

P4P has a strong focus on learning. The programme tries to identify models of procurement that can benefit smallholders without compromising WFP's core objectives of providing safe food in a reliable, timely and cost-efficient manner.

Nevertheless, the programme is confronted with a number of risks. Default in the contracts issued is one of the main problems that the P4P has to overcome, according to WFP's own evaluations. Unsurprisingly, this problem is not different to the ones that all producer organizations face: how to avoid side selling when the competition (intermediaries) pay in cash and on the spot, while P4P takes several weeks to issue payments, a crucial lapse of time for peasants often in urgent need of money.

Source: P4P, Purchase for Progress, A Primer (WFP, 2012).

Although the handover of the P4P programme is still to be defined, in countries such as Rwanda and Guatemala, governments have shown interest in the experience and have already engaged in attempts to replicate the initiative in various ways. LFR could be linked to this type of initiative by articulating purchases from LFR in order to replenish national reserves, or by linking LFR to school feeding programmes. A pilot initiative is currently being tested in Ghana based on linking the latter.

Efforts to build synergies between food reserves and social protection initiatives can further support smallholders through effective local procurement schemes that focus on small producers. These synergies would fulfil the twofold objective of ensuring a reliable source of food for these initiatives while at the same time providing a market for the products of small producers.

Tackle price risk: support the stability of price cycles

Governments should work to try to keep intra-annual price cycles as stable as possible (i.e. higher prices at the end than at the beginning of the season). If they are not in a position to do so, alternative ways of compensating LFR for changes in prices should be sought. Creating stabilisation funds to compensate losses is one of the government-sponsored measures that could be taken.

A sustainable solution to the problems faced by small producers necessarily entails supporting their transformation from net buyers to net sellers. Unless States establish compensation systems to support the viability of local reserves, this transformation will not be possible.

Keeping prices stable mainly involves intervening carefully in markets when price spikes are excessive, but avoiding indiscriminate measures such as export bans which harm LFR and traders alike.

Tackle climate risk: promote climate insurance and selective bailout

Climate insurance is one of the main measures to be taken against credit default in LFR. Developing climate insurance requires a regulatory environment that promotes the extension of insurance private companies beyond their usual reach, both geographically and in relation to the variety of services offered. To achieve this wider scope, according to Barret et al (2008) and Skees (2007), certain government actions are more effective than others:

For example, it seems wiser not to subsidize premiums in deficit areas, since this may cause rent-seeking behaviour that could lead to greater benefits for the better-off segments of society.

Instead, it is more advisable for the state to:

- Pay for the most extreme risk and allow the insurer to pay for the less extreme (known as risk-layering).
- Support information gathering and sharing.
- Pay for research and design costs (which are high).
- Adapt climate insurance to the poorest by linking it to social protection through 'insurance for work' schemes as detailed in box 2.

Governments should also devise in kind bailout mechanisms through national reserves in order to provide in kind support to LFR facing difficulties and prevent them from going bankrupt (i.e. make national reserves act as a lender of last-resort). However, there is a certain moral hazard that could result in supporting LFR that are de-capitalised as a result of bad management. Index insurance could be the solution for this by setting up a progressive scheme, which could cover losses in LFR in exchange of a fee and use satellite data to determine which LFR are really affected by bad harvests due to drought or floods. This would be a subject for further research.

Strengthen the links between national stocks and social protection

The links between LFR and social protection can be considered from various perspectives:

- **Actions by LFR in collaboration with the government:** As local procurement – LFR providing grain to social schemes – described above. In this case the State's social protection helps to the farmers who sell the grain obtaining more earnings.

LFR could help the state to identify better-targeted social protection schemes based on local needs in rural areas. In Burkina Faso, the AAAE has compiled a list of 14 different vulnerable groups in the community and has established quotas for the distribution of free grain (AAAE, 2011). The quantities are determined on the basis of both household size and the overall stocks available at each moment of the cycle.

- **Social protection initiatives conducted by LFR independently:** LFR offering social protection by their own means to the most needed or those unable to work. Cereal banks in the Naam Federation, in Burkina Faso, or others coming from Oxfam programmes in Tanzania, deliver grain to them.

Many LFR incorporate social protection measures without any outside support, which creates a situation where de facto, poor people who are already facing serious difficulties are supporting others who are poorer still. It seems clear that under such circumstances, the burden of solidarity should not fall solely upon those who are already vulnerable. States and donors should ease the load of LFR in this respect by contributing grain for social protection initiatives, thereby contributing to their sustainability.

Strengthen institutional capacity of LFR

States should support efforts aimed at strengthening the institutional capacity of LFR by investing in training of management committees (from basic numeracy skills to more specialised accounting techniques, inventory management, etc). Technical support and guidance should also be granted at all stages of the development process in order to build the capacity of LFR managers.

Facilitating administrative procedures is one concrete way in which the everyday functioning of LFR can be supported by reducing cumbersome barriers and paperwork in ways that save time and money for LFR managers.

Develop a monitoring system

Governments could play an important role in support of the establishment of an independent, transparent, and clearly defined system for auditing LFR (Chirwa et al, 2005) and monitoring activities to ensure greater transparency and identify when corrective action and support are required to improve performance.

Promote the legalisation of LFR

Many LFR do not have a legal framework. Since they hold farmers' products in the same way that banks hold savings, their legal status should be clearly determined. Governments should promote the legalization of LFR in order to ensure that LFR are accountable for the products they store (and at the same time avoid the politicization of their use). WRS, for instance, must guarantee the quality of the product stored and this involves having a system of grades and standards and effective quality control. In the absence of a legal framework, the relationship between farmers and LFR must be based on trust and the enforcement of agreements cannot be guaranteed. Governments are key to ensuring that WRS are well certified to effectively guarantee the provision of an adequate service (Jayne et al, 2010, p.92) as well as transparency and accountability.

One of the ways in which local government institutions can support LFR is by facilitating licenses and related-paperwork by cutting red tape and waiving certain costs. This support is appreciated by management committees, since it saves time and money for LFR managers (Interview with Management Committee members, AAAE, June 2012).

Subsidise properly

Within the framework of this paper, subsidies are understood as any transfer of money or goods delivered to a LFR. Subsidies are not meant to pay for activities directly related to the LFR's balances of grain trade: they should serve to support complementary activities in seemingly less distortive ways. Subsidies serve the following purposes:

- To tackle market failures: ill-functioning input markets can justify the subsidisation of fertilisers when producer organizations have to substitute an underperforming private sector actor. The government can choose between subsidising input traders and helping producer organisations to do it themselves.
- To kick-start the commercialisation in newly created producer associations, which need to be able to sell at competitive prices in the first seasons (when their unitary costs are high). Using local procurement for targeted producers combined with the provision of pre-harvest services allows production intensification in response to the guaranteed price (Poulton 2006, p.353). This is the essence of P4P (discussed at length in Box 3).
- To build governance and capacity, skills and resource development at different levels among producer organisations, their members and supporting organisations (Chirwa et al, 2005).

- To ease the production in less-competitive regions: if commercial cereal banks can thrive by themselves in surplus areas, in deficit areas they can hardly compensate their balances. Food security reserves can make life easier for their beneficiaries, but this does not entail that they will boost production. Insurance (in the terms described above), agricultural extension, credit and inputs have to be subsidised where the market does not provide them and at the same time the environmental conditions are not the most favourable. Dembelé (2007, p.6) justifies keeping cereal banks located in deficit areas in business in cases of absence of market in the village, lack of transport infrastructure or existence of local monopolies. If not, using subsidies could in fact harm the development of the private sector.

This can be done in the following ways:

Subsidies are one of the most discredited policy tools in agricultural history for many reasons. In the last years some initiatives, especially Malawi's fertiliser subsidy scheme, tried to escape from this common view by endorsing the concept of 'smart' subsidies, which are 'innovative delivery systems intended to reduce common problems facing subsidy programmes and to extend their benefits' (Dorward et al, 2008).

Formulating a definition of 'smart' does not solve the problem of implementation, but can help to define the features that such a service should fulfil. Regarding LFR, a smart subsidy would be a kind of compensation, targeted, measured according to objective parameters, designed to achieve concrete objectives or compensate for concrete losses, temporary and with an exit strategy (unless the ecological conditions of the area justified a longer engagement).

Channelling subsidies only through a federation or a large producer organisation could help to target and deliver more effectively. To summarise, the following activities could be subsidised:

- Training and capacity building for management teams.
- Local procurement prices in targeted areas.
- Weather insurance in deficit areas (see Box 2 for further details).
- Grain storage technology.
- Storage capacity (always including a local contribution).

What should not be subsidised: those services that already exist in the market and are within the reach of small producers. If credit exists at reasonable rates, working capital should not be provided. If inputs are plenty and have a reasonable price (unlikely), they should not be granted. Subsidies must compensate a lack, not to help where there is no need.

Support the development of new technologies

Governments should tap into new technologies in order to support LFR and ensure better performance. The last 20 years have witnessed a series of decisive developments on the technological front. For LFR, these resources could include the following:

- **Mobile phones:** the availability of market information has radically transformed with the arrival and widespread use of the mobile phone. Isolation is now relative, since prices can be checked at a modest cost and money transfers can be made using mobile phones.
- **New methods of storage:** although cereal banks have been designed to improve the quality of storage, many of them have suffered serious losses due to pests (such as the large grain borer). These new designs include: a) metal silos (distributed by the POSTCOSECHA initiative) and b) modified atmosphere methods such as the 'super-bag', which controls pests through the CO₂ emitted by the grain stored in air-tight conditions.
- **New management tools:** in the last 20 years, a series of administrative technological tools have been developed to support the work of managers working in different fields. The

widespread use of computers, internet services and the introduction of specialized software for accounting have allowed managers to gain efficiency while at the same time increasing overall transparency and accountability (by providing the means to exert greater control over activities and resources). LFR are still to benefit from the advantages of using these new tools and their widespread use should be actively promoted.

- **Electronic warehouse receipts:** a regulated system using this new tool (eWRS) has been introduced in Uganda. The initiative has been well received by small producers and banks (Coulter, 2009, p. 2) although it would require certain conditions to be in place (notably reliable internet access and computer skills) in order to be applied in other contexts.

Promote zero line of defence

Improving household storage is always worthwhile and should not be seen as competing against LFR. Their promotion should ideally go hand in hand with other efforts aimed at promoting and strengthening the role of LFR as food security instruments. In Burkina Faso, the AAAE has set up a system whereby smallholders are organised in groups of four and jointly work on a collective field shared by the group. Each collective field has a small granary to stock production. This stock sometimes feeds into the community LFR, which provides a market for these products (although excess production is usually limited and the stocks are primarily consumed by the smallholders and their families).

WHAT LOCAL FOOD RESERVES SHOULD DO BY THEMSELVES: CREATE FEDERATIONS

Federations can help to strengthen LFR in various ways. They can encourage ownership, active participation and mutual support among LFR.

Information exchange

Federations can play a pivotal role in helping to overcome one of the main problems faced by LFR (namely spatial arbitrage (trading between geographic locations), since they have the capacity to facilitate data exchanges between the associates and promote grain trade between surplus and deficit cereal banks (e.g. Naam Federation in Burkina Faso).

The price information system established by the Naam federation in Burkina Faso constitutes a good example of the type of service that can be offered to smallholders. This information system collects the prices of four cereals (millet, sorghum, maize and cowpea) through the local 'animateurs' in seven different markets (including two situated in surplus areas and two in deficit areas) on a weekly basis. This information is sent to be aired by the community radio and reaches all smallholders, thereby facilitating informed decision-making in relation to prices. The possibility of offering this type of service to the community at large at a moderate price deserves to be considered since incomes could contribute to the running costs of LFR.

Surveillance

Federations can also share the costs of a centralised form of control, which could act as central bank supervision (in a similar way as in the banking system) and facilitate access to support services (training, access to national reserves) to LFR that fulfil all the quality requirements.

Perhaps a certain loss of autonomy is the price that has to be paid for belonging to a federation. Coulter (2006, p.11) states that the lack of outside monitoring is one of the four causes that accounts for the poor performance of cereal banks. Federations provide supervision, although

this supervision is often part of a rigid business model that reduces the decision power of individuals.

Technical support and advice

In addition, federations can lend support and give advice, act as apex organisations and help to ensure adequate replenishment of stocks by for instance, jointly fixing replenishment dates well in advance (November-December) to protect LFR from decapitalization. By sharing the services available, different LFR can develop common purchasing strategies and establish sales commissions, grouped purchases, joint transportation (among others) in cost-effective ways that facilitate the functioning of LFR.

Buffer stocks

Federations can also provide extra services by acting as central buffer stocks. Some organisations (such as CARE, Mooriben and AAAE) have established centres that provide stock to satellite groups of LFR during the lean season. Stock purchases can only be paid cash (not by credit) and adhering involves a payment by the LFR to the buffer stock.

Mutualise risks

The possibility of using market-based tools for smallholders or cooperatives to manage price risk has been developed for several decades. Hedging is widely used in developed financial markets, but it is less extended in developing countries and rarely serves smallholders. There are several reasons for this:

- Lack of commodity exchanges limits the availability of price information.
- Lack of use of grades and standards limits the possibility of establishing long-distance contracts both for buying and selling.
- Government interventions in markets affect prices and discourage financial institutions to provide insurance price.

The few experiences that are currently adapting price insurance for cooperatives in developing countries are so far focusing on cash crops, given the lower chances of government interventions that can affect prices. The insurance market price is underdeveloped and most projects have not progressed beyond the pilot phase. In West Africa, the possibility of working with hedging is also limited even for the big players.

In light of these difficulties, Oxfam is exploring the possibility of establishing a stabilisation fund in a federation of cooperatives that would limit the damage caused by the inversion of price cycles, by trying to answer the following questions:

- Determine the level of price risk of a typical cereal bank simulating what would have happened if it had bought post-harvest and sold at the end of season, using price series from fifteen markets from Niger, Mali and Burkina.
- Determine the feasibility of an internal stabilisation fund established in the years when the price difference between post-harvest and lean season was positive, to compensate for those years in which it was negative.
- Determine the level of risk and profit if sales were made monthly rather than at the end of the season. Could the incidence of a low turnover due to poor harvests override this system?

This involves comparing producer and consumer prices in 12 markets in both countries between 1995 and 2011 and analysing different scenarios entailing four different buying and selling strategies (strategy one: storage facility is assumed to sell during the lean season; strategies two, three and four: sales are assumed to be distributed throughout the year).

The preliminary results suggest the following:

- Storage facility margins are usually positive.
- Strategy one generally yields higher margin levels than other scenarios but the risk is higher.
- Strategies two, three and four yield less but also entail less risk.
- The losses of negative margins over several years are offset by positive results in other years.
- Hence an external stabilisation fund may be enough to guarantee the economic viability of LFR.

Two major difficulties are likely to emerge:

- **Side selling:** the stabilisation fund involves that producers have to renounce to a part of profit in the good years. This would facilitate things for middlemen buying the production from smallholders with a more fragile sense of loyalty towards the cooperative. This collective action problem is frequent in fair trade, contract farming and any scheme that provides a floor price, but it faces problems when competing for higher prices.
- **Lack of enough margins to constitute the fund.** This could be solved by opening the door to State compensation for producer organisations in return for their market interventions. The State would have the obligation of compensating all legal LFR suffering losses as a consequence of interventions affecting prices. In relation to this, IFPRI has a tool that could be useful to calculate the compensation: it models the impact in markets that results from the release of a given quantity of grain coming from food reserves.

The conclusions of the study will be made available in July 2013.

IT'S ABOUT BUILDING THE CAPACITY OF INSTITUTIONS

LFR are neither the panacea to solve farmer's problems in semiarid areas, nor a hopeless unsuccessful tool condemned to failure. It is an institutional arrangement that can provide better market access, more income and wellbeing to farmers while only representing a reasonable burden for government's budgets.

Creating institutions is a slow process, which requires the commitment of both farmers' organisations and the government, which must not only provide a good environment for them but also balance the secondary effects of its intervention in food markets during the lean season with the need of the LFR – and equally the private traders – to remain as viable business.

Although the history of LFR is marked by their uneven performance record, it must also be acknowledged that LFR have primarily been established in contexts that lacked the necessary conditions for them to effectively function and develop. The political context has often been characterised by inadequate, non-transparent and unaccountable governance systems unable to provide the required institutional support required for LFR to flourish. These factors, coupled with an unfavourable economic climate, have substantially weakened the potential role of LFR.

LFR do not constitute a simple blueprint solution that can be applied everywhere. Their main strength lies precisely in what they can achieve when tailored to each local context. This community-based approach necessarily requires a level of institutional support that has been missing from many past experiences. Furthermore, the absence of strong links between local and national reserves has also weakened the potential of LFR to play an effective role as a food security instrument.

8 CONCLUSIONS AND RECOMMENDATIONS

Food insecurity is a complex problem that must be tackled in a concerted manner by all the institutions involved at every level. Governments, NGOs, local communities and international partners must work together to develop the common rules of the game required to ensure effective coordination of responses to food crises and long-term solutions.

Within this framework, LFR deserve special attention given the fact that they constitute food security instruments with enormous potential but which also display a profound fragility that requires strong institutional support to ensure efficient service delivery in a sustainable manner.

WHAT GOVERNMENTS SHOULD DO

In order to support the functioning of local food reserves in the best possible conditions, governments should:

Link LFR to national reserves

National and local reserves should act in a combined way to tackle price spikes more effectively (increasing the sales capacity of LFR and supporting social protection initiatives).

Feed national reserves through local procurement

By feeding national reserves, local procurement can help to establish synergies between food reserves and social protection initiatives. Supporting a local procurement system can help to attain the double objective of securing a reliable source of food for these social initiatives while at the same time providing a market for small producers.

Tackle price and climate risks

- Keep intra-annual price cycles as stable as possible and find alternative ways of compensating LFR for price changes (compensation/stabilisation fund).
- Promote climate insurance: develop a legal environment that promotes the extension of insurance private companies beyond their usual reach (both geographically and in relation to the variety of services offered).
- Devise in-kind bailout mechanisms through national reserves in order to provide in-kind support to LFR facing difficulties and preventing them from going bankrupt.

Strengthen the links between national stocks and social protection

National reserves should support social protection initiatives by providing the necessary grain to help them attain their social objectives.

Strengthen the institutional capacity of LFR

- Invest in the training of LFR management committees (from basic numeracy skills to more specialised accounting techniques, inventory management, etc).
- Ensure that technical support and guidance are granted at all stages of the process to ensure the adequate functioning of the LFR.
- Simplify administrative procedures in order to facilitate the everyday functioning of LFR by reducing cumbersome barriers and paperwork.

Develop a monitoring system

Support the establishment of an independent and transparent monitoring system in order to ensure greater transparency and identify when corrective action and support are required to improve their performance.

Promote the legalisation of LFR

- Promote the legalisation of LFR to ensure that they are responsible for the products they stock and can guarantee certification and adequate services.
- Facilitate the provision of licenses and administrative procedures.
- Ensure that projects for the creation of new LFR are firmly grounded in participatory analyses of each context, high-quality feasibility studies and professional planning.

Subsidise properly

- Introduce “smart” subsidies (training, local procurement in targeted areas, climate insurance in deficit areas, storage technology). In the context of LFR, a smart subsidy would be a kind of targeted compensation, targeted, measured according to objective parameters, designed to achieve concrete objectives or compensate for concrete losses, temporary and with an ‘exit strategy’ (unless the ecological conditions justify a longer permanence).
- Channel subsidies through federations or large producer organisations could help to target and deliver more effectively.
- Avoid unnecessary subsidies (for example services that already exist in the market and are within the reach of small producers).

Promote the development of new technologies

For LFR, these could include telecommunications and storage techniques.

Promote line zero of defence

Improve and promote household storage, together with other measures that aim to promote and reinforce the role of LFR as food security instruments.

WHAT PRODUCER ORGANISATIONS SHOULD DO

In order to be effective, these policies must be developed in partnership with producer organisations, which should in turn concentrate their efforts on the promotion of federations in order to reinforce the position of LFR. Federations can:

- Facilitate information exchange between LFR in order to maximise their access to markets and guarantee that purchases and sales are conducted under the most advantageous conditions possible.
- Share the costs of a centralised form of control, which could act as central bank supervision and facilitate access to support services.
- Share support and advice services.
- Act as buffer stocks by providing supplementary services.
- Mutualise risks by using common market-based tools to manage price risk.

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NOTES

¹The SHARE initiative (Supporting Horn of Africa Resilience) launched by EU is an example of this current trend. A similar initiative for the Sahel was launched in June 2012 under the title AGIR (Alliance Globale pour l'Initiative Résilience Sahel).

² Provisional Oxfam definition.

³African Post Harvest Losses Information System, a network of local experts in East and Southern Africa led by the Natural Resources Institute (<http://www.erails.net/FARA/aphlis/aphlis/Home/>).

⁴ Competitiveness is understood in terms of quality and productivity (i.e. yield/production costs).

⁵ The countries which are above 10per cent are Burkina, Niger, Guinea, Malawi, Ethiopia, Mali (and Ghana (10per cent). Below 5 per cent are Uganda, Swaziland, Kenya, Burundi, Botswana, Rwanda, Lesotho, Mauritius, RDC.

⁶ POSTCOSECHA (Post-Harvest) is a long-standing program funded by the Swiss Development Cooperation which distributes locally produced metal silos. In 20 years it has sold half a million silos among smallholders in Central America.

⁷ International Maize and Wheat Improvement Centre.

⁸ With the exception of Warehouse Receipt Systems.

⁹ Three types of area exist, even if the main LFR types defined in this paper correspond to only two (deficit and surplus). LFR in intermediate areas (where there is a succession of good and bad years) could constitute a third type but in the absence of concluding evidence on how LFR function in such contexts, this matter will not be addressed in the current paper. Further research is foreseen.

¹⁰ Also named banques céréalières "classiques", lean season banks (banques de soudure), gréniers de sécurité alimentaire, gréniers villageois etc..

¹¹ In Tanzania, some cereal banks apply a 100per cent interest rate in kind.

¹² For instance, AAAE and Naam in Burkina Faso.

¹³ The definition of cereal bank varies across countries. In Burkina, for example, following the failure of many cereal banks ("*banques céréalières*") largely as a result of credit default, many cereal banks have been renamed food security reserves ("*gréniers de sécurité alimentaire*" (GSA)), in an attempt to distance themselves from the negative experiences of the past. GSA work in virtually the same manner as cereal banks, the main difference being the fact that they no longer offer credit services (Interview with AAAE animateur, June 2012).

¹⁴ As in cereal banks supported by Oxfam in the regions of Morogoro and Dodoma in central Tanzania.

¹⁵ FEPAB, a producer organisation in Burkina, has 26 warehouses that work with this system.

¹⁶ Roger Blein (2009) estimated the reserves at approximately 40,000 tones in Niger, 15-30,000 in Burkina and approximately 15,000 in Mali. These figures only constitute a rough estimate.

¹⁷ The *Association Aidons l'Afrique Ensemble* (AAAE) offers credits of 320,000 CFA (490 €) for the purchase of 4 oxen and ploughing equipment. These credits are reimbursed over a 5-year period (with an additional 2-year grace period available). The members of the association are organized in groups of four producers who work jointly in a common field and also "entraide" to plough their individual fields. Each credit is granted to the group and the debt is shared by the four members. The AAAE has granted this type of credit to a total of 63 producer groups to date (interview with AAAE President, June 2012).

¹⁸ In Tanzania Oxfam has been working with fourteen cereal banks since 2001 in Dodoma and Morogoro areas. The services offered, include the provision of ox-carts and ploughs in some of them.

¹⁹ Interview with the coordinator of AAAE's school programme, Irin, Burkina Faso, June 2012.

- ²⁰ Upcoming fieldwork will analyse the dispersion of income depending on the number of bags sold by small producers to local food reserves.
- ²¹ 95per cent of the AAEE beneficiaries interviewed in the department of Rambo (Burkina Faso) affirmed that the existence of FSR had helped to reduce migration in their community (June 2012).
- ²² This practice is no longer permitted by organizations such as the Naam Feederation and the AAEE. According to the AAEE, this is due to the limited margins of their sale products (as little as 250 CFA for a 100kg bag), which means that the risk of credit default is so high that the non-reimbursement of just 5 bags can potentially lead the FSR to bankruptcy in a period of only two years (interview with AAEE *animateur*, June 2012).
- ²³ Although this is not the case for Naam and AAEE.
- ²⁴ Covariant shocks affect the entire population of a given place causing an unexpected loss of assets and income as a result of a single cause such as drought or conflicts (Maxwell 2008, p.58).
- ²⁵ Based on classification by Mayoux, L. (2006) and Ibrahim and Alkire (2007).
- ²⁶ Interview with manager of the CECVD.
- ²⁷ <http://www.oxfamamerica.org/issues/insurance>
- ²⁸ At least one case of misappropriation was witnessed within the AAEE network of 21 food security stocks, where a member of the management committee had left the village, taking with him part of the stock as well as the revenue collected through sales.
- ²⁹ Interviews with local residents in Ouagadougou and IO staff, June 2012.
- ³⁰ Interview with Oxfam staff in Ouagadougou, June 2012.
- ³¹ This is the case in the P4P in Ghana and the PAA in Brazil.

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