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Food Security in sub-Saharan Africa: Determinants of a Public Intervention in case of Market Failures

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Food Security in sub-Saharan Africa: Determinants of a Public Intervention in case of Market Failures

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Introduction

Food security is generally expressed in terms of food *insecurity,* as it emphasis the stress that can be associated to food. Severe hunger is life-defining but, most of the time, life-threatening. People who do not get enough to eat or ingest non-nutritious food face multiple threats: their health can be put in jeopardy, their productivity decreases, their trust in the future and their hopes vanish, upsetting their overall well-being. Constantly looking for securing one's food situation is exhausting. It consumes time, energy and diverts people from receiving education and finding alternative sources of income (WFP, 2009a). Markets could reduce this constant struggle for food adequacy. They enable buyers and sellers to meet and fulfil their demands and needs according to the available supply. When markets function well, everybody wins and the whole society benefits from a general welfare gain. However, when markets are deficient, there are winners and losers. The rural poor spending in general a larger share of their budget for food items, especially in the developing world and in sub-Saharan Africa particularly, they are more vulnerable to market failures. High prices of food are generally the result of markets performing badly, at the expense of the rural poor.

The purpose of this analysis is subsequently to analyse the determinants of food security, specifically in light of market failures, and the potential public interventions aimed at reducing those market failures in order to improve food security matters. We will focus on sub-Saharan Africa and more precisely on rural households, as we will see that food insecurity is mostly harming the livelihoods of poor populations living in rural areas. As a fact, 75 percent of the word's hungry poor live in rural areas (WFP, 2009a). Intuitively, those people living in remote areas need to bear high costs in order to access the markets, thus benefit less from their advantages. Poor rural populations are also more vulnerable to their discrepancies as they rely extensively on the market system to buy food. Smallholders in Africa are generally net buyers as well because very few manage to live solely from their production. Therefore, having well-functioning markets is a critical issue in sub-Saharan Africa.

PART 1. Food Security in sub-Saharan Africa

1.1 Food Security: Definition

There have been several attempts to adequately qualify food security, but the latest one has been the most convincing, maybe for it recognizes the complexity of the issue. It is during the consultations leading to the World Food Summit in November 1996 that policymakers agreed upon a definition: "Food security, at the individual, household, national, regional and global levels [is achieved] when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life[1]".

Thus, the notion of food security includes all levels of control, with a special emphasis on the individual level ("people"), which we will also give prevalence to in this study. The fact that a time component is also accounted for in this definition is also important for our case of study, namely sub-Saharan Africa, as we will see that food security can either be chronic, transitory or seasonal. The concepts of access, utilisation and availability that appear in the rest of the definition will be clarified in the subsequent section.

1.2 Hunger in sub-Saharan Africa: an on-going challenge

With over 240 millions of hungry people within the territory, accounting for almost 30 percent of its total population, the sub-Saharan area is the worst faring region in the world regarding food security issues. Since 1998, there have been around 20 food emergency cases every year in Africa (KIDANE, MAETZ, DARDEL, 2006).

Political and ethnic conflicts are often the common background of the most vulnerable countries hit by chronic hunger. Causes of food crises are manifold. From food availability decline to weak property rights or inefficient markets, the problematic of food security is dependent upon a lot of determinants. Generally, we conceive food security with regards to four substantial aspects: availability, access, utilisation and stability. Besides, there are always – at least – two ways of looking at those aspects: we may either consider the national level or the household level.

[1] FAO. 1996. Rome Declaration on World Food Security and World Food Summit Plan of Action. World Food Summit 13-17 November 1996. Rome.

1.3 Food Security Aspects in sub-Saharan Africa

1.3.1 Availability

Households in rural areas of sub-Saharan Africa are usually smallholders, living from subsistence agriculture. According to the World Food Programme "Hunger and Markets" Analysis (2009), "typically, less than 30 percent of farmers who grow food are net-sellers". Considering they have very little to sell on the markets, availability is low.

In the existing literature about food security, this aspect of availability has often been praised as the most essential one when considering famines. Some authors believe that food availability decline is at the core of the problem (DEVEREUX, 1988) and should act as the main indicator of famine threat. Famines appear when there is a severe shortage of food, due to an external shock such as crop failure, for example, or due to the inability of citizens to access the markets to purchase food.

1.3.2 Access

Amartya Sen, in its book *Poverty and Famines* (1981), displayed a new theory, called the "entitlement approach". He asserted that one would be subject to hunger if his entitlement set were to fail, regardless of exogenous shocks hindering available food production. In other words, if someone's income gets reduced or if his endowment looses some of its value, that person may be facing a hunger problem due to his inability to access sufficient amounts of food. Likewise, non-functioning or non-existent institutions and absence of rule of law can equally hinder people's access to food. Some may argue that Sen underestimates the power of food availability decline, like Stephen Devereux in *Entitlements, Availability and Famine: a Revisionist View* (1988). For Devereux, understanding the supply-side of the problem is as important as grasping the demand-side part as shown by Sen. Amartya Sen explained the people's entitlements to food as deriving from their assets, networks, skills; their own production; their bargaining power over their labour force; and from transfers. People are food insecure when the combination of entitlements is not sufficient to enable the individual or household to acquire the minimum food to meet their requirements (KIDANE, MAETZ, DARDEL, 2006). The risk of entitlement failure determines the level of vulnerability ad

hence the level of food insecurity, with risk being greater, the higher the share of resources normally devoted to food acquisition (MAXWELL, SMITH, 1993).
For African households, access to food mainly relates to their income, hence their ability to acquire food. With around 50 percent of sub-Saharan Africans living under the poverty line of 1.25$ a day, the accessibility to food is often put into question. Poor, rural populations tend to rely excessively on subsistence agriculture, have limited access to off-farm employment, and suffer from skewed income distribution – illustrated by high Gini coefficients[2] overall in SSA(KIDANE, MAETZ, DARDEL, 2006).

Food prices matter as well, seeing that they give indications about the purchasing power of households. When price spikes are higher than the increase in wages, households loose some of their purchasing power and become insolvable with regards to what they used to buy before. People either turn to less nutritious food or simply buy less because they cannot afford their previous food basket anymore. For small producers, harvest and lean periods usually imply market prices that reflect their limited bargaining power: they sell low and buy high. As smallholders often struggle to live from their production[3], they are dependent on high prices when food is scarce and their production out of stock. Considering that obtaining a credit is very difficult, they need to sell their labour – or livestock for the "richer" ones – at harvest time to cover their cash needs at a low price as supply is abundant and buy high due to the soaring demand for food in lean periods (WFP, 2009a). This is alarming when we know that, on average, households in SSA spend 66 percent of their income on food (KIDANE, MAETZ, DARDEL, 2006), and that selling livestock makes poor people more likely to enter a hunger-poverty trap as their assets are being dramatically reduced. Poverty traps are usually defined by "a situation in which a group of people and their descendants remain in a perpetual state of poverty because of mechanisms such as credit market imperfections, corruption, dysfunctional institutions, or decreasing returns from investments in health, education, or physical capital" (MANSURI, RAO, 2013). Poverty traps will generally be associated to hunger traps because of their strong imbrication. Indeed, hunger is not only a cause of poverty,

[2] Gini index measures the extent to which the distribution of income or consumption expenditure among individuals or households within an economy deviates from a perfectly equal distribution. Gini index of 0 represents perfect equality, while an index of 100 implies perfect inequality. (Source: The World Bank, Gini index)
[3] According to the World Food Programme "Hunger and Markets" Analysis (2009), "typically, less than 30 percent of farmers who grow food are net-sellers".

but also its consequence. Shocks related to diseases or weather, lack of assets and institutions, risks, small-scale and physical isolation; all of them worsen hunger and poverty at the same time (WFP, 2009a). And because food prices are forecast to remain volatile in the near future because of climate change, slow productivity growth, low stocks and high demand for biofuels, special attention needs to be given to this particular market failure.

Food access issues can arise when infrastructure is weak. If people have difficulties to access the markets because of damaged roads or inexistent roads, the connectivity between producers and consumers via the markets is cut off. Acute problems of weak infrastructure in Africa are widespread: the share of paved roads is 18 percent in sub-Saharan Africa, compared with 33 percent in Latin America and 59 percent in South Asia (UNDP, 2012). The rural poor living in isolated areas are the most sensitive to situations of blocked roads because of climatic conditions, hampering them in getting their food from remote markets. Likewise, merchants can experience complications themselves, as they might not be able to transfer food to those who need it the most because of high transport costs and low market infrastructure.

1.3.3 Utilisation

The utilisation part refers to the calorie-intake and the nutritional quality of food. While food production can be plenty, one may still suffer from undernourishment or malnutrition. Undernourishment appears when food consumption is insufficient with regards to the required intake of food above a certain dietary energy level, established according personal characteristics like age, sex, body weight and activity. The requirements are defined in terms of calories needed for an active, healthy life rather than simple survival (MAXWELL, 1993). In sub-Saharan Africa, almost 27 percent are considered undernourished, amounting to nearly 240 million people.

Malnutrition, however, appears because of an insufficiently diversified diet. People are considered to be malnourished when they lack essential micronutrients to their diets. Malnutrition leads to the onset of diseases that can spread rapidly if inadequate,

unhygienic habits are adopted or to biological adaptation if malnutrition is not treated in the long run, causing wasting and stunting mostly[4].

In this context, poor people who lack sufficient and adequate food intake are inapt to work and are thus trapped in a hunger-poverty cycle, which maintains them in a downward sloping trend of food insecurity.

1.3.4 Stability

Lastly, a stable food situation is where the seasonality of food production is not putting at risk households living on farm activities. The time factor of food security distinguishes two cases: chronic and transitory food insecurity. When individuals or groups of people suffer from food insecurity all of the time, then they can be said to suffer from chronic food insecurity. Transitory food insecurity occurs when households face a temporary decline in access to food (THOMSON, METZ, 1997). Transitory food insecurity can be further decomposed into two scenarios: temporary food insecurity and seasonal or cyclical food insecurity. When food insecurity is said to be temporary, it is mostly because of a sudden or unpredictable shock that has affected the food production process or access to food, such as heavy rains or droughts. Seasonal food insecurity however is linked to a regular pattern of inadequate access to and/or availability of food. Agricultural seasons are most likely the causes of such seasonal distresses.

Stability issues thus mostly arise in rural areas, where access to markets is more precarious than in urban areas. Urban markets are usually more well stocked in a timely manner. Plus, plots of land in SSA are considerably lagging behind in irrigation technologies than other regions in the world[5]. Therefore, smallholders are extremely dependent on climatic conditions, which tend to be more and more erratic in Africa. Indeed, sub-Saharan Africa is the world's second-most severely affected region for climatological disasters (extreme temperatures, droughts and wildfires), behind East Asia and the Pacific (UNDP, 2012).

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[4] Intra-household allocation is not analysed here but is nevertheless important for understanding differences among individuals of a household who do not present similar concerns with regards to malnutrition. Generally, young girls and elder people living under the same roof as other family members have less to eat and present therefore deeper signs of malnutrition.

[5] "Whereas the irrigated agriculture is three times higher than that of rainfed agriculture, Africa only uses 4% of its available water resources for irrigation; only 7% of farmland (1.6% in sub-Saharan Africa) is irrigated. By contrast, 40% of farmland is irrigated in Asia. The recommended objective is to irrigate 14% of farmland (SASSON, 2012)."

PART 2. Market Failures

In this second part, we will tackle the concept of market failures essentially with regards to food security. Hence, when dealing with food security and, *a fortiori* food *insecurity*, we consider specifically rural populations. Rural populations are the most at risk of facing market failures because of their remote location and vulnerability to shocks, as we have seen previously with the various aspects of food security.

First, we would like to highlight the importance of markets when dealing with food security, although we will identify its flaws later on.

Why do we need markets?

Well-functioning markets signal scarcities, strengthen value chains and enable farmers to manage risk, access credit and exchange information (UNDP, 2012). Markets provide employment and opportunities for trade. They are centres for sharing vital information. During production failure times, communities become increasingly dependent on markets, as households seek to exchange assets, such as livestock, for grain. Even households that engage in subsistence agriculture depend on markets, at least to buy necessities and diversify their diets beyond the food crops they produce themselves (WFP, 2009a).

Markets can be an alternative to State aid when they are sufficiently regulated or monitored. They ensure for the smoothing of economic activities through the connection of buyers and sellers. Free market conditions are hard to fulfil though: buyers and sellers must be numerous in order not to influence prices; no significant cost should be attributed to the entry of markets for new buyers and sellers; all buyers and sellers must have all the information available; all products must be homogenous. Very often, those conditions are not met, thereby generating non-optimal outcomes. The hungry poor are commonly the most affected by the vagaries of markets, namely due to the weak protection of their property rights, their difficulty to contract loans, the absence of a system of standards to protect them and the inaccurate information flows reaching them. Therefore, markets need appropriate institutions, infrastructure and policies to make sure that everyone benefits proportionally from the largesse of markets.

2.1 Source of Market Failures

According to Weimer and Vining (1999), market failures are characterized by a situation where the pursuit of a private interest does not lead to an efficient use of a society's resources or a fair distribution of a society's goods. Market failures are typically the exception to the neo-liberal rule stating that free markets are necessarily economically and socially more efficient. Indeed, neo-liberalists commonly prone less government action and more private interests in order to increase the society's welfare. Yet, markets can display adverse effects for vulnerable populations. Food market liberalisation uncovered deep limitations to their beneficial effect on hunger: high infrastructural constraints, high transaction costs, weak coordination between buyers and sellers, inadequate trade financing, highly skewed distributions of market power, high risk, and, as a consequence, major non-competitive elements (WFP, 2009a).

In developing countries, remarkably in sub-Saharan Africa, market failures are common because of poorly developed market institutions, weak or non-existent market information, extensive market power, and the absence of several markets, particularly financial markets. Besides, markets entail high risks, pervasive uncertainties and poor infrastructure, which deepens the transaction and participation costs even further for the deprived.

2.2 When do market failures appear?

The rural poor ordinarily live in an environment characterized by the presence of numerous market failures. In extreme cases, market failures transpire because there is no actual market in the area. However, most of the time, markets exist but do contain some flaws and inconsistencies. Markets generally start to fail when there is insufficient control upon them. Typically, one market failure mostly experienced by rural populations is the substantial price margins between what they can sell and what they can actually buy from the markets. Prices do not always reflect the actual – 'fair' – price of the product.

2.3 Major market failures regarding food security

The most common sign of market failure for the rural populations is that they have to sell at low prices while they need to buy at high cost – the "sell low, buy high" dilemma. In sub-Saharan Africa, this paradox is further intensified by a need for cash, a shortage of storage capacity and a lack of financial services.

Market failures can have dramatic effects. Price differentials may exceed transaction costs in fragmented markets. Price seasonality may be large, reflecting a lack of storage and inter-temporal arbitrage. Access to finance may be curtailed. Precautionary or speculative accumulation of food may create artificial shortages by withdrawing food from the markets, turning a minor production shortfall into a major crisis. Such hazards and vulnerabilities affect food security, particularly if combined with unstable livelihoods (DEVEREUX, 1988; RAVALLION, 1987; WFP, 2009a).

In the next sub-sections, we will analyse the causes of these market failures, or more accurately, the potential exacerbating factors to these market vulnerabilities: market power and transaction costs. Those two genuine market failures are the main sources of vulnerability for the rural poor when analysing food security. These are typically problems that do not encounter food secure households.

2.3.1. Market power

Market power concerns generally appear when a single large buyer or seller manages to influence the price, thus building a monopoly position. Sometimes, those individual buyers or sellers enter in collusion with others, creating barriers to entry for other potential market agents. This can result from economies of scale, which encourage the economic agents to operate on a large scale.

2.3.1.1 Weak negotiation power

In sub-Saharan Africa, the massive stock of available labour force makes it hard for workers to adopt a strong bargaining power. A large labour force inevitably leads to lower wages, as labour demand is scarcer than supply. Therefore, rural workers dispose

of few earnings to dedicate to food purchases. Paradoxically though, those people tend to dedicate up to 60 percent of their budget to food items (WFP, 2009a).

2.3.1.2 Price-makers

Smallholders live from their harvest until there is nothing left, and must then turn to the markets during lean periods where food is rare and prices are high. For the lucky ones that manage to sell surplus crops, this is a profitable time where they can earn extra money due to soaring prices. However, only 30 percent of smallholders happen to be net-sellers according to the World Food Programme. For all the others, resorting to rural markets where merchants are few and food is little leaves them in a position of dependency towards price-makers. In this regard, we consider the merchants as monopolies as they can set the prices of their scarce commodities.

2.3.1.3 Role of collateral

People with livestock can rely on that asset when their market power is low. They can sell it and gain some revenue as an off-farm activity, which happens to be very sporadic in rural areas. However, those kinds of sales are usually distress sales where people urgently sell – often at a loss – assets they have for a rapid source of income. Generally, they need to repay some debts or buy food. As a consequence, people with no assets left are much more inclined of entering a poverty trap where they have no collateral upon which to rely.

Collateral issues are related as well to credit facilities where banks accept people's assets as guarantees to the loans contracted. We will analyse this aspect in the next sub-section of transaction costs.

2.3.1.4 Price spikes and speculation

Price increases, and principally speculation on primary commodities, can be disastrous to the rural households that depend solely on markets to acquire their food. Indeed, as we have already detected, poor households spend a larger share of their income to food items. Therefore, when prices increase, their ability to buy food is seriously hindered.

This typical market failure is even more harmful when markets do not succeed in moving food from surplus areas to deficit ones.

We will treat this aspect of food transfer in the next sub-section of transaction costs where distance and infrastructure, among others, matter for food security aspects, as they imply high costs for rural households.

2.3.2 Transaction costs

2.3.2.1 Physical costs

Distance from the markets and poor infrastructure induce high transportation costs, imposing a high final cost for households having to depend on markets. Remote markets imply people having to travel a long way to access the markets, which is common to lots of rural households living in SSA: only 30 percent of the rural population in sub-Saharan Africa lives within 2 kilometres of an all-season road, which is just over half the shares for Latin America and the Caribbean (54 percent) and South Asia (59 eprcent) (UNDP, 2012).

On the other hand, poor infrastructure prevents markets from functioning at full proficiency. If merchants can access markets only with difficulty, then food supply will be scarce, and so will be the number of actual suppliers on the market, leading to a situation of quasi-monopoly or incomplete competition. This quasi-monopoly situation will in turn drive the prices up and result in a loss of purchasing power for the households eager to buy staples.

2.3.2.2 Economic auxiliary costs

Other more implicit costs can be found in the financial and banking sectors. Certainly, people living in rural places have little access to banks where they provide credits, insurance and other types of safety nets or coping mechanisms. Credits are useful for smallholders at times where they need it the most; for example, to buy inputs for their crops when money is limited due to the exhaustion of last season's crop production. Likewise, with poor access to formal financing mechanisms, traders exchange small volumes within limited geographical areas, causing prices to be highly volatile. Accordingly, credits also serve for buying food when prices are high, especially for

households that do not possess livestock. Yet even for households with livestock, credits can prevent them from entering a poverty trap due to the sale of their collateral asset.

Credit constraint is mostly imputable to asymmetric information and lack of collateral.

2.3.2.2.1 Asymmetric information

In sub-Saharan Africa, rural populations face asymmetric information bias with regards to bankers. As such, bankers do not necessarily know their clients extensively, due to distance reasons and lack of knowledge about their venture. If bankers are located in cities and have very few notions about agricultural work, they might not comprehend the plan of the small farmers, their creditworthiness, their motivation to achieve their goal, hence veto their proposal. The amount and quality of information available to the banker is fundamental. If he feels that there is a lack of information about his "customer", the loan proposal of the farmer will not be approved.

2.3.2.2.2 Lack of collateral

Rural populations have very few assets to present when banks ask for collateral upon applying for a credit. Animals, crop reserves or even land do not appear credible to the banks that will have no use for those rural assets. As a result, rural households will be denied the access to a loan because of this lack of collateral for backing up the credit.

Market failures thus can and do impose constraints on the everyday life of rural households in SSA, be they consumers or producers. If markets do no fulfil their role of enhancing the society's welfare through smooth transfers and economic activities, public responses must be engaged in order to rectify the situation and reallocate resources efficiently.

PART 3. Public interventions when markets fail

In the 1980s and 1990s, budget spending on agricultural matters in sub-Saharan Africa considerably fell with the structural adjustment programmes (SAP) pushed for by the Washington Consensus (from 15% to 3-5% according to countries), claiming for more liberalisation and less State interventionism. The SAP aimed to close budget gaps but instead created large human development deficits, especially among the vulnerable poor, and skewed allocations of national revenue and foreign aid that overlooked agriculture and nutrition (UNDP, 2012). Small farmers and households became extremely dependent of food aid and volatile markets – regarding prices and supply of food; and terms of trade quickly deteriorated as input prices grew faster than output prices (KIDANE, MAETZ, DARDEL, 2006).

On another path of dependency, the hungry poor have limited margins and assets, which means they are less able to take risks and innovate. They engage in low-risk activities, yielding low returns, typically such as subsistence food production. Additionally, as they have very little access to financial markets, they have few solutions to cope with market failures (WFP, 2009a).

In those cases, public action must arise in order to improve economic and social outcomes to the benefit of the poor.

3.1 Role of Public Protection

African communities dispose of a variety of informal mechanisms to protect their food entitlements. They range from family gifts, to shared food, interest-free loans from neighbours, and remittances from family members having migrated abroad (UNDP, 2012). However, when poverty is prevalent, those informal mechanisms tend to shrink as there is not much left to share. Moreover, informal mechanisms may collapse with covariate shocks, by definition affecting most people in a community. Adding safety nets to the unstable livelihoods of rural populations would reduce uncertainty about their future, allowing them to better allocate their resources. Providing public goods like local infrastructure, market information systems, research and development, agricultural extension and contract enforcement alongside improving market performance may

decrease transaction costs, information asymmetries and coordination failures, indirectly enhancing both food availability and food access (WFP, 2009a).

The foundations of public interventions can be multiple but are usually divided into two main branches: efficiency and non-efficiency oriented rationales[6]. Efficiency oriented interventions aim at destroying market failures that are, by essence, inefficient and counterproductive. By doing so, public interventions enhance the profitability and return of economic activities that used to be obstructed by market failures.
Non-efficiency interventions would majorly act upon reducing inequalities, poverty, and vulnerability of the targeted populations.

3.1.1 Efficiency oriented reasons

As we have said before, Africa's labour force is mainly working in the agricultural sector (up to 60 percent). Therefore, it is more than likely that public interventions engaging in agricultural investment will lead to productivity gains and technology advances for the rural population in SSA. In turn, those enhancements will have a substantial positive effect on agricultural outcomes; hence improve the economic situation of the country and its households via trade competition and productivity of workers (due to increased nutritional intake), implying lower food prices and higher wages. Plus, it will give a positive signal to traders that want to participate in agricultural economic activities: public interventions exist in case the markets fail.

3.1.2 Non-efficiency oriented reasons

Public interventions can also be motivated by objectives different than efficiency related. Apart from addressing typical market failures in an economic perspective, social protection mechanisms can have the motivation to intervene in markets for fighting hunger, improving political support, stabilizing prices and ensuring domestic food self-sufficiency (WFP, 2009a).
Public agents may be interested in self-interest objectives or to the demand of organized interest groups. When there are market failures, normally there are welfare losses. Those welfare losses can be minimized if interventions are targeted towards income

[6] Based on SADOULET Elisabeth and DE JANVRY Alain (1995), "Quantitative Development Policy Analysis", The Johns Hopkins University Press, Baltimore and London.

redistribution, land reform or lowering transaction costs that would reconcile the poor with market efficiency alongside welfare impulses.

Sustainability could be another element pursued by public interventions, as no additional intervention would be required for the following generation. Indeed, their utility level would have been substantially increased as a result of the intervention.

3.2 Controlling for market power abuses

As highlighted above, market power differentials between SSA rural households with little income and practically stand-alone merchants are enormous. Public interventions should focus on reducing those differentials so that the very definition of food security can encompass the reality of those households henceforth; that is, making possible for rural households to be able to purchase the appropriate amount of quality food at reasonable prices. There are various channels through which market power can be constrained for rural households regarding their purchasing power, property rights, wage revenues, and so on. Public interventions should aim at minimizing those channels.

3.2.1 Direct actions

3.2.1.1 Increase competition for food supply

If food availability might not be the most crucial issue when considering food security according to Amartya Sen, it is still a major one. When a food crisis looms, increasing food availability is almost always a good thing. Increasing food availability, prices drop and so does the market power of the monopolistic merchants. Increasing competition has also the advantage of reinvigorating the markets, while at the same time replenishing stalls. Farmers that were once barred the entry from markets will be able to sell their merchandise, creating positive effects both for them and the concerned households: more food at lower price and increased variety of supply. As such, this direct action of permitting the entry of smallholders to the markets has addressed at the same time access, availability and utilisation failures.

In the past – up to the structural adjustment programmes where States were asked to diminish non-productive activities, governments used to constitute buffer stocks for times of food shortage. But this measure was expensive and necessitated good

governance in order to manage purchase, storage, and distribution of food on the markets when commodities started to lack. Besides, release of food reserves could create disincentives for traders to import food, impairing further the availability of food inside the country. Eventually, buffer stocks were abandoned by several governments in SSA that decided to allocate their budget otherwise and to promote trade of surplus for covering shortfalls.

Public interventions can otherwise act by distributing food to the most needy in emergency situations, like food aid programmes. This type of aid is the most controversial because it is one of the most expensive one, and it is demanding in time, logistic, infrastructure, and staff. Food needs to be bought (at soaring prices over the years), transported and distributed to the people in the shortest interval possible for emergency reasons.

However, as we have seen that infrastructure in sub-Saharan Africa is extremely faltering, this solution is certainly not the best. Plus, food aid can depress food prices in markets because of increased availability of food. Public officials thus have to be careful not to discriminate smallholders who would lose a great deal if attention is not paid to their situation. Nevertheless, authors agree on its positive role when rural populations have no other way of accessing food and recognise its immediate relieving effect for the hungry poor.

In the literature of food security, food aid is acceptable if it is part of a global programme of food insecurity alleviation where food aid is the first stage of that programme. Next should come empowering, self-targeting programmes such as food-for-work or cash-for-work programmes where the local populations either get food or cash in exchange of their labour force for undertaking public works. Generally, these works include infrastructure construction, acting in parallel on the supply-side of the food security concept rather than on the demand-side.

For instance, food-for-work programmes were set up in Ethiopia in 1982-1983 during a food crisis but were stopped in 1984 because officials feared that the situation would turn into a famine. Hence, facing an emergency case, public agents felt wiser to proceed to food distribution programmes. Alas, food aid happened to be drowned by

irregularities and logistical problems, which made the situation worse, with many people losing their only source of income. History has shown that combining both programmes would have been more efficient and salutary. Indeed, in Cape Verde, with droughts having plagued the country for more than 20 years, from the sixties throughout the eighties, food aid for the most vulnerable combined with employment for cash wages have been conclusive. The African country has managed to escape from extreme food crises via this mixed public intervention.

On the other hand, vouchers and cash transfers can be an alternative response to a food crisis, as long as markets are integrated[7], food is available on the markets, prices are stable and households have access to markets (WFP, 2009a).

Ultimately, increasing food availability is *almost* always a good thing because, unfortunately, food availability does not preclude the emergence of food crises. There are still other market failures that prevent the smooth transfer of available food from surplus regions to deficit ones.

3.2.1.2 Price controls

Wages might well increase forever, if food prices follow the same trend upward, people will still feel food insecure. Price spikes need to be controlled for. May it be caused by monopolistic behaviour or deregulated markets, public interventions should keep an eye on the problem. In the past, countries have already put in place some price band mechanisms where they would check that food prices would remain inside of a certain range. This type of action has its advantages, mainly for households assured of having reasonable prices, but it surely has its drawbacks. This mechanism is extremely costly, as it needs a constant monitoring, but also entails market distortions. Producers might be tempted to produce more than they should if they know that the government will purchase their surplus to avoid altering the price band.

In Kenya, during the year 1984, public authorities decided to stabilize food prices because of the perception of an imminent food crisis approaching. Instead of acting on

[7] Markets are integrated when prices are consistent over a long period in different markets of the country, meaning related goods move proportionally to each other.

food distribution or incomes, stabilizing prices of basic commodities managed to prevent food crises, precursor of potential famines.

Nevertheless, there is another side to the issue of food prices. Food prices are actually part of a delicate dilemma: high prices for staple foods provide incentives for producers, but consumers may lack the purchasing power for an adequate access to food. If prices are too low, producers will not be able to cover their costs, or make agricultural investments that lead to increased food supply (WFP, 2009a). Therefore, when intervening on food prices, public agents should care about this opposing predicament of safeguarding the rights of individuals to adequate food at reasonable price, as well as promoting production incentives for smallholders. Some of the options would be to reduce transportation costs, asymmetric information, market barriers or other obstacles to a fully operational market without harming poor households in rural areas.

3.2.2 Indirect actions

3.2.2.1 Empowerment of the weak

Aside from the economic aspect of market failures, it appears that psychological costs contribute to driving the market power of rural households down. By facilitating the knowledge of households of what the market situation actually is and what merchants' strategies involve, local populations can adopt a more rational behaviour towards suppliers. This is even more true so for smallholders: if they can assert themselves against big suppliers, eager to become monopolists on the market, this is a gain for them but also for the local households freed from the ascendancy of powerful merchants who impose high prices. In general, when vulnerable groups gain a voice in the decisions affecting their lives and livelihoods, their capacity to produce, trade and use food is materially enhanced (UNDP, 2012). The decisions locals take will be more sustainable seeing that they reflect their beliefs, preferences and values.

3.2.2.2 Raising incomes versus Stabilising incomes

African households are, for a large majority, employed in the agricultural sector where wages happen to be very low. Low incomes transpire through high vulnerability to rising and volatile food prices. The volatility of food prices in SSA is chronically high, as

80 percent of the food production of the region is produced by smallholders (WFP, 2009a). Small quantities of food sold on small-scale markets with complications of transportation and storage imply high volatility of prices when supply or demand shift. Minimum wages or employment guarantee schemes[8] could provide for the insurance of a minimum threshold of income needed for the household to buy an appropriate amount of quality food at a reasonable price, such as the food security definition entails. These mechanisms provide for a means to raise people's income. However, this step should come in second. Indeed, stabilising incomes, in the sense of reducing the volatility of the revenues of the poor, must prevail. By reducing the uncertainty of people's incomes, the vulnerability of those populations to shocks drops. Households will then be able to make more strategic choices, with no apprehension of emergency situations. For instance, households will not have to reduce their present consumption of food in order to save for later, in case they possibly run out of income in the next period – due to a drought destroying their harvest for example. Interestingly, we see that by touching upon the aspects of access, public interventions can also enhance the aspect of utilisation of food.

3.2.2.3 Promoting diversified activities

Rural households in sub-Saharan Africa have few sources of revenues. The largest share of rural income in Africa comes from agricultural activities, especially crops. African households rely mainly on subsistence farming and try to sell their surplus crops when possible. For smallholders, agricultural income is highly sensitive to prices, because their production level is limited by the small area of land cultivated, inputs and weather conditions (WFP, 2009a). That is why they need to find other sources of income in times of lean periods when there is little food left and prices are high.

Off-farm activities are one alternative to subsistence farming that could be promoted by public interventions. It would encourage households to diversify their activities, hence generating diversified, more secure, revenues. With increased revenues, households would dedicate a smaller part of their income to basic commodities in their food budget,

[8] Employment guarantee schemes were introduced in 2005 in India through the Mahatma Gandhi National Rural Employment Guarantee Act. They assure the needy of 100 days of public work programmes throughout the year, whenever people feel they need cash the most. It has been proved to be extremely successful because of its demand-driven approach rather than supply-driven like other public works programmes, while enhancing the country's infrastructure.

hence leaving room for purchases of more nutritious food such as vegetables and fruit instead of solely cereals.

However, engaging in off-farm activities requires a certain starting capital. Rural households might not possess this capital. That is where the second aspect of public interventions is interesting: reducing transaction costs.

3.3 Reduce transaction costs

Markets can fail quite quickly because of heavy transaction costs or imperfect, asymmetric information. Adverse selection and moral hazards are the main contributors to the asymmetric information bias. Adverse selection is the case where "those who buy insurance tend to be those most at risk or (where) those who are willing to pay high interest rates may, on average, be worst risks[9]". Moral hazards occur when people take more risks because they are insured. Farmers could neglect their field or animals knowing that insurance will cover their losses (UNDP, 2012). These two basic fears of bankers induce higher transaction costs, as they need to spend more time on recruiting and monitoring their clients. In rural areas, this incurs even higher costs due to the distance between banks and their clients and often leads to the neglect of credit opportunities for potential borrowers.

Reducing transaction costs is therefore crucial for communities that are being denied a fair access to markets, be it through the financial markets or simply because of infrastructure or information issues. We will now explore the necessary conditions for diminishing the potential transaction costs incurring to vulnerable populations in rural areas.

3.3.1 Diffusion of information

Farmers need to be well informed about market prices and conditions if they are to take advantage of profitable market opportunities. Lack of information makes farmers vulnerable to exploitation by traders and buyers, decreases their bargaining power in

[9] SADOULET Elisabeth and DE JANVRY Alain (1995), "Quantitative Development Policy Analysis", The Johns Hopkins University Press, Baltimore and London, p. 4.

the marketing chain, and affects their production incentives and income (WFP, 2009a). With real-time information on prices, transport costs and demand, farmers can adjust their production and marketing and increase their efficiency. Information matters as well for integrating rural markets by reducing food price volatility. When farmers, transporters, sellers and buyers communicate regularly and rapidly, prices become more transparent, transaction times fall and the bargaining power of small producers increases (UNDP, 2012).

3.3.2 Enhancing access to credit

Rural populations of sub-Saharan Africa have difficulties accessing banks for credit as they lack collateral and (high) regular incomes. Moreover, banks rather prefer urban areas because of higher population densities, more diversified deposit base, lower transportation costs and lower risks (WFP, 2009a). As an illustration, only 4 percent of SSA's population has a bank account. Farming households face specific credit problems owing to risks inherent to agriculture and fluctuating output prices. African households have no choice but to engage in non-risky operations with low-yielding outcomes – low-nutritional, low-quality and little diversified crops, hence a low income-generating capacity. Farmers use few or no purchased inputs, such as fertilizer and seeds, to avoid losing money if crop prices decline or the rains fail; using only their own labour input reduces the risks, but crop yields are also smaller (WFP, 2009a).

On the other hand, households may not have the choice of engaging in non-farm activities because of a lack of capital. They get excluded from credit and insurance, as banks are afraid that their promise to repay their loan in the future will not be held. Because of asymmetric information, banks do not know as much as the borrower about their capacity to repay, therefore are not willing to lend to rural households. As a consequence, households find it very difficult to cope with income shocks and to smooth their consumption throughout the year. Hence, public interventions should act upon enhancing access to credit for the rural poor in order to lessen their vulnerability to food insecurity. Opening rural bank branches or lending cooperatives might be first-hand solutions while public interventions can act at a lower level by relaxing constraints faced by rural households upon contracting a loan.

3.3.2.1 Protect property rights

Property rights represent a basic principle of ownership in developed countries. In the developing world though, this principle of private property is lagging behind. Still, property rights are crucial for the smallholders and households that could certainly use titles of their land and houses. Banks could accept newly attributed property rights as collateral, thus as an insurance upon contracting loans for the poor. Smallholders in SSA often work on a plot of land that is not officially theirs, although they have been exploiting it for generations. Indeed, family holdings in sub-Saharan Africa pass from one generation to the next with ill-defined rights of tenure, leaving smallholder farmers vulnerable to dispossession and exploitation (UNDP, 2012). Giving them a title for those lands could increase their chances of getting a loan from a bank that could use the titles as collateral in case they would have troubles with the loan (non-repayment, rescheduling of the loan, and so on). Strengthening the land rights of poor people can bolster food security by increasing the productivity of farm labour, making land transactions fairer (lease or sale) and improving nonfarm agricultural value chains and growth across the economy (UNDP, 2012). Nonetheless, giving out property rights has already been tested in some areas of the world (India namely) with mitigate effects: too many loans contracted with a lack of strategic planning leading to indebtedness (consumption choices instead of investment in productive assets); exogenous shocks resulting in non-performing loans; etc. This is therefore one of the methods public interventions could apprehend to tackle food insecurity, although not their best one.

3.3.2.2 Reduce asymmetric information in the banking system

Minimizing asymmetric information is key in financial and banking markets. If banks had all the necessary information about their clients, there would be no information bias because they would immediately judge the capacity of clients to repay their loan when due. However, many obstacles arise for bankers when monitoring their clients: distance between the banks and their clients, personality of the borrowers, trustworthiness of their strategy plan, etc. Interventions could weigh in for lessening information gaps between the banks and the borrowers so that more loans could be contracted and ensure for a substantial drop in hungry households.

Microfinance institutions are the most promising model until now for increasing access to credit to the rural poor. Nevertheless, microfinance does not appear as the remedy to poverty as it is occasionally accompanied with negative externalities: heavy indebtedness, disengagement in rural investment, unsustainable plans, etc. It is still one alternative to market failures that succeeds in reducing transaction costs and empowering rural populations, although at a high cost, being almost entirely subsidised. Another alternative or improvement to deficient access to credit is weather-index insurance. Only rarely used in the developing world, this could pave the way for increased credit to smallholders, less scared to contract a loan in case of an external shock impeding them to repay their debt. However, drawbacks of this type of insurance could be that poor farmers cannot afford the market-rate premiums for private insurance, so that the programmes rely mainly on public subsidies. Second, these insurances take into account rainfall data, thus not adequately reflecting the individual farmer's potential loss (UNDP, 2012). Social protection schemes, including disability, sickness and unemployment insurance, can also be effective market-based instruments for reducing risks, but they are not widely available (WFP, 2009a).

3.3.3 Building infrastructure

Sub-Saharan Africa trails all other regions in nearly every aspect of physical infrastructure: access to electricity, improved water source in rural areas, improved sanitation facilities in rural areas, paved roads, and mobile cellular subscriptions. Improvements in rural roads would lower transaction costs associated with agricultural activities and reduce the costs of inputs, increase the prices that farmers receive and facilitate diversification into new and more profitable activities (UNDP, 2012). In turn, people would obtain higher incomes, and would thus manage to produce more food for their own consumption. By filling the gaps in infrastructure, regional integration and trade will be made easier and could generate economies of scale in production, expand markets for farmers an increase the variety of food available to consumers (UNDP, 2012).

PART 4. Case Study – "Greniers de Sécurité Alimentaire" in Burkina Faso

Now that we have exposed the theoretical rationales and *modus operandi* of public interventions in cases of market failures regarding food security, we will focus on a particular type of intervention that has taken the shape of an updated cereal bank in rural Burkina Faso.

4.1 Food situation in Burkina Faso

In Burkina Faso, the major part of the population lives in rural areas (almost 80 percent). With an average economic growth of about 5 percent in the last ten years, Burkina Faso remains one of the poorest countries in the world. Almost half of the population (46 percent) lives under the national poverty line; 38 percent of children under 5 years old are underweight; 15 percent of the population does not meet its basic alimentary energetic needs. The agricultural sector contributes to a third of the gross domestic product and absorbs 80 percent of the population in its labour force. Poorly diversified, the economy of Burkina Faso remains largely dependent upon climatic conditions and world prices of cotton, the principal export product of the country (SOS FAIM, 2009). Overall, Burkina Faso manages to produce enough cereals and other agricultural products in order to feed its population, in spite of a demographic growth of 3.1 percent per year. However, there are serious disparities among the different regions of the country.

After the profound droughts in the early 1970s, food security became a rising concern in Burkina Faso, especially in the North of the country. In Burkina Faso, populations are particularly dependent on food production. While the latter has been steadily growing over the years resulting in an average level of cereal intake per capita stable or even slightly improving, food crises are nevertheless constant in the Northern part of the country. In question is the hungry poor that have difficulties to access the markets in order to buy the food they utterly need due to distance, cost, risk, barriers to entry, lack of information, lack of market power,...

Legacy of cereal banks

At the end of the 1990s, the network of cereal banks established all over the country during the years 1970 and 1980 included over 200 units, of which only a minority had managed to maintain a significant level of activity. Management issues – and sometimes even cases of embezzlement – had driven the majority of cereal banks to bankruptcy or to the loss of almost all their start-up capital. For the other minority, several cooperation agencies were keeping them afloat with reiterated injections of capital in order to restart their activities. This was not only true for Burkina Faso but for a bulk of cereal banks all over the world. This caused deciders to discredit the relevance and suitability of the cereal banks. However, the need for cereal banks, hence demand for food supply at low price, continued to increase, pushing local organisations in charge of food issues to think of a new project.

4.2 "Greniers de Sécurité Alimentaire" – Market intervention

In 2003, SOS Faim, an NGO active in Belgium and Luxembourg, advocating for food security in countries from the "South", decided to finance the project of "Greniers de Sécurité Alimentaire" (GSA), which were in fact the previous cereal banks that had adopted a fresh name, jointly with a local NGO, the "Fédération nationale des groupements Naam" (FNGN). The FNGN is one of the oldest farmer organisations from West Africa. It comprises over half a million individual members gathered in thousands of groups. The organisation is mostly active in the Northern, Sahelian part of Burkina Faso where food security is the most acute. The old cereal banks that used to scatter Burkina Faso until the late 1990s were requisitioned to constitute the base of the GSA.

SOS Faim decided to take action through the GSA because of the situation of vulnerability that rural populations in the Sahel region encounter. Northern Burkina Faso corresponds particularly well to the problematic of food access, availability – and, as a consequence, utilisation – for rural households. Market failures arise mainly because of weak infrastructure that prevents smooth transfers of food across the regions and climatic conditions that jeopardize food production.

The strategy of the collaboration between SOS Faim and the FNGN is based on five lines of action: (1) improvement of the supply management of the GSA; (2) improvement of the financial management and increase of funds at the disposal of the GSA; (3) enhancement of the building infrastructure and the equipment of the GSA; (4) strengthening of human resources capacities; (5) strengthening of the coherence of the GSA network. This strategy is mainly based on a credit fund to the GSA and on a technical assistance in collaboration with the local staff of the network (SOS FAIM, 2009). These five commands will help reaching the ultimate goal of the venture: reducing seasonal food insecurity in lean periods.

4.2.1 Aspects of food security dealt with by the GSA

SOS Faim along with the FNGN conceived a program in order to sustainably enhance the performances of the cereal banks that used to be active in the North of Burkina Faso. However, they decided to change some decisive aspects for establishing a well-functioning network of food banks that could eventually eradicate market failures in the targeted regions. The GSA have retained namely the abolition of on credit purchases, the promotion of purchases in small quantities, the diffusion of information, a strong relationship with the suppliers, and a sustainable management plan. Indeed, they prohibit the people from buying on the spot and pay later because it has had some bad consequences in the past with cereal banks going bankrupt because of insufficient working capital. The only exception goes to situations of "social cases" with the extremely vulnerable people and require an in depth analysis from the part of the local staff so that it truly remains an exception. They also prone for a healthier management plan with lasting relations with the agents involved, especially the suppliers. GSA staff mostly get their supplies from smallholders with whom they try to remain lasting clients and maintain a good business relationship. All of these innovations have major implications for food security enhancement through its various aspects.

4.2.1.1 Availability

In a well-functioning scenario, markets should transfer food from surplus regions to deficit regions without too many costs as these transfers are driven by demand. However, market infrastructure being weak in sub-Saharan Africa, deficit regions tend

to be poorly supplied because of logistical problems (damaged roads, unfavourable climatic conditions, etc.), lack of demand because of low incomes or low market visibility because of small amounts of goods the poor can buy or sell.
Thanks to the GSA, buying from the same suppliers all year round will give great incentives to the smallholders to produce more, hence increase the availability of food. The GSA also care about moving food from surplus regions where partner GSA operate to deficit regions, mostly present in the North of Burkina Faso.

So not only does it procure a stable provision of food to the GSA and eventually to the rural people all around the year, reducing the vulnerability in habitually deficit regions, it also empowers small-size farmers and enables them to have a stable source of income, consequently reducing their vulnerability.

4.2.1.2 Access

The additional secured source of income may help smallholders to initiate different projects through reducing their aversion to risk and their feebleness towards investment, especially as they receive regular revenues from their crops sale to the GSA. Indeed, the GSA are required to buy supply in large quantities so as to obtain more advantageous deals. They are supported in this way be a new line of credit fund established by the SOS Faim jointly with the FNGN. The mechanism is simple and flexible: the GSA applies for a credit in the harvest season so as to buy large quantities from suppliers and that credit has to be reimbursed at the end of the selling period. The end of the selling period corresponds to the beginning of the next harvest season, when people have lived through the lean season with the help of reasonable price sales from the GSA.
Stabilising food prices is an enormous challenge when we consider the price spikes in 2007/2008 and 2011 that have sparked a new wave of hunger in the developing world: worldwide, 115 million additional people became hungry. Small changes in earnings or prices can worsen the nutritional status of the poor. Indeed, vulnerable populations switch to cheaper food, thus less nutritious, to fill their stomachs. Without several valuable nutrients, they become prone to illness, learn less and have lower productivity. Just a few months of inadequate nutrition can suffice to produce long-term adverse

consequences, not only for the individual, but also for the growth prospects of a country (WFP, 2009a). The GSA, with the insurance of reasonable prices, act upon this market failure and reassures the households with regards to their food basket price, trailing their purchasing power. Thereby, households will be able to purchase their usual food basket without having to cut off nutritious food because of a lack of available income.

4.2.1.3 Utilisation

Another distinctive aspect of the new cereal banks is that they insist on diversifying their supply. They don't simply sell basic commodity products like cereals but they also provide for other products such as niébé (black-eyed pea), peanuts, oil, etc., which are of great demand in villages. This diversification strongly improves the use of food, which distinguishes undernourishment from malnutrition. Malnutrition is here considerably reduced due to the possibility of adopting a quality diet at a fair price.

By increasing the availability of staples and stabilising food prices, the GSA have managed to lower the costs of basic commodities, hence increasing the purchasing power of the households. As a consequence, those households have managed to spend less on staple food, while maintaining their calorie-intake, as well as they succeeded to increase their purchases of high-quality food.

4.2.1.4 Stability

Stability issues arise when there is a time component added to food insecurity. In the case of the GSA, SOS Faim along with the FNGN recognized the importance of seasonality regarding food production in Burkina Faso. They set up the shops with the objective of reducing the vulnerability of the rural poor especially in lean periods, when prices are high, food supply is low and when small producers do not have food left from their previous harvest. Eventually, the shops would run the whole year long, enabling a stabilisation of income and a constant reduction of volatility in prices and food supply.

Thus, we have seen so far that the GSA insist primarily on improving the access to food for the rural poor by establishing small shops with food supply all year round, but with

an emphasis on lean periods, at reasonable prices. The project also cares about the availability of food, enhanced with the empowerment of smallholders and the utilisation of that food, improved by the diversified supply. However, the GSA do not just entail a simple food programme but they are part of a broader project of enhancing the living conditions of the rural poor in Northern Burkina Faso.

4.2.2 Socio-cultural implication

The project of the GSA is more than a food aid programme. The objective of SOS Faim and the FNGN was to turn this intervention into a sustainable plan. Indeed, when providing locals with know-how, it increases their chances of running the GSA autonomously, ultimately without the help of a credit fund. The GSA would thus have to make profits and to be self-reliant. For that to happen, a competent and dynamic staff is required. In that perspective, SOS Faim and the FNGN imagined an dynamic approach to the training process of local staff. GSA staff that have a favourable business plan are asked to teach about their methods to other GSA that experience some difficulties. This training by peers, through exchanges of individuals occupying the same function, has borne fruit. It enables to institute an alternative to the classic lectures with little interaction between the lecturer and the audience. In the case of peer training, a true exchange of knowledge with practical recommendations has proved to be extremely successful. It has been perceived as an authentic way of reinvigorating the endeavour translating in a significant increase in commercialized volumes, a search for more commercial opportunities (purchases and sales), a diversification of the supply and enhanced financial results, along a reinforced team spirit with the ambition to assist to the community. Ultimately, it is also a huge factor of sustainability as the process is completely run by locals who will transmit their experience to their future colleagues.

4.3 Cost-effectiveness

It is not new to the development actors that humanitarian work or development programs can become profitable if soundly set up[10]. SOS Faim and the FNGN did not lose that sight when establishing the GSA on the pre-existing grounds of the old cereal banks. They knew what they had to avoid and what they had to improve in order to remain

[10] For further information, see the publication of Prahalad, « The Fortune at the Bottom of the Pyramid : Eradicating Poverty Through Profits ».

viable and prosper. When initiating the project in 2003, SOS Faim transferred its first grant for the line of credit for the GSA to the FNGN, which released 94 credits for the amount of 62,038 euros. Early 2011, these became 177 credits for 884,992 euros. The average reimbursement rate currently amounts to 94.64 percent. The credit fund has thus certainly not compromised the profitability of the project; on the contrary, it has had a stimulating effect through its flexibility. The GSA were able to ask for a credit adapted to their needs and that could vary from year to year depending on their requests and capacities.

By 2008, corresponding to the end of the first phase of the project, the initiative pursued by SOS Faim in collaboration with the FNGN received a lot of positive evaluations and was hailed for its performances. It is expected that by the end of the second phase, during the 2015-2016 campaign, the network of GSA will be able to deliver to an estimated population of 746,000 people a volume of 15,823 tons of diversified food supply, of which 13,449 tons of cereals, worth 2,371.8 million FCFA, covering that way their alimentary needs for 35 days (SOS FAIM, 2009). The strategy will be to increase even further the credits delivered to the GSA in order to cover the losses from non-performed loans and operating costs, enabling that way the financial autonomy and empowerment of the network.

The organisation of supply has increased considerably since the era of cereal banks; and so has the diversification of the offer: 54.5 percent of the GSA commercialise more than three products in 2011 compared to 5.66 percent in 2003.
Important to note also is that this intervention is not just a food aid project. Locals do not feel the destabilising moral effect of charity. Indeed, while food aid made up a large part of food programmes in the past, it has considerably reduced its scope because of this personal cost incurred to the targeted poor, among other factors such as high costs and time-consuming process. With the intervention of the GSA, agents of the project do not have to go towards the needy; it is the opposite that is happening. Therefore, costs are smaller, especially individual costs that are not a burden anymore as locals consider the GSA as "regular" shops where they buy what they need and can afford.

4.4 Local participation

In the recent research report from the World Bank conducted by Mansuri and Rao (2013), involving the locals in the realisation of a development project has been proved to be fundamental.

The objective of the GSA is to end up with autonomous "food shops" selling basic commodities especially during lean periods at reasonable prices so as to maintain the purchasing power of rural poor that are vulnerable to spikes in food prices. The GSA would have to rely on their own profits, via convincing and effective business plans, without having to depend on credits or subsidies. Therefore, the promotion of their activities by a local organisation with a strong social anchorage is necessary. Indeed, the locals are the ones that have the most and the best information. The information comes directly from the source and has not been biased in any way – except when there is elite capture. We will not talk too much about elite capture but we realise that this is an issue and that this could cause prejudice to the programme. The elites of the village could influence the choice of the local staff or force the discrimination against certain people from buying from the GSA. In this case, we will not take this possibility too seriously as the project is closely monitored and because, through the training by peers and the strong dynamic of the concept, there is a true willingness to help the poor and, most of all, to make the GSA thrive and generate some profits.

Including the locals also comes as an advantage to the project leader. For SOS Faim, it was easier to set up a pilot project with the help of a local partner on the field, with some knowledge about the issue and some experience with handling it. Having worked for quite some time with the FNGN, SOS Faim naturally decided to cooperate with them on this rehabilitating project of cereal banks. Doing so, SOS Faim considerably reduced its expected transport, storage, information and administration costs. Plus, basing its intervention on a pre-existing institution – cereal banks, SOS Faim saved some expenditures costs from not constructing buildings and by concentrating mainly on the rearrangement of the facilities. There was obviously some repairing costs but less important compared to what they would have been were they to build new stores.

The involvement of farmers' organisations in the local food markets has occasioned an improvement factor and helped the moralisation of these markets by reinforcing the bargaining power of the producers and the rural consumers faced with influential merchants. High connectivity between farmers and markets (here, the GSA) increased the trading position of smallholders and turned markets into more transparent hubs.

In a different context, women living in rural areas where GSA are active have declared that the intervention of SOS Faim and FNGN had improved their livelihood remarkably on the social level. Husbands seem to migrate less because of reduced food insecurity and new bonds seem to be emerging around this dynamic project. All in all, people feel more confident about their future and their prospects in life due to the GSA programme. Smallholders especially feel more assertive due to the relationship they maintain with GSA staff.

4.5 Auxiliary Reflections

Any public intervention is acknowledged to be more efficient when State officials and civil organisations work together[11]. We feel that this aspect has been put aside in the project of GSA and fear that it could harm the sustainability of the venture. The government should take part in this project in order to convert it into a long-lasting programme, with positive effects for the whole nation, by levelling the playing field and reducing inequalities among regions. Availability issues would be coordinated at the national level, with expanded solutions for deficit regions. As the project is almost self-reliant and financially autonomous, there would be little costs induced for the State, except for implementation measures. But, as countries spend usually much more of their budget for food aid than for rural development, this should come as a relief, as this redistribution of resources should allow for increased security of the Burkinabe in the long run while eliminating one-shot measures.

Involving the official institutions of the State could help reducing market failures even further, through the implementation of legal decisions such as credit access for the vulnerable, construction of roads to facilitate the physical access to the markets, or even

[11] For further indications, see FAO (2008) ; KIDANE, MAETZ & DARDEL (2006) ; SEN (1981) ; UNDP (2012) ; WFP (2009a). This list is not exhaustive.

set up audit controls for a better accountability of the local representatives in charge of the programme. Indeed, Burkina Faso being in the middle of a decentralisation phase, regional territorial authorities would be in charge of the economic development of rural areas. Besides, the Burkinabe government has elaborated since June 2000 a Strategic framework for the fight against poverty (*Cadre Stratégique de Lutte contre la Pauvreté* – CLSP). Revised in 2004, the framework insists on accelerating growth and base it on equity, guaranteeing access of the poor to basic social services, widening opportunities for employment and revenue generating activities for the poor and promoting good governance. The GSA project could be a perfect illustration of the State's motivation to combat food insecurity thanks to the pilot project conducted successfully by SOS Faim and the FNGN, a local farmer organisation upon which the State will be able to rely.

Conclusion

In sub-Saharan Africa, food security is compromised for a variety of reasons: scattered human settlements render access to markets difficult, low incomes prevent from accessing adequate amounts of food, erratic climatic conditions destabilise food supplies, low technological breakthrough slows down the agricultural development, problems of land registry discourage investment in land tenure, political instability hampers agricultural growth. When those market failures add to the obstacles of satisfying the customers' demand while fulfilling the suppliers' expectations of output earnings, inequalities rise and food insecurity worsens.

On the other hand, markets have the ability to increase wellbeing. They are at the core of wealth creation. Well-functioning food markets are central to fight hunger and, as a corollary, poverty. Food must be produced to meet consumption needs, but this food must also be accessible to the poor, at appropriate quality levels. Markets should stand as the main channel through which individuals can access food. They constitute the principal source of living for the rural poor: rural households in sub-Saharan Africa are, for the large majority, subsistence farmers who eventually become net-buyers of food commodities.

However, markets need to be carefully monitored in case of failures where negative consequences could arise for vulnerable households in rural Africa. Often stuck in hunger-poverty traps, their productivity is too low, their skills too few, their health too precarious and their access to assets, inputs and finance too limited to benefit fully from markets (WFP, 2009a). They live too far away from markets and lack essential information about them, rendering their participation too costly. Plus, being mostly risk-averse, the hungry poor engage in low-income generating activities because new technological ones imply risk. Public interventions should therefore support markets through the participation of vulnerable individuals, while also providing for social protection. Their engagements must be considered as complementary actions to the market functioning. Solid institutions need to support policy-makers and public agents willing to implement safety nets; reciprocally, legal and regulatory safeguarding systems need to support markets.

Public interventions should invest in infrastructure, institutional strengthening, market power denunciation, while at the same time promoting better distribution of resources for the poor, better opportunities through markets, access to credit, empowerment actions and help diffusing information and raising awareness about food security matters for reducing transaction costs.

With the case study of a public intervention in the rural part of Northern Burkina Faso via the market channel, we have seen that major breakthroughs in terms of food security relief are possible. Even if they rise from obsolete structures that have proved to be disastrous in the past, the GSA have managed to become a viable project, even starting to be auto-sufficient and financially independent. First, using already existing structures has enabled to considerably reduce the costs of the intervention. Second, delegating the majority of the work to the locals is a major feature of an efficient public intervention for many reasons, but namely for the proximity of the issue, the local know-how, the sustainability angle, and the empowerment of the rural poor. Third, the project has innovated by introducing a credit fund to the GSA that has performed impressively and by forbidding sales on credit through the promotion of small quantities purchases for rural populations. In doing so, the intervention has focused on facilitating access to credit to rural populations, while reducing as well transaction costs for the final customers. Fourth, the GSA maintain the social approach of a public intervention, as exceptions are possible on an individual appreciation level and in emergency cases. Finally, and globally the most important feature of the "Greniers de Sécurité Alimentaire", is the comprehensive strategy undertaken by the intervention. All four aspects of food security are tackled in the project in order to build a wide-ranging and all-inclusive approach.

Actually, the public intervention of the "Greniers de Sécurité Alimentaire" in Northern Burkina Faso has managed to increase the market power of smallholders by buying their supply from local farmers, alongside reducing transaction costs for rural populations benefiting from diversified food supply at reasonable price from transparent and accessible markets.

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