



# Food Reserves

Using food reserves  
to enhance food and nutrition security  
in developing countries

**Case Studies**

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***The opinions expressed in this document represent the authors’ points of view,  
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## About ASiST

ASiST is an advisory service of the European Commission (EC) managed by the unit in charge of rural development, food security and nutrition (C1) within the Directorate General for International Cooperation and Development (DEVCO). It has been conceived as a flexible tool to support the work of the European Union (EU) aimed to strengthen food and nutrition security and sustainable agriculture (FNS-SA) in developing countries. ASiST has been operating since January 2012 under three successive contracts. It offers short-term expertise, backstopping facilities and support teams in the following areas: social transfers (and social protection) for FNS-SA; resilience to food crises; budget support and public finance management for FNS-SA; and, when needed, any other FNS-SA-related issues not covered by any other advisory service. The service is accessible to all EU Delegations and their partners, as well as EC headquarter units. To request assistance from ASiST, please contact [EuropeAid-C1@ec.europa.eu](mailto:EuropeAid-C1@ec.europa.eu).

## About this report

This report is one of the products of a study commissioned by the DEVCO C1. It aims to clarify the potential role of food reserves in enhancing food and nutrition security in developing countries and make recommendations on how to use food reserves (in complement to other tools), taking into account the specificities on the context and the constraints of World Trade Organization (WTO) disciplines.

The study was conducted in 2016 based on i) an extensive review of the existing literature (both theoretical and empirical) and ii) 10 case studies analysing national or regional experiences in Africa, Asia and South America.

All the products of the study, including a synthesis report, are available at <https://europa.eu/capacity4dev/hunger-foodsecurity-nutrition/discussions/how-can-food-reserves-best-enhance-food-and-nutrition-security-developing-countries>.

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## Disclaimer

The authors accept sole responsibility for this report, drawn up on behalf of the Commission of the European Union. The report does not necessarily reflect the views of the Commission.

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## List of Abbreviations and Acronyms

ARC	African Risk Capacity
ASEAN Plus Three	Association of Southeast Asian Nations (ASEAN) and the three East Asia nations of China, Japan and South Korea
CFAF	African Financial Community Franc
CHB	<i>Cadre Harmonisé Bonifié</i> (West Africa)
CILSS	Permanent Interstate Committee for Drought Control in the Sahel
CoI	Conflict of Interest
CSA	<i>Commissariat à la Sécurité Alimentaire</i> (Senegal)
ECOWAS	Economic Community of West African States
EGTE	Ethiopian Grain Trading Enterprise
EUR	Euro
FP	Fair Price cards
FR	Food reserves
FRA	Food Reserve Agency (Zambia)
G20	Group of Twenty
GDP	Gross Domestic Product
LDCs	Least Developed Countries
NFA	National Food Authority (Philippines)
NFSS	National Food security stock
NGN	Nigerian Naira
NGO	Non-Governmental Organisation
OMS	Open Market Sales
PAA	Food Acquisition Programme (Brazil)
PFDS	Public Foodgrain Distribution System (Bangladesh)
PHP	Philippine Peso
PNAE	National School Feeding Plan (Brazil)
PO	Producer Organisation
PS	Public Stock
RR	Regional Reserve
SAARC	South Asian Association for Regional Cooperation
SONAGESS	<i>Société Nationale de Gestion du Stock de Sécurité Alimentaire</i> (Burkina Faso)
STU	Stock-to-Use
USD	United States Dollar
WFP	World Food Programme
WTO	World Trade Organization
ZAMACE	Zambian Commodity Exchange

## Introduction

The present report is one of the products of a study commissioned by the European Commission's Directorate-General for International Cooperation and Development (DEVCO), through its unit in charge of rural development, food security and nutrition (C1), aimed to clarify the potential roles of food reserves (FR) in enhancing food and nutrition security in developing countries, and make recommendations on how to use food reserves (in complement to other tools), taking into account the specificities on the context and the constraints of World Trade Organization (WTO) disciplines. The study, coordinated by the CIRAD with support from DAI Europe, was conducted in the course of 2016 based on a review of the existing literature (both theoretical and empirical), and ten case studies analysing national or regional experiences in Africa, Asia and South America.

The theoretical and empirical knowledge on what can be expected from FR to enhance food and nutrition security has been summarised in the Synthesis Report of the study.<sup>1</sup> As a complement, the present report captures the main lessons learnt from each of the 10 case studies that looked at experiences in Asia (**Bangladesh, Indonesia, and the Philippines**), South America (**Brazil**) and Africa (**Burkina Faso, ECOWAS Regional Reserve, Ethiopia, Nigeria, Senegal and Zambia**). The summaries enclosed here are based on the draft case study reports presented and discussed at the "Public Stocks and Food Security in Developing Countries" workshop held on 22-24 June 2016 in Montpellier, France.

The rest of this introduction presents the impact pathways by which FR can contribute to improve food and nutrition security, as well as the main lessons learnt from the case studies.

### Impact pathways by which FR can improve food and nutrition security

**The definition of food and nutrition security** has evolved over time, reflecting the progressive enlargement of the concept. The definition, adopted during the 1996 World Food Summit, states that "food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life". The widely accepted interpretation of this definition enlarged it even more by considering the "utilisation" of the food through "adequate diet, clean water, sanitation and health care" in order to reach "a state of nutritional well-being where all physiological needs are met" (FAO, 2006). According to this interpretation, food and nutrition security encompasses four dimensions: i) food availability, ii) food access, iii) utilization and iv) stability of the three first dimensions. Food and nutrition insecurity can be chronic or transitory (World Bank, 1986). Chronic food and nutrition insecurity refers to households with permanent difficulties to feed themselves whereas transitory food and nutrition security refers to households in difficulty only when facing a crisis. Of course, households may shift from the category 'food secure' to the category 'transitory food insecure' or 'chronically food insecure' and vice versa.

**Food reserves (FR)** are stocks of food products held by a public entity. The considered products should be food products with content in calories or nutrients that render them important for food and nutrition security (stocks of coffee or cacao can hardly be considered as FR). In practice, FR are mainly made of grain or other staples (for instance, milled cassava in some regions of the world). The public entity that holds the FR can be national but also local, regional<sup>2</sup> or (theoretically) international.

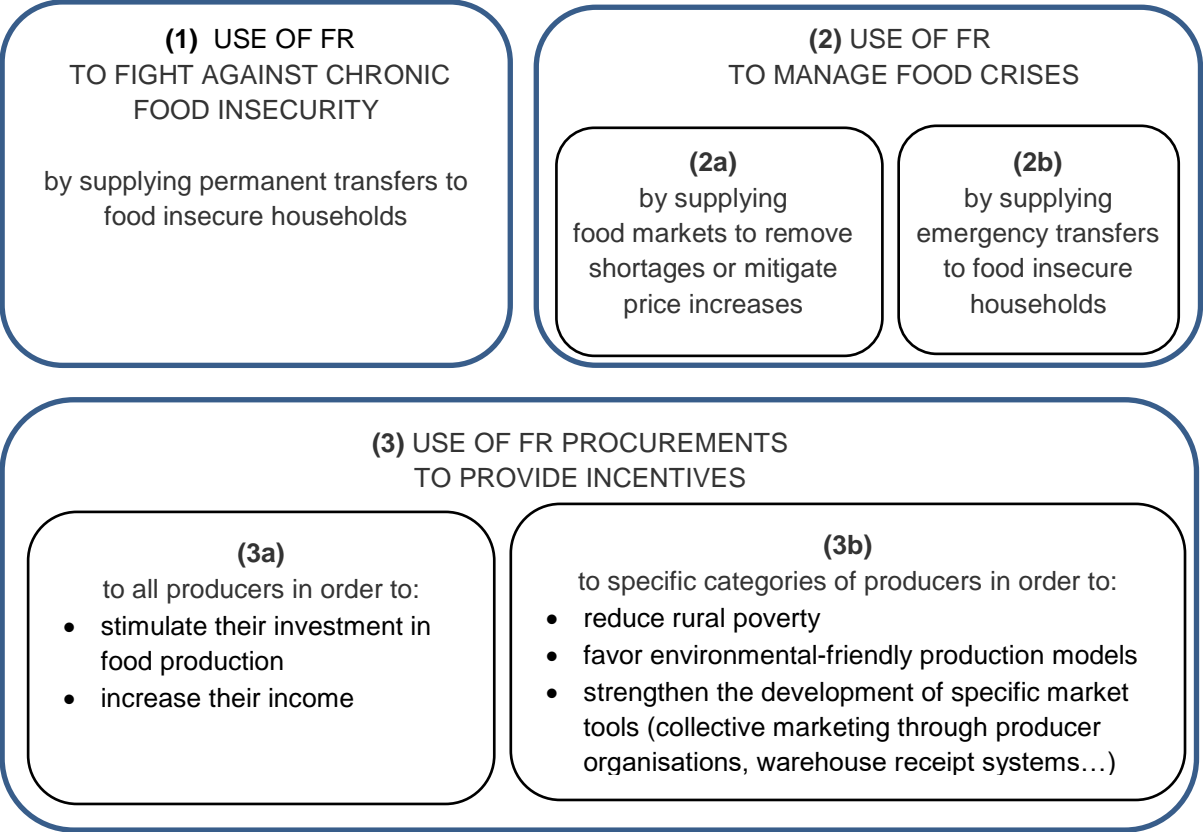
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<sup>1</sup> All the products of the study, including this synthesis report, are available at <https://europa.eu/capacity4dev/hunger-foodsecurity-nutrition/discussions/how-can-food-reserves-best-enhance-food-and-nutrition-security-developing-countries>.

<sup>2</sup> The Association of Southeast Asian Nations and the three East Asia nations of China, Japan and South Korea (ASEAN Plus Three), the Economic Community of West African States (ECOWAS), and the South Asian Association for Regional Cooperation (SAARC) have built regional grain reserves.

By extension, stocks managed by village communities are sometimes assimilated to FR, as their effect is quite similar to the effect of local public FR (managed by municipalities or other local authorities).

**There are different ways to use FR to improve food and nutrition security**, as illustrated in Figure 1. FR can be used to fight against chronic food and nutrition insecurity by providing poor households with permanent food transfers. They can also be used to manage food crises either by providing emergency transfers to food insecure households, or by mitigating food price increases. Finally, FR procurement can be used to provide incentives to food producers, thereby contributing to long-run food and nutrition security.



Source: Author.

**Figure 1** Potential use of FR for improving food and nutrition security

**The first impact pathway** is controversial. Although some countries (such as Brazil and India) are providing permanent food transfers to food insecure households, it is more and more acknowledged that providing cash or voucher transfers is often a more cost-effective way to fight against chronic food insecurity. Moreover, when food transfers are implemented, public purchases can often be made on a just-in-time basis (with a limited use of FR).

However, exceptions exist where providing food transfers is more cost-effective to reach specific food and nutrition security objectives (for instance, increasing the consumption of calories or specific nutrients), or to improve the food and nutrition security of particular social groups (for instance, persons living far from markets and groups where women manage food – but not cash – transfers and pay more attention than men to household food consumption). Finally, situations exist where it is relevant to purchase in advance and supply transfers through FR (for instance, where there are risks of shortages or excessive seasonality of prices).



**The second impact pathway** is highly important: food crises are often provoked or exacerbated by tensions on food markets (shortages or sharp price increases). These tensions generate a collapse in the physical or economic access to food of many households (in particular the poorest). The resulting devastating effects on food and nutrition security can, to some extent, be managed by emergency cash transfers provided to food insecure households. However, these transfers have many limitations: they can hardly cover all food insecure households (because of the imperfection of targeting), and in a context of tensions on food markets, they are likely to exacerbate the increase in food prices. Actions to release these tensions are therefore necessary. In many situations, these actions require the use of FR.

This is especially the case when food products important for national food and nutrition security can be imported only to a partial extent or with long or uncertain import timelines. This may be because these products are not traded on international markets: sources of supply from the regional market may be too limited or subject to disruptions (all the more so, since bad harvests are likely to occur at the same time in neighbouring countries, as in the Sahel in 2005 and 2012). It may be because a country's imports account for a significant share of the quantity traded on international markets, or because the country is landlocked, or simply because there is a situation of scarcity on international markets (as occurred during the 2008 crisis). In these situations, shortages or sharp price increases are likely to occur in developing countries (and may be exacerbated by stock hoarding and panics); FR are then necessary to supply transfers and markets during the time necessary to import these products (or substitutes of these products).

In practice, staples (grains, roots and tubers) play a decisive role because they not only provide the cheapest source of calories (and therefore the major part of the caloric intake) but also because, in developing countries, they often account for an important share of households' total expenditures. Therefore, sharp increases in staple prices endanger not only the consumption of staples (and thereby caloric intake) but also the consumption of other foods (and thereby macro-nutrient and micro-nutrient intake); many households have to reduce the diversity of their consumption in order to maintain their staple consumption level. Some households may also reduce their health expenditures or their capital and savings (thereby becoming less resilient to future crises). Sharp increases in staple prices are therefore very damaging for food and nutrition security.

FR are therefore necessary in periods of crisis to release tensions on food markets. FR are used to supply food transfers and markets (especially with staples) during import timelines and possibly during longer periods when the staples most consumed by the poor are not traded on international markets.

**The third impact pathway** has also proved to be important. Green revolutions played an important role in improving food and nutrition security by reducing the cost of basic food products (in particular grains), by increasing the stability of grain production, thus diminishing the frequency and magnitude of food crises, and by releasing land and agricultural labour to produce other foods. These green revolutions were rendered possible by floor price policies that partly rested on FR procurement (for instance, in Bangladesh, India and Indonesia). Thanks to floor prices, farmers were more willing to invest, and banks or microfinance institutions were more willing to lend them money.

However, it is worth noting that:

- Stimulating investment does not require a permanent support of producer prices (which would be damaging for poor consumers). What matters is preventing price collapses. The floor can therefore be fixed at the mid-term average level of international prices or even at a slightly lower level.
- Floor prices policies may generate environmental issues if they result in promoting production models that generate scarcities in some of the resources used (for instance, water for irrigation) or too high a level of pollution of soil, water and plants, generating food safety issues. Moreover,

their effect on rural poverty and farmer food and nutrition security is not automatic as these policies are likely to benefit mainly big farmers (in Zambia, for instance, farmers with less than one hectare of land account for two-thirds of the country's farmers but only for 6 per cent of the sales to the FR agency). If the floor price is set at too high a level, floor price policies can even be detrimental to deficit farmers (who account for 73 per cent of small farmers in Ethiopia and 63 per cent in Kenya).

This is the reason why there is a rationale for using FR procurement to provide targeted incentives instead of (or in addition to) floor prices or other non-targeted incentives. These targeted incentives can be focused on:

- *Environmental-friendly production models* that contribute to food and nutrition security both in the short run (by improving health through improved food safety and water quality) and in the medium run (by increasing the sustainability of food production, by reducing pollution of soils and water tables, and by conserving soil fertility and scarce resources, such as water for irrigation and phosphates);
- *Small-scale farmers* to reduce rural poverty and improve rural food and nutrition security;
- *Specific markets tools* to make markets more transparent and to make them work better for farmers: encouraging, for example, collective marketing through producer organisations (to increase farmer bargaining power and open new marketing channels), warehouse receipt systems (to increase farmer access to credit and thereby their ability to wait for the right moment to sell their products) and commodity exchanges (to reduce information asymmetries and render competition less imperfect).

**Coordinating several FR** is important for stronger impacts. FR can exist at different scales (local, national, regional). A good *'vertical coordination'* between these different levels of FR is a way to increase their impacts. Also, national FR can generate supranational impacts; by allowing countries to regulate their deficits by internal means, they are likely to play a stabilizing role on international or regional markets. Conversely, the lack of FR (and more generally of stocks) in importing countries may be problematic; in 2008, it resulted in panic imports that exacerbated the increases in international prices of rice and wheat. As national FR benefit international market stability but are built by national governments to serve national purposes, their levels are likely to be below the level that would be optimal from the point of view of global food and nutrition security. There is therefore a need for a supranational governance of FR to allow a good *'horizontal coordination'* between national FR.

### Main lessons from the case studies

The case studies provide useful insights on the way FR can be used to activate the different impact pathways described above.

#### Impact pathway #1 – Lessons on how FR can be used to fight against chronic food insecurity

In many countries, FR are used to supply permanent food transfers to poor and vulnerable households (often in complement to cash transfer programmes). This fact is reflected in the following case studies: **Bangladesh**, **Brazil**, **Ethiopia**, **Indonesia**, and the **Philippines**, where safety nets providing in-kind transfers exist. The impacts of these transfers are mixed, depending on the country – they are sometimes undermined by a poor targeting as, for instance, in Indonesia.

The main lessons on this topic stem from **Brazil**, where food transfers account for a small share of all permanent transfers – the major part being the cash transfers provided through the *Bolsa Família* programme. However, food transfers and the national school feeding programme play an important role in promoting diets that meet nutritional requirements but also cultural habits and environmental and social criteria (local and organic food, produced by small-scale farmers). Note however that the

contribution of FR to these food transfers programmes is limited: as the priority is given to fresh and local products, they are usually not stored a long time in FR and specific modalities have even been designed where the products are directly delivered to the recipients by farmers or farmer organisations.

## **Impact pathway #2** – Lessons on how FR can be used to manage food crises

The case studies provide many lessons in this area. First, the **Bangladesh** and **Senegal** case studies illustrate the need for FR to manage food crises. The experience of these two countries is highly interesting because they are in the situation where the need for FR is the less obvious: their food security depends on a food product that is traded on the international market (rice); their needs are small compared to the size of the global market; and they are coastal countries. However, during the 2008 high-food-price crisis, both countries faced difficulties because of their lack of FR. For many years, Bangladesh succeeded in mitigating staple price increases only by allowing more imports. However, in 2008, the crisis on international markets resulted in longer and uncertain import timelines which seems to have provoked speculation (stock hoarding) and panic purchases, resulting in exacerbating the increase in the domestic rice price. The government of Bangladesh understood the lesson: it nearly tripled the size of its FR. Senegal's experience has been quite similar. Since the liberalization of the rice sector in 1995, Senegal government has not held FR but only a financial reserve supposed to allow rapid purchases in case of necessity. The limitations of this scheme were apparent during the 2008 crisis when importers were suspected of hoarding stocks (the domestic price increased even after import duties have been removed). After the crisis, the need for FR was reaffirmed. If Bangladesh and Senegal highlighted the need for FR to manage import timelines, **Ethiopia's** experience showed that FR alone are not enough: in 2008 (a period where imports were restricted), FR proved very useful in mitigating grain price increases but were not sufficient to hold them below their import parity price level. This illustrates the fact that the role of FR is to complement imports (especially during import timelines), not to replace them. FR are even more necessary when the staples most consumed by the poor are non-tradable, as is the case in Sahel countries: even if other grains can be imported (rice and wheat), they are much more expensive than local staples such as millet, sorghum and local maize (see the **ECOWAS** study).

In situation of food crisis, FR can be used either to mitigate grain price increases or to supply food transfers to vulnerable households. An example of the first strategy is provided by the **Indonesia** success story in stabilising the domestic price of rice between 1973 and 1997. This policy was based on regulating imports and using FR. An example of the second strategy is given by the way FR are used in Sahel countries (see the **ECOWAS** study). Although staple prices are highly unstable in this region (in 2005 and 2012, the price of millet and sorghum sharply increased, generating food crises), FR are not used to mitigate price increases. This is because it would be too complicated to hold the price below a predefined ceiling. Millet and sorghum (the staples most consumed by the poor) are not traded on international markets and the regional market has limited stabilizing effects – mainly because neighbouring countries are often hit at the same time by the same natural hazards, as was the case in 2005 and 2012. This means that huge (and expensive) FR would be necessary to hold staple prices at a level compatible with food security objectives. As a result, food crises are mainly managed through emergency transfers. Conversely, when the considered staples can be found on international markets, a choice needs to be made between using FR to supply targeted transfers or to mitigate staple price increases. This dilemma can be illustrated by **Ethiopia's** experience during the 2008 crisis: the choice was made to supply free distributions and subsidized sales but simulations showed that the same effect on food and nutrition security may have been reached at a much lower cost if the same quantity had been sold on the domestic market. Sometimes, the two options are not so different, however, as FR-supplied transfers may have a very significant effect on staple prices if the distributed quantity is large enough.

### Impact pathway #3 – Lessons on how FR procurement can be used to provide incentives to food producers

Countries' ability to use FR procurement to orient food production (impact pathway #3) strongly depends on how FR are used, especially whether they are used permanently (impact pathway #1) or only in periods of crisis (impact pathway #2). In the first case, regular procurement operations are necessary whereas in the second case occasional procurement is sufficient (usually after a crisis, when there is a need to replenish the FR, or when the stock should be rotated in order to avoid quality deterioration). In the second case, the quantity required to manage crises is higher when the FR is used to mitigate food price increases (impact pathway #2a) than when it is used to supply emergency transfers (impact pathway #2b) (Figure 1). This has strong implications on the way FR procurement can be used to provide incentives, as general incentives (floor prices) usually require that the quantity procured accounts for a significant share of the quantity traded on the domestic market, which is unlikely to be the case when the FR is only used to supply emergency transfers.

This means that the different ways to activate impact pathway #3 (permanent or occasion incentives, general or targeted incentives) strongly depends on the way FR are used. The case studies illustrate what can be expected from four coherent combinations of FR procurement and FR uses:

- *Providing a permanent price support to farmers* (coupled with permanent food transfers to poor households). On paper, this strategy seems coherent: a high quantity is procured every year, allowing the price to be maintained at a high level (with expected beneficial effects on food production); this quantity is distributed to poor households in order to protect them from the damaging effects of high food prices. However, the case studies show that, in the countries where this strategy has been implemented (**Indonesia** from 1998, the **Philippines** and **Zambia**), it led to very poor results. Consumers have not been really protected by the food transfers (in large part because of poor targeting), so that the high food prices resulted in highly damaging effects on food and nutrition security. Small producers benefited very little from high food prices. And the budgetary cost of the policy proved to be extremely high, with significant opportunity costs in terms of alternative policies.
- *Providing a permanent support to specific categories of farmers* (coupled with permanent food transfers to poor households and school feeding). This situation is illustrated by **Brazil**'s experience of procuring food from small-scale family farmers through the Food Acquisition Programme (PAA) and the National School Feeding Plan (PNAE). These programmes not only target small farmers, they also incentivise them to produce organic foods and to market their products through farmer organizations. Although they do not really provide a premium (their procurement price is in line with the price prevailing on regional markets, except for organic products for which a higher price is offered), the mere existence of a regular structured demand has been sufficient to orient production and generate new marketing channels.
- *Providing price support to farmers in periods of price collapses* (coupled with price mitigation in period of sharp price increases). This situation is illustrated by **Indonesia**'s successful experience in stabilising the domestic price of rice between 1973 and 1997. Although the floor price was not high (it followed the midterm trend of the international price of rice) it proved to be enough to boost investment in rice production.
- *Providing support to specific categories of farmers when there is a need to rebuild the FR* (coupled with emergency transfers in period of crisis). In this situation, procurement operations are occasional: they are implemented after a crisis (to replenish the stock) or when it is necessary to rotate the stock in order to avoid quality deterioration of the food stored. **ECOWAS** countries illustrate this kind of situation. Procurements are usually made through public calls and the main suppliers are usually local traders. However, a percentage of the planned purchases is targeted on farmer organisations. The World Food Programme (WFP) may be a source of inspiration for governments, as it procures food not only from small farmers (through

its Purchase for Progress programme) but also using specific market tools such as warehouse receipt systems or commodity exchanges.

### **Coordination** – Lessons on the necessary coordination among FR

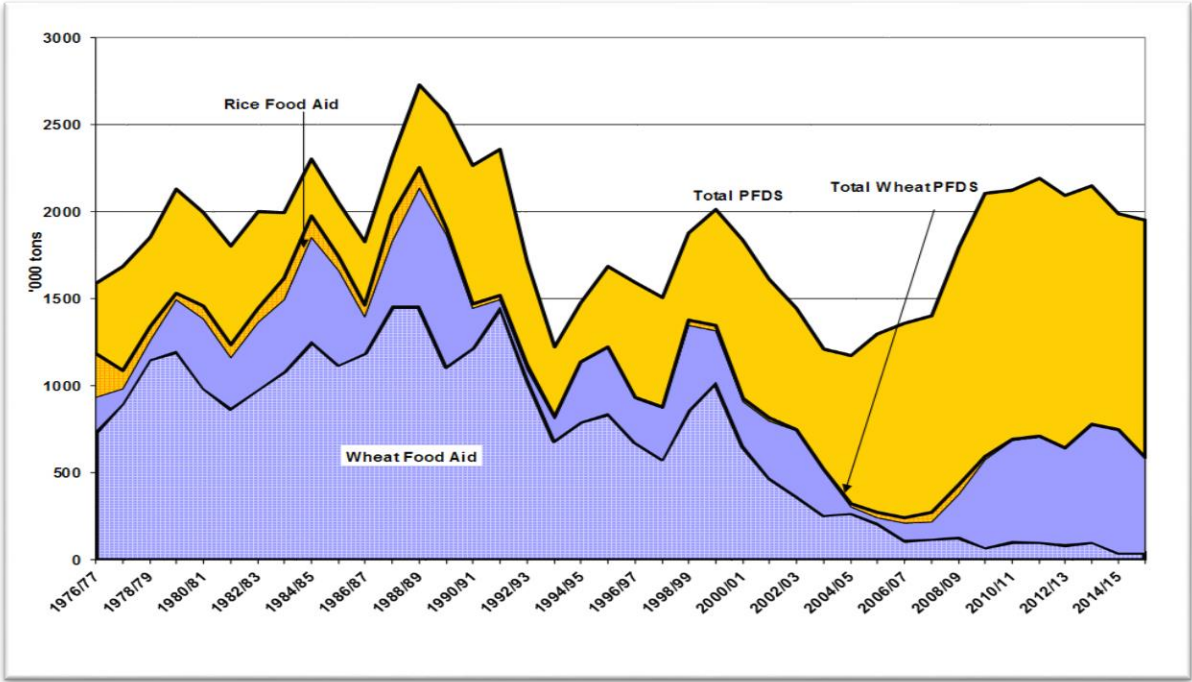
The case studies provide very few lessons on how national FR can be coordinated ('horizontal coordination') to improve the stability of international markets and global food and nutrition security. This issue, including the role of the World Trade Organisation (WTO) rules, is dealt with in the second part of the synthesis report (European Commission 2018, chapters 6 and 7).

Conversely, the case studies provide useful insights on the 'vertical coordination' between different levels of FR (local, national, regional). Local FR (called cereal banks) exist in Sahel countries; they are sometimes managed by municipalities (as in Mali) but most of the time by local communities. Interventions of national FR may destabilize local FR by offering more attractive purchasing or selling prices, as has been observed in **Burkina Faso**. Several options exist to coordinate local and national FR, including contracts between them. The way to coordinate different levels of FR was conceptualized when the **ECOWAS** Regional Reserve was designed. The concept (based on the subsidiarity principle) has been expressed through the 'three lines of defence' (local, national, and regional) that should be used successively. In line with this doctrine, the Regional Reserve is not a tool used by a regional authority: it is rather a regional tool that can be used by national governments when hit by a crisis. It therefore plays the role of a mutualized FR financed to a great extent by regional solidarity. The need to articulate the different scales can be extended to private stocks. The **Zambia** case study showed that, when they are managed in an unpredictable manner, FR operations are likely to crowd out private storage – to avoid this, FR interventions should be rules-based. Conversely, the **Bangladesh** case study suggests that, in situations of stock hoarding, FR releases can play a leverage effect by incentivizing traders to sell their stocks.

**CASE 1 Promoting national and household food security in Bangladesh: The evolving role of public stocks, cereal distribution and private trade<sup>3</sup>**

The experience of Bangladesh over the last four decades illustrates the effectiveness of a food security policy that combines agricultural investments, public stocks, targeted cereal distribution and a liberalized trade regime that promotes private sector imports. In the wake of famine conditions in 1972-74, just after the country’s independence in December 1971, the government initially relied heavily on food aid to address the widespread food insecurity. Over the past five decades, however, the Public Foodgrain Distribution System (PFDS) has included major interventions to spur production, develop markets, and increase consumption of the poor that have resulted in large production increases, increased household food consumption and substantial price stability.

Increase in foodgrain production in the 1980s and 1990s, made possible by the adoption of Green Revolution technology (improved seeds, fertilizer and irrigation), enabled Bangladesh to eliminate its ‘food gap’ (the difference between net domestic production and a target level of consumption equal to 454 grams per person per day) by 2000. Rice production more than doubled from independence between 1971 and 1999/2000. Most of this production increase was due to the expansion of *boro* (winter season) rice as privately owned tubewell irrigation expanded dramatically. Since 2000, adoption of improved varieties has led to increases in *aman* (monsoon season) rice production, as well.



Source: Author, based on Food Planning and Monitoring Unit (FPMU) data.

**Figure 2** Food aid and PFDS distribution in Bangladesh, 1976/77 – 2015/16

As a result of the increase in production and the elimination of the food gap, food aid declined: from over one million tons per year in the late 1980s and early 1990s to approximately 600,000 tons per year in the early 2000s and then further to only 74 thousand tons per year in 2015/16 (Figure 2). This decline in food aid had major implications for the composition of grain in the PFDS. In the 1980s, wheat food aid accounted for about half of total foodgrain distribution, which averaged over two million

<sup>3</sup> This case study summary was prepared by Paul Dorosh in August 2016.

tons per year. Major reforms in the early 1990s led to the elimination of major subsidized sales channels (Urban Rationing and Rural Rationing), the creation of the targeted Food For Education programme, and an overall decline in distribution to about 1.5 million tons per year throughout most of the 1990s. As food aid declined further in the early 2000s, the total distribution fell to about 1.3 million tons per year, almost all of which was sourced from domestic procurement of rice.

Changes in the role of international trade also greatly enhanced food security in Bangladesh. In its first two decades after independence, the government maintained strict controls on international trade in rice and wheat. In the early 1990s, however, Bangladesh liberalised its import trade in rice and wheat. Thereafter, in years of relatively poor harvests in the mid- to late 1990s, import parity prices of rice provided a price ceiling for Bangladesh domestic market prices. Following the 1998 flood, private sector rice imports exceeded 200,000 tons per month for seven consecutive months, stabilizing domestic rice prices at import parity (based on India wholesale market prices plus transport and marketing costs).

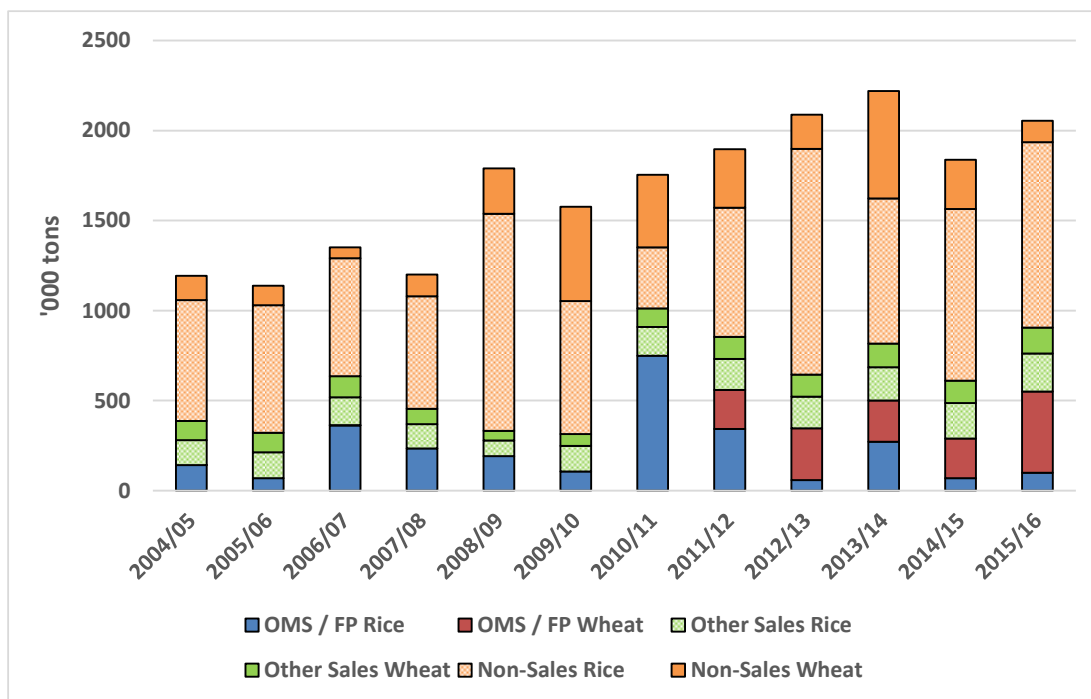
During the early 2000s, private traders in Bangladesh continued to import rice from India, most of which derived from sales of Indian government rice stocks at subsidized prices. However, in 2007/08, as world food prices rose, India put a temporary ban on its exports of non-basmati rice leading to a major price increase in Bangladesh. Ultimately, Bangladesh negotiated for a limited amount of commercial imports from India, but the temporary disruption of rice imports from India has led to a major shift in government policy with lesser reliance on international markets.

Since 2008, public cereal stocks have increased, along with domestic procurement and public distribution (including a return to rationed sales). Total annual average PFDS stocks exceeded 1.3 million tons in four of the last five years. Current stocks consist mainly of rice (averaging about 1.0 million tons per year in this period). In part, this is due to the ability to better dry paddy and milled rice, and thereby reduce storage losses related to high moisture content that generally limited storage of rice to about six months.

Public distribution was also scaled up after the 2007/08-price surge. Total distribution averaged only 1.22 million tons per year (1.01 million tons of rice and 210,000 tons of wheat) from 2004/05 through 2007/08; from 2009/10 through 2015/16, total public distribution averaged 2.065 million tons per year, steadily rising to a peak in 2013/14 of 2.22 million tons (1.26 million tons of rice and 958,000 tons of wheat). Much of this increased distribution was through sales channels, including 1.04 million tons through Open Market Sales (OMS) and Fair Price Cards (FP) in 2010/11 (Figure 3). Given the increases in both stocks and distribution, the average stocks/distribution ratio remained unchanged at 59 per cent.

Looking forward, major new planned investments in public storage facilities offer the opportunity to reduce storage losses and provide greater flexibility in the PFDS with regard to needs for stock rotation. International trade, both public and private imports, will likely continue to provide a low-cost option for enhancing domestic supplies in times of unforeseen shortfalls. Maintaining an appropriate balance between public interventions and international markets will remain a key food policy challenge, necessitating strong analytical capability within the Government of Bangladesh.

Food security in Bangladesh has been greatly enhanced over the past two decades by policies that have allowed a major public foodgrain distribution to co-exist with the private sector trade. Increasing the efficiency of the public distribution system while maintaining incentives for private sector trade can help ensure that food security continues to improve in the coming decades, as well.



Source: Author, based on Bangladesh's Ministry of Food data.

**Figure 3** Public foodgrain distribution channels in Bangladesh, 2004/05 – 2015/16



## CASE 2 The formation of agricultural stocks of grains in Brazil and food security<sup>4</sup>

Brazil has gone from an extreme intervention policy on food stocks and food distribution system to an acting-through-the-market practice in the early 1990's. Intervention in agriculture began at the turn of the twentieth century and expanded with the creation of state mechanisms responsible for controlling production, establishing tariffs, export quotas and intervention standards through buffer stocks. Due to the Brazilian economic crisis in the 1980s, hyperinflation and loss of regulatory power, the State retracted and gradually food reserves control systems were established through market instruments. Currently, the Government operates four types of contracts that allow it to intervene within the market promoting the outflow of production between the regions of Brazil, without having to immobilise public funds in food stocks.

Considering that Brazil is a major agricultural producer and has trade agreements with its neighbours, the volume of stocks held by the government has been decreasing gradually. At the same time, the stabilisation of food prices through market mechanisms based on auctions has not allowed the agility to face crises such as that of 2008, when international prices rocketed. There was an increase and high volatility in food prices in the domestic market which benefited very little the producers because, at that time, their costs also increased. The government tried to combat the rise in agricultural prices with exemptions and the relative appreciation of the exchange rate.

Brazil has developed various social protection programmes since the 1990s, based both on in-kind food transfers as well as cash transfers. The results of these programmes have been very limited, both for their inefficiency as well as for their operational scale. Since 2003, Brazil has developed a massive programme of conditional cash transfers, called the *Bolsa Família* (Family Grant), which reached 13.9 million households ten years later, representing a total coverage of the estimated households in extreme poverty. Evaluations of international organisations show the positive effects of the programme in reducing extreme poverty and indicate a satisfactory operating performance in terms of efficiency. This programme also contributed in reducing the impact of high prices of food on the poorest families.

After 2008, efforts to promote direct purchasing policies from family farming for use in social programmes, such as school feeding, were intensified. Nowadays, these programmes reach around US\$500 million serving close to 200,000 farmers every year. As a large producer, and considering the magnitude of its food assistance to poor, Brazil hasn't received strong impacts derived from the international food price rise. The analysis of price movements in Brazil from 2008 doesn't reveal any generalized effect as a result from the increase of international food prices.

Brazil was the first country in Latin America that had an integrated policy regarding price control and interventions in agricultural products. Launched in 1943, the policy of minimum prices and public regulation stocks started covering very few products but it has been widened step-by-step. The heyday of the public intervention happened during the 1960-70's when the government controlled not only the food stocks, but also the amount and the import-export's licenses, as well as the vegetables' wholesale in large cities. This model of intervention was dismantled in the 1980's due to the hyperinflation and later, in the 1990's, due to the introduction of the market's liberation policies. The last period, described above, could be characterized by a mix of indirect intervention through the market, in order to 'keep the prices right,' and equilibrate the food supply among regions, and punctual and compensative interventions to final consumers by means of cash transfers.

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<sup>4</sup> This case study summary was prepared by Walter Belik and Altivo R.A. de Almeida Cunha in June 2016.

Some of lessons drawn from the successful Brazilian case are as follows:

- All solutions to fight food prices' instability and volatility are dependent on how big the population's food insecurity is and how this population is distributed in geographical terms. There is no one global solution; different countries with different trajectories and specific eating habits require distinctive policies.
- It is strongly recommended to combine FR building with conditional cash transfers and other programmes from the demand side. They are not exclusive.
- The best way to provide social protection and prevent food insecurity, in any scenario, is to give access to food through public and collective programmes, such as school feeding.
- Individual or household food transfers (in-kind) should be used only in special areas, mainly in food emergencies.
- Subsidies, through imports or internal prices, to sell food in accredited retailers or state owned retail chains, are a difficult operation that normally results in leakages and inefficiencies.
- FR, be it physical or made of agricultural certificates of deposit and agricultural warrants controlled by government, should be substantial even if the country has an open and liberalized economy. However, these FR must be oriented to respect the following: storage facility locations covering hot spots; management of phytosanitary conditions; dissemination of transparent information; and clear rules for stock release.

### CASE 3 How to articulate local stocks and public stocks for food security in Burkina Faso?<sup>5</sup>

Burkina Faso is a small land-locked country where food insecurity affects around one third of the total population. Despite a dynamic cereal production (around 5 million tons), which globally follows the demographic growth, strong regional disparities exist and only one fifth of the production is traded. Being part of a regional integration area, Burkina Faso strongly relies on regional markets and regional public policies for its food security (common agricultural policy, common external tariff, etc.). Since the adoption of a food regional reserve by the Economic Community of Western African States (**ECOWAS**) in 2012, public stock management by the SONAGESS (*Société nationale de gestion du stock de sécurité alimentaire* in French, the national agency responsible for the management of the food security stock) must be part of this regional framework. In case of food crises, proximity stocks (that is, those stocks based in villages and managed by producer organisations) should first be used, then should come national stocks, and regional food reserves should be used as last resort.

The challenge now is to articulate proximity stocks with public stocks and to ensure that the latter do not affect the former. Indeed, public interventions from the SONAGESS are often under criticism by producer organizations (POs) and non-governmental organisations (NGOs) but there is only limited evidence from small-scale studies to provide with detailed information on their negative impacts. It is therefore crucial to analyse the nature of possible interactions between proximity stocks and public stocks based on available data and qualitative information.

Public stocks and proximity stocks are very diverse in terms of objectives, as well as in their functioning. The National Food Security Stock (NFSS), implemented in 1994 and co-managed by the state and its development partners, is only used in case of major crises and was actually mobilised only once in 2012. The Intervention Stock (IS) was created in 2005 when it appeared that the NFSS could hardly be mobilised to address the food crisis. The IS is exclusively managed by the State and stock movements run all year round. The Regulation Commercial Stock (RCS) was created in 2010 and is entirely managed by the SONAGESS in view of collecting financial resources. Each of these stocks offers preferential conditions to POs in the framework of public procurements – 20 per cent is dedicated to POs for the NFSS and the IS, and 80 per cent of direct contracts from the RCS are made with POs.

Destocking operations consist in sales at social price in areas that are prone to risk and during specific periods (lean season), but the SONAGESS also managed since September 2013 witness shops that are open throughout the year and located over the whole national territory. The total conventional level of public stocks is 80,000 tons (of cereals mainly, with a small share of cowpea, potatoes and processed products), which represents a very small part of all traded cereals. Proximity stocks are also very diverse, ranging from cereal banks or food security granaries, whose aim is to allow buying cereals at low prices to sale them below the market price during the lean season, to collective trading for getting better producer prices, or to warrantage, which consists in deferring harvest's sales to benefit from higher seasonal prices.

Based on literature review and qualitative interviews with around twenty POs in surplus and deficit areas and with agents from SONAGESS, this case study reveals the complexity of interactions between publics and proximity stocks, which are both positive and negative:

- *Public procurements offer opportunities of secured outlets for POs*: contracts with the SONAGESS represent secured markets and facilitate POs' efforts to obtain credits to financial institutions. However, the modalities of public procurement with the SONAGESS are judged

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<sup>5</sup> This case study summary was prepared by Arlène Alpha and Bénédicte Pémou in August 2016.

less attractive than those of the Purchase for Progress (P4P) programme implemented by the WFP (lesser prices, longer payment periods and costs for the delivery of products). For instance, in 2015, the SONAGESS bought cowpea at 260 CFA francs (CFAF) per kilo while the WFP bought at CFAF 357 per kilo. Moreover, a number of limiting factors explain that only a few POs are actually in capacity to respond to the public procurements from the SONAGESS: weak storage capacities, and difficulties to collect the necessary volumes from PO members and to comply with the required volumes and delivery times.

- *When public procurements are made at farm-gate they directly compete with proximity stocks:* in 2011/12, while the food production was in sharp fall and the food crisis was expanding, the SONAGESS chose to make farm-gate collecting operations at remunerative producer prices (CFAF 15,000 per 100-kg bag of maize against around CFAF 12,000 at market price) to supply deficit areas. During this operation, producers preferred to sell directly to the SONAGESS rather than through the POs. Afterwards, POs claimed that they were not able to respond to the SONAGESS calls, and the SONAGESS bought the necessary volumes from traders. Moreover, it has been observed that there is generally much less warrantage in periods of SONAGESS public storage (a 48 per cent decrease of the number of producers engaged in warrantage, and a 75 per cent decrease of the average quantity of agricultural products put in warrantage).
- *While it is difficult to document the impact of public storage on market prices, this is expected to be weak and localised given the small volumes in question:* there is no monitoring and accounting of purchased volumes by the SONAGESS and it is therefore not possible to link the SONAGESS operations with market prices. However, given the small purchased volumes, which furthermore tend to run over the year, it is doubtful that these operations may have significant impact. The market surveys made by the SONAGESS show nevertheless that traders tend to appreciate periods of public procurements as an opportunity to sell at higher prices.
- *Sales at social price tend to depress market prices:* public destocking in the form of sales at social price is generally too weak to expect a direct downward impact on market prices. However, POs' testimonies and market surveys tend to show that sales during the lean season have an impact. Traders tend to postpone their sales when they are informed that there will be sales at social price because they know that they will have difficulties to sell at the price they want. Warrantage operations by the POs are also affected by sales at social price (a decrease of around 20 per cent is observed in the average producer prices). Since the opening in September 2013 of witness shops throughout the year, a number of POs complain about the decrease of producer prices. For instance, a PO specialised in rice processing usually sold a 25-kg bag at around CFAF 10,000 but this bag is now sold at CFAF 7,500 in these witness shops.
- *Some opportunities of complementarity between sales at social price and proximity stocks exist:* in deficit areas, POs were sometimes mobilised to make sales at social prices, which has been considered as a good operation. This is a way for these POs to make their proximity stocks known by dwellers in villages.

Three ranges of recommendations are proposed for a better articulation between public stocks and proximity stocks in Burkina Faso and at the regional level:

- *A complementarity of action:* it appears important i) to know better proximity stocks – a directory of POs which usually work with the SONAGESS is planned by the SONAGESS and a mapping of proximity stocks in the Sahel might be elaborated by the Permanent Interstate Committee for Drought Control in the Sahel (CILSS), ii) to improve the predictability of storage and destocking operations from the SONAGESS to allow POs to adapt their trading strategies, iii) to make targeted sales at social price preferably where there is no or few proximity stocks, and iv) to

strengthen the dialogue framework between the SONAGESS and POs for public procurements and distributions.

- *A synergy of action:* this could be made through a reduction of limiting factors regarding public procurements (better producer prices, higher required volumes, reduction of payment periods), and a contractual arrangement between proximity stocks and the SONAGESS enabling to sell at low prices during the lean season (the difference between the social price and the cost price could be subsidised but this requires to control compliance with the social price).
- *A structural support to proximity stocks:* such a support should focus in particular on the development of storage capacities, the creation of working capitals, the training of people in charge of management committees on quality procedures and standards for the stocks' maintenance, and the structuration or network of proximity stocks.

# CASE 4 Can the ECOWAS Regional Reserve Project improve the management of food crises in West Africa?<sup>6</sup>

## 4.1 Introduction

The Regional Reserve (RR) project is a project developed by the ECOWAS with the aim of improving the management of food crises in the region by adding a (regional) 'line of defence' between national policies and international aid. As the RR project is not really born yet,<sup>7</sup> it is difficult to draw lessons from its experience. However, two reasons justify reflecting on it. First, it is a very innovative tool both in its modalities (the RR is a regional tool at the service of national policies) and in its objective (see below). Second, to some extent, the RR project may be a source of inspiration for other regions of the world (it has been presented as a pilot experience during the G20 2011 negotiations on managing agricultural price instability). We will present successively its objectives, its components, its potential benefits and the challenges to be overcome in order to make them real.

## 4.2 Objectives of the ECOWAS Regional Reserve Project

The objectives of the ECOWAS RR project, presented in Table 1 below, are not only related to food security, as the project also aims to strengthen the solidarity among Member States and to increase the food sovereignty in the region. The RR project is backed by a doctrine based on the principle of subsidiarity: the idea is not to substitute to national policies, but to back them with regional tools; it is not to substitute to international aid, but to better manage the timelines in mobilizing it.

**Table 1** Objectives of ECOWAS regional reserve project

	<b>Political objectives</b>	<b>Food security objectives</b>
<b>Vis-à-vis national policies</b>	Increasing the solidarity between ECOWAS Member States	Improving food security by complementing national policies and international aid in managing food crises
<b>Vis-à-vis international aid</b>	Increasing the food sovereignty of ECOWAS region and countries	

Source: Authors.

These objectives can only be understood by tracing back how the idea of this project emerged, in the aftermath of the 2005 and 2008 food crises. Before 2005, in Burkina Faso, Mali and Niger, FR were limited to a small reserve co-managed with the donors. In 2005, these countries faced a major crisis due to the bad harvest of millet and sorghum resulting from a drought and locust attacks. After the 2005 crisis, considering that this FR was not enough and that the procedures to mobilize it were too heavy, these three Sahel countries decided to build other FR directly managed by the government. Mali also created more than 700 decentralized FR managed by the 700 municipalities of the country. Some elements of the RR project rationale emerged at that time: the wish for more FR, the wish for more independence vis-à-vis the international community, and the subsidiarity principle. Then, came the 2008 crisis on international markets. For ECOWAS countries, the consequences were a sharp increase in the price of imported rice and increased import delays. This resulted in a strong lack of confidence in international markets. And here is probably the main source of the idea that some kinds of reserves are necessary to manage import timelines. Another consequence of the 2008 crisis is related to the fact that many West African countries implemented export bans with the aim of mitigating price increases on their domestic market. These measures were not really effective (they were circumnavigated most of the time), but they highlighted the lack of solidarity between ECOWAS countries.

<sup>6</sup> This case study summary was prepared by Franck Galtier in July 2016.

<sup>7</sup> As of July 2016, when the case study was written.

### 4.3 Components of the ECOWAS Regional Reserve Project

The RR project encompasses two main components: increasing the level of national FR (thanks to regional funding) and building a regional reserve. Both components are complementary because they seek to help countries meet their staple needs in case of crisis. Both respect the principle of subsidiarity by strengthening the tools in the hands of national governments – the RR is designed to be used by national governments, not by ECOWAS authorities. Both involve regional solidarity but the RR goes further in this direction: the increase in national FR is initially funded by the region but, when these stocks are exhausted, they are replenished through national funds; in the case of the RR, the rebuilding of the stocks is also covered by the region.

#### Planned increase in national FR and size of the RR

The required size for national FR and the RR was determined by estimating the staple needs of each ECOWAS country when facing a major crisis. This has been done by: i) taking the percentage of population affected by the major crisis experienced by this country between 2000 and 2012; ii) multiplying this percentage to the estimated population for 2020; iii) applying the WFP norm of 15 kg needed per person per month; iv) assuming that three months of these annual needs should be met regionally for landlocked countries, and 1.5 months for coastal countries (in order to manage the timelines for mobilizing international aid). This gave the needs for staple FR, country by country. The next step has been determining the share of these needs that should be covered by the RR (as opposed to the national FR). In the name of the subsidiarity principle, it has been decided that, at the aggregated level of the ECOWAS region, this share will be around 33 per cent, resulting to the conclusion that the relevant size for the RR is around 410,000 tons and the required size of national FR around 840,000 tons (given their current size, the required increase in national FR is over 600,000 tons). The last step has involved the definition of the weight of the physical and financial components within the RR: 140,000 tons for the physical stock, and roughly equivalent to 270,000 tons for the financial stock.

#### Rules and procedures for using the RR

Each ECOWAS Member State can ask for using the RR for free (in the name of regional solidarity) up to a certain amount, provided that this Member State is facing a food crisis. This amount (the country 'quota') corresponds to a given share of the country needs for staple FR (estimated as described above). As already indicated, this share is around 33 per cent on average, but in fact it varies depending on whether the considered country is coastal or landlocked and whether it belongs to the least developed countries (LDCs) or non-LDCs (40 per cent for landlocked LDCs, 20 per cent for countries landlocked or LDC, and 10 per cent for coastal non-LDCs). This allowed calculating the quota of each country (that is, the quantity it can get for free from the RR when hit by a crisis) and the required level of its national public stocks – as presented in Table 2 below.

#### Funding strategy

The estimated cost of increasing national PS by 600,000 tons is around USD 3,000 million (the project plans to do this over 8 years), whereas the annual cost of the RR is around USD 200 million (if 100 per cent of the RR are used within the year, only USD 150 million if only 75 per cent of the RR are used). ECOWAS asked donors for support (the European Union already provided around EUR 50 million), but the idea is that around 75 per cent of the funding should stem from the resources of the region through a "Zero Hunger tax" on ECOWAS overall imports (this tax would generate around USD 390 million per year).

**Table 2** Calibration of the RR and estimation of the required increase in national FR

ECOWAS country	Population in 2020 (000s)	Population affected following most serious crisis	Annual estimated needs by 2020 (Tons)	Import timelines	Country needs for FR (Tons)	% of the needs for FR covered by the RR	Needs covered by the RR (Tons)	Needs covered by national FR (Tons)	Current level of national FR (Tons)	Required increase in national FR (Tons)
Benin	11 523	4%	82 966	1,5 months	10 371	20%	2 074	8 297		8 297
Burkina Faso	22 150	18%	717 660	3 months	179 415	40%	71 766	107 649	28 000	79 649
Cape Verde	544	7%	6 482	3 months	1 621	20%	324	1 296		1 296
Côte d'Ivoire	24 503	4%	176 422	1,5 months	22 053	10%	2 205	19 847		19 847
Gambia	2 242	36%	145 282	1,5 months	18 160	20%	3 632	14 528		14 528
Ghana	30 325	4%	218 340	1,5 months	27 293	10%	2 729	24 563		24 563
Guinea	12 765	4%	91 908	1,5 months	11 489	20%	2 298	9 191		9 191
Guinea-Bissau	1 863	8%	25 989	1,5 months	3 249	20%	650	2 599		2 599
Liberia	5 166	13%	120 884	1,5 months	15 111	20%	3 022	12 088		12 088
Mali	20 537	23%	850 232	3 months	212 558	40%	85 023	127 535	17 000	110 535
Niger	22 071	53%	2 118 286	3 months	529 572	40%	211 829	317 743	32 000	285 743
Nigeria	203 869	4%	1 467 857	1,5 months	183 482	10%	18 348	165 134	150 000	15 134
Senegal	15 998	7%	201 575	1,5 months	25 197	20%	5 039	20 158		20 158
Sierra Leone	7 178	4%	51 682	1,5 months	6 460	20%	1 292	5 168		5 168
Togo	7 343	4%	52 870	1,5 months	6 609	20%	1 322	5 287		5 287
<b>ECOWAS</b>	<b>388 077</b>		<b>6 328 433</b>		<b>1 252 637</b>		<b>411 554</b>	<b>841 083</b>	<b>227 000</b>	<b>614 083</b>

\* Estimate based on the WFP norm of 15 kilo per person per month.

Source: Authors' calculus based on ECOWAS (2012) – table 3 (p. 38) for annual needs; note 18 (p. 39) for the list of coastal countries and landlocked countries (that determines the share of the needs that should be met by FR: 1.5 or 3 months); note 19 (p. 40) for the lists of LDCs/non LDCs countries (that jointly with the coastal/landlocked criterion determines the percentage of the needs met by FR that should be covered by the RR).

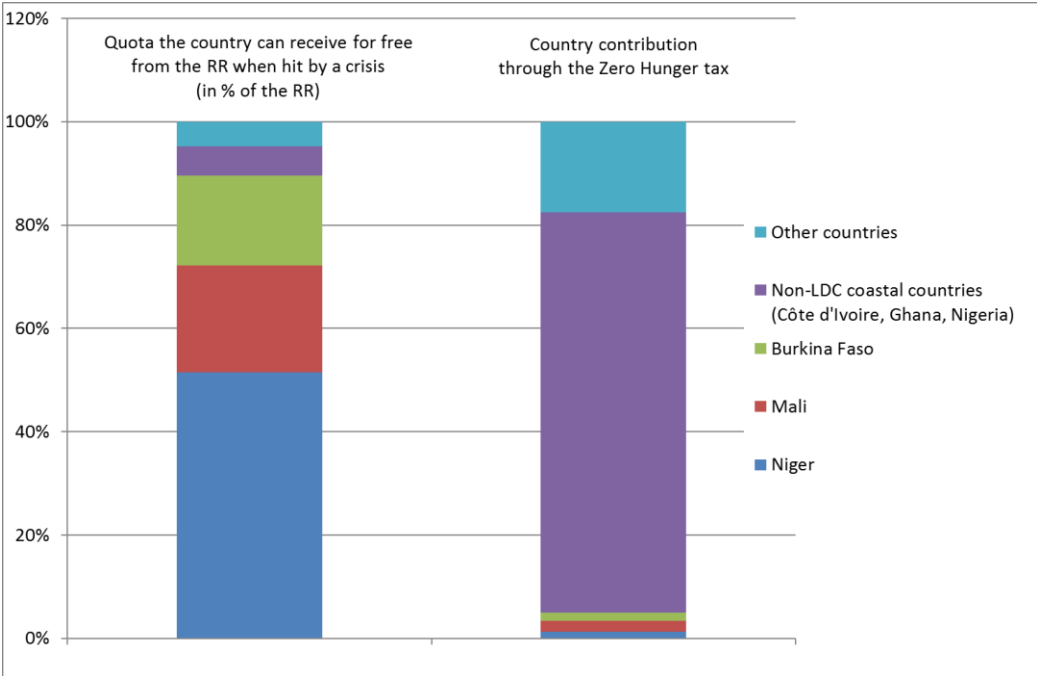


**4.4 Can the RR project increase the solidarity between ECOWAS countries?**

The answer is clearly yes, as the RR project encompasses three forms of solidarity:

- *Solidarity with countries vulnerable to food crises.* The countries strongly affected by past crises will receive a higher support from the regional solidarity to increase the level of their PS (even more if they are landlocked).
- *Solidarity with countries hit by food crises.* This form of solidarity is implemented through the ‘mutualization’ of the RR: all countries contribute but only those in crisis benefit (the right to use the reserve is triggered by country food insecurity indicators based on the *Cadre Harmonisé Bonifié*<sup>8</sup> (CHB). Moreover, among the countries hit, countries with higher needs benefit more: the quantity each country can get for free from the reserve (its quota) depends on its needs for staple stocks. Last but not least, for a given level of needs, the solidarity is higher for poor and landlocked countries, as a higher percentage of their needs is covered by the RR (Section 4.3).
- *Solidarity regarding the funding of the RR project.* As the major part of the cost of the RR and the initial increase in national FR is supposed to be funded through a “Zero Hunger tax” on each ECOWAS Member State’s extra-ECOWAS total imports, non-LDC coastal countries (Côte d’Ivoire, Ghana and Nigeria) will be the main contributors.

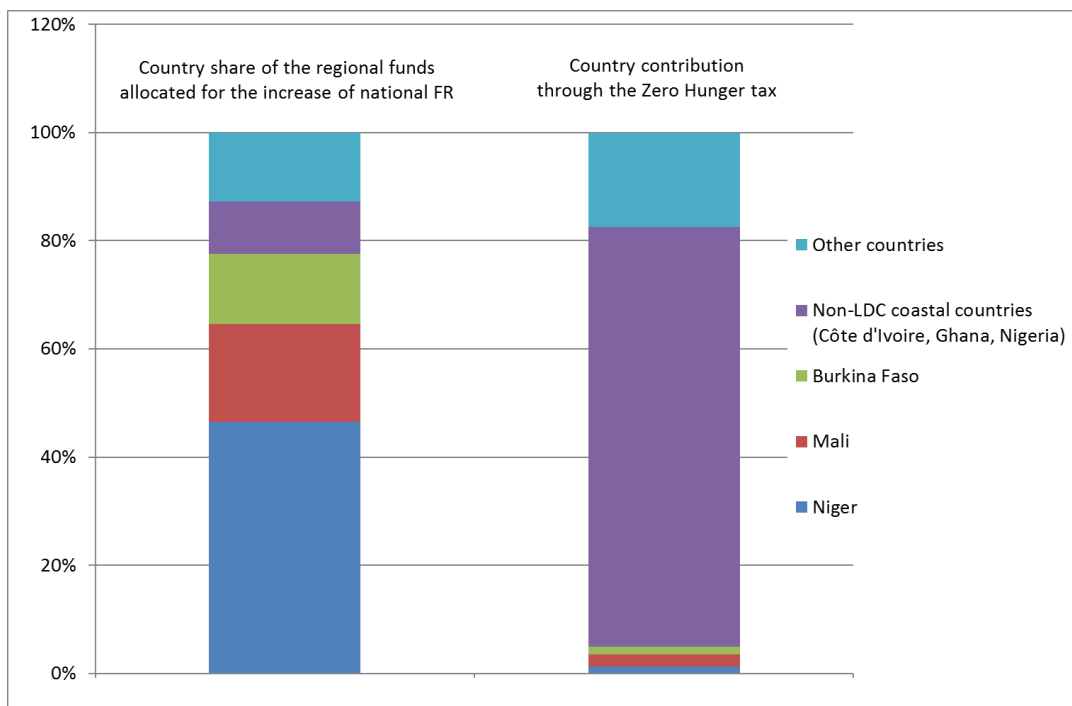
These three forms of solidarity would result in a very high level of regional solidarity with Sahelian countries (especially Niger), as these countries are the most often hit by food crises, have the higher needs, and are all landlocked and LDC countries: while contributing very few (around 5 per cent of the total cost), they will get around 90 per cent of the RR quotas and 77.5 per cent of the increase in national FR – as shown in Figure 4 and Figure 5. A potential additional benefit is that the existence of these three forms of solidarity is likely to incentivise countries to renounce implementing export bans.



Source: Authors, based on ECOWAS (2012) – see Table 2 for details.

**Figure 4** Regional solidarity associated to the RR

<sup>8</sup> Harmonised food security indicator used in West Africa – the CHB is broadly based on the Integrated Phased Classification (IPC).



Source: Authors, based on ECOWAS (2012) – see Table 2 for details.

**Figure 5** Regional solidarity associated to the increase in national FR

#### 4.5 Can the RR project improve food security in the ECOWAS region?

As the RR Project has not been implemented yet, the only thing we can do is assessing its adequacy with the characteristics of food crises in West Africa. In order to do that, we identified the main types of food crises faced by the region during the last years and we tried to imagine what might have been the effect of the RR project in improving the management of these crises. The main identified expected benefits results are as follows.

##### Improved diagnosis and early warning by strengthening the ‘think regional’

The use of the *Cadre Harmonisé Bonifié* (CHB) to compare the situation of various countries will lead to take into account the regional dimension of crises – the misunderstanding of the dynamics of the regional market led to strongly underestimating the Niger 2005 crisis.

##### Earlier (national and international) responses

The most obvious effect is that, thanks to the RR and increased national FR, stronger national responses will be possible while mobilizing international aid. The RR project may also reduce the delay in mobilizing international aid, as governments are more likely to recognize the magnitude of the crisis if they have more means to manage it – as illustrated by past crises in the region. Finally, it can also reduce the delay for implementing international aid thanks to the increased availability of physical stocks – the lack of stocks has been, for instance, an important issue during Niger 2005 crisis.

##### Better responses

Acting sooner may reduce the needs for costly nutritional recovery programmes, which represented more than 60 per cent of the budget for managing the Niger 2010 crisis, thereby saving means for more medium-term action focused on household livelihoods and resilience. The availability of physical stocks may also allow for more use of local staples in (national and international) interventions, which, in turn, may contribute in reducing the cost and delays of interventions, and in mitigating the increase in the price of these staples, which are the most consumed by the poor. The RR project may also lead

to more coordination between national responses to regional crises: by increasing the means of all ECOWAS country governments, the RR project may lead to the simultaneous use of FR, thereby contributing to mitigating surges of staple prices much more effectively.

#### **4.6 Can the RR project increase the food sovereignty of the ECOWAS region and countries?**

In this area, the ambition of the RR project is more limited; it is not to substitute to international aid but only to manage the crises during the delays for mobilising international aid. Moreover, in the proposed funding strategy of the RR project, development partners still play a role, although the main part of the funding is supposed to stem from regional resources. However, by increasing the capacity of ECOWAS country governments, the RR project may contribute not only to an increased role of governments before the arrival of international aid, but also to a co-management of international aid. The 2005 crisis in Niger showed that international aid (channelled exclusively through the United Nations clusters and NGOs) can have a very destructuring effect on national institutions. Holding more stocks may increase the role played by the government, especially when there is a scarcity of local staples, as occurred in 2005. The RR project may also provide secondary benefits to food sovereignty by, on the one hand, promoting the use of local staples (millet, sorghum, maize, milled cassava) when managing food crises, thereby fitting better with consumer habits and preferences, and, on the other hand, strengthening procurement on the local market.

#### **4.7 Challenges**

Anyway, all the benefits mentioned above are only potential benefits. Making them real would require the involvement of the ECOWAS Commission and its Member States in the funding of the RR project. However, until now the only contributor to the building of the RR project is the European Union: the Member States did not deliver the quantity of staples they were supposed to deliver to build the RR; the regional economic communities (ECOWAS and the West African Economic and Monetary Union) did not provide the money they were supposed to provide for the building of the RR; the Zero Hunger tax has not been created. Another challenge is related to the lack of (proper) use of the CHB by many ECOWAS countries. As the CHB is the basis of the (harmonised) food insecurity indicators that will trigger countries' right to use their RR quota, generalizing the use of the CHB is necessary to avoid conflicts.

#### **4.8 Conclusion**

This case study is a good illustration of the conclusion of the overall study, as reflected in its synthesis report<sup>9</sup>, that food reserves are particularly useful when: i) the staples most consumed by the poor are non-tradable; ii) the country is landlocked; and iii) the storability of the considered commodity in the considered country is good. It also illustrates the fact that a regional approach can be very useful in situations with many spillover effects between countries (including porosity of borders). Therefore, the relevance of the RR project is not questionable. The main challenges are related to its implementation.

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<sup>9</sup> European Commission (2018).

## CASE 5 Public policies for enhancing food security: The case of Ethiopia<sup>10</sup>

Ethiopia, a country prone to prolonged droughts that can have devastating effects on cereal and livestock production, has made tremendous progress in enhancing food security over the past two decades. Massive famines occurred in the early 1970s and mid-1980s during major droughts, as emergency relief efforts could not compensate for the fall in domestic cereal and livestock production and a sharp decline in access to food for millions of households. Other factors were also important, however, including a long-term neglect of smallholder agriculture, inadequate infrastructure, poorly developed private markets (and cereal movement restrictions during the 1984 famine), and slow response of public institutions.

Over the last decade, however, food security has been substantially enhanced, in large part due to public investments and policies that led to a doubling of cereal production over the past ten years, more efficient agricultural markets and development of a flexible and well-targeted large-scale safety net. Improvements in the effectiveness of food security and disaster management institutions related to market price stabilization, management of stocks and coordination of emergency relief have played a role as well.

From the 1960s through the 1990s, Ethiopia's government intervened in domestic cereal markets in an effort to control prices. Successive government agencies were created and subsequently disbanded, including the Grain Marketing Board (GMB) begun under the reign of Emperor Haile Selassie in the 1950s, the Agricultural Marketing Board (AMB) created under the Derg regime in the mid-1970s and the Ethiopian Grain Trading Enterprise (EGTE) beginning in 1991. The government's share in domestic cereal markets (EGTE and its predecessors) declined substantially over time, however, from its peak of around 40 per cent in the 1980s to only four per cent by the late 1990s and less than two per cent during the 2001-2007 period. Public commercial imports prior to 2008 were generally small, but since then the EGTE has imported more than a million tons of grain in years of major production shortfalls to stabilize prices and subsidise urban consumption.

Since 1996, food aid inflows to the country have ranged from about one quarter of a million tons to nearly two million tons following the drought in 2003. Although food aid as a percentage of total grain production has been small in most years, this share rose substantially in drought years, reaching as high as 16 per cent in 2003. A major shift in food aid planning and distribution occurred in 2005, however, with the introduction of the Productive Safety Net Programme (PSNP) that replaced annual "emergency" appeals for food aid with targeted programmes of both food in-kind and cash transfers to households, linked to local public works projects and household asset building programmes.

Following the drought of 1973–74 and subsequent famine, the Government of Ethiopia set up a strategic grain reserve, supplied both by regular inflows of food aid, as well as domestically produced grain. Thereafter, the Government of Ethiopia established the Ethiopian Food Security Reserve Agency (EFSRA) in 1982, as a unit of the Relief and Rehabilitation Commission with a mandate to manage the stocks. In some years, government and NGO agencies have borrowed from these stocks to be able to conduct emergency operations even before food aid shipments arrived. Recommended levels for the stock were gradually raised over time, from 204,600 metric tons in 1987 to 407,000 tons in 2004 (following the droughts of 2002-03). By 2009, the merits of raising the strategic grain reserves up to 1.5 million metric tons were being debated.

Administrative reforms in the disaster risk management agency designed to enhance coordination, augment public ownership, and provide more rapid response to disaster risks have also proven effective. Nonetheless, the country still suffers from considerable price instability. By design, the food

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<sup>10</sup> This case study summary was prepared by Shahidur Rashid, Dawit Alemu and Paul Dorosh in August 2016.

stocks are too small to support large-scale market interventions needed to effectively stabilize prices. Moreover, interventions would be very costly due to large transport and marketing margins for cereals. Nonetheless, there are largely unrealized opportunities to lessen price stability and reduce costs to the government through encouraging private sector international trade in wheat and maize.

Thus, the Ethiopian food system with its minimal stocks has successfully evolved over time. Policies and public investments to promote increased production, more efficient markets and effective safety nets have made large contributions to overall food security, while costly direct government interventions in markets to stabilize prices have greatly diminished since the 1990s. Public FR play only a minor role in the current food system, essentially functioning as working stocks that expand temporarily to facilitate emergency relief operations, while the institutions charged with management of food stocks and emergency relief have grown increasingly effective in addressing crises. Nonetheless, because the country remains susceptible to drought, Ethiopia will continue to need well-chosen public investments and well-functioning institutions to maintain or surpass the remarkable gains improvements in food security it has achieved over the past two decades.

## CASE 6 The role of public grain stocks in food security: Indonesia's experience<sup>11</sup>

This Indonesia case study attempted to: i) analyse food security activities within a historical context; ii) emphasize the broader macro context in which the issue of grain reserves is set, and iii) raise as many – really more – questions than to which it provides answers. It dealt with price stability, public FR, trade policies, and in-kind social transfers. At least historically, the Indonesian story is a series of emergencies. The case study did not deal with cash or voucher transfers, asset (cattle, etc.) transfers, production input transfers, or policies to boost private storage/warehouse receipt systems (although it does introduce the potential role of supermarkets), for these issues are not directly relevant to the Indonesian experience.

Indonesia has a long history – since independence from Dutch rule in 1945, and even before – of using FR of rice to provide food security. Beginning in 1973, in the early days of the post-Sukarno period, domestic rice prices were stabilized around world rice prices. A food logistics agency, named BULOG, was established to control rice prices with a head who reported directly to the President and with a line of credit at subsidized interest rates from the Central Bank. The floor price covered costs of production, provided a margin to encourage adoption of new technology, and was known in advance of sowing – farmers could count on at least minimum prices in their decision-making.

The buffer stock under BULOG control was built up when production was abundant and disbursed relatively evenly over years to provide wages in-kind to civil servants to offset the impact of rising prices (there was very rapid inflation – several hundred per cent yearly – in the 1950s and 1960s) and provisioning the military – two pillars in providing political stability.

Rice was injected into retail markets to defend the ceiling price. Importantly, and by design, the band between upper and lower price bands was wide enough to encourage private trade. International trade provided an important balance wheel in the system: Indonesia imported to supplement domestic procurement when needed and exported only on occasion. Domestic prices were more stable than world rice prices. There were some crisis periods – the world food crisis in 1972/73, the collapse of commodity prices in world markets in the mid-1980s, and another crisis in 1994/95 – but this policy dominated over nearly three decades until the Asian financial crisis in 1997/98 – it became impossible to stabilize rice prices when the macro economy and exchange rate went out of control.

Price stabilization was especially important in the early days because it was an essential element in holding the country together politically – the post-Sukarno period was very volatile. Food shortages could in fact lead to urban riots causing the government to fall. It may be argued that, since the government did not fall, price stabilization 'worked.'

Price stabilization was important because it was an essential element in the pro-poor development policy. It arguably 'worked' because Indonesia moved from a hopeless economic situation in 1966 to a very high growth rate, and poverty was reduced dramatically. Low and stable rice prices were a key component of that broader development strategy, but this strategy could only work with rapidly rising productivity of Indonesia's rice farmers.

There were some special circumstances. Technocrats basically set policies and were supported by the political structure (the President). Sound macroeconomic policy was followed. Price stabilization was part of an ambitious development effort with heavy emphasis on agricultural research, extension, irrigation, and input supply. New high-yielding technology was introduced. Rural roads expanded

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<sup>11</sup> This case study summary was prepared by C. Peter Timmer in June 2016.

significantly. Petroleum reserves were available and exploited. Foreign assistance was abundant. BULOG, which implemented the price stabilization effort, grew out of a structured military command with adequate financial resources and an excellent information network.

Thus, price stabilization:

- had a positive effect on food consumption within Indonesia, especially by stabilizing the rising trend in per capita rice consumption;
- was cost-effective; and
- had limited negative effect on other countries – although Indonesia recognized that it was a “large country” in the world rice market.

When the Asian financial crisis hit in 1997/98, the Suharto regime collapsed, and democracy took hold. BULOG’s broad-based trade monopoly and price stabilization authority were dismantled. In the early 2000s, in what was a conscious political choice because of import restrictions, retail rice prices began to rise – well above world prices. For nearly two-thirds of rural households in Java, higher rice prices mean lower real incomes and more poverty. High prices keep inefficient farmers in rice production, providing disincentives for them to change to consumer-driven, high-value commodities, an essential transition for sustained economic growth over the longer run (and higher incomes for small farmers).

As the offset to a political strategy of wooing the loyalty of rice farmers via high prices, the targeted food subsidy programme became the government’s single most important policy instrument for protecting food security. What eventually emerged as the *Raskin* (food for the poor) programme had the best of intentions and was well conceived, but was poorly implemented.

Under democracy, a radical decentralization basically tied the hand of the central government agencies and opened the door to locally induced corruption that undermined *Raskin*. BULOG was reorganized into a Perum (a public corporation), rather than a government agency reporting to the President or the cabinet, resulting in hiding various costs in the *Raskin* accounts, but without any true public responsibility. Type-I (exclusion) and Type-II (inclusion) targeting errors grew. Costs have risen. Corruption is a very significant, and visible problem. Waste has mounted. There have been four significant evaluations from which recommendations have emerged, including: strengthen targeting; reduce ‘leakages’; increase transparency and accountability; strengthen oversight and monitoring, including ‘socialization’ (community responsibility); without significant changes in the above, return to price stabilization only.

In conclusion, if the policy discussion is restricted solely to the future of *Raskin*, a sensible analyst is likely to agree with the widespread sentiment in Jakarta’s community “kill it off.” But a discussion about the broader role of food security in the development process requires a much more nuanced and historically informed view. Indonesia needs a new food policy.

Overall, in-kind transfers:

- had a limited, and highly questionable in statistical terms, effect on food consumption within Indonesia;
- were not cost-effective; but
- had limited negative effect on other countries.

To summarize the contribution of this case study to the three major debates around the role for food reserves in enhancing food security in developing countries:

- *Transfer Tools Debate*. While recognizing broader aims in providing transfers to poor households (either in a situation of crisis to allow them to maintain their food consumption level or in normal time with the aim of reducing chronic malnutrition), the case study only addresses

transferring food, which had highly mixed results. It does not address cash or food vouchers, except as possible alternatives to the *Raskin* in-kind transfer programme. There is no empirical experience yet.

- *Stabilization Tools Debate.* If the aim is to contain grains price spikes, price stabilization (FR) and trade policies (policies that try to regulate imports and/or exports) can be quite effective. Policies that support private storage (interest rate subsidies, rent of warehouses at low prices, support to warehouse receipt systems, etc.) were not discussed because such storage subsidies would be ineffective in Indonesia.
- *Stabilization vs. Transfer Debate.* In a situation of emerging food crisis, the case study does not address whether it is better to try to contain or mitigate price spikes or to compensate their effect on poor households by providing transfers. Timmer (2004) argues that mitigating price spikes is the only realistic strategy in Asia to protect poor rice consumers.

The case study does not address whether it is better to use FR to act on prices or to provide transfers to targeted households – although the early Indonesian programme seemed to do both, because of the *beras pegawi* programme (rice distributed to civil servants as part of their wages), which outlived its economic usefulness in the 1980s. More generally, it does not address whether it is better to promote stabilization tools or transfer tools – although, given the historical context (which is significant), the study favours FR because the stability in rice prices that FR permitted generated an economic growth which resulted in increased income for poor households (that is, ‘transfers’ in some ways) and substantially reduced poverty.



## CASE 7 Efficiency of food reserves in enhancing food security in developing countries: The case of Nigeria<sup>12</sup>

The food security challenge in Nigeria began before independence but intensified after independence as agriculture lost to oil exploration as the top foreign exchange earner. Within a few years after independence, the agricultural sector transited from a net foreign exchange earner to a net foreign exchange drain. Commencement of large-scale oil exports in early 1970s led to near abandonment of agriculture and disappearance of the cocoa mountains in the West, the oil palm and kernel heaps in the East and groundnut pyramids in the North. Food insecurity gained national attention during the period but the policy response was food importation rather than a return to self-sufficiency in domestic production. Efforts to tackle the challenge through domestic production by subsequent governments were ineffective and failed to achieve any tangible outcomes.

**Table 3** Nigeria's agriculture and food statistics

	1990	2000	2014
<b>Setting</b>			
Population (million)	95.6	122.9	178.5
Population, rural (million)	61.9	70.8	86.6
Urbanization (%)	35.3	42.4	51.5
Area harvested (million hectares)	34.0	65.0	100.0
<b>Hunger Dimension</b>			
Cereal import dependency ratio (%)	6.4	13.6	21.7
<b>Food Supply</b>			
Food production value, 2004-06 (million int. dollars)	15,138	25,335	36,075
Agriculture, value added (% GDP)	32	26	20
Food exports (million USD)	158	262	1,219
Food imports (million USD)	480	1,017	6,402
<b>Net Trade (million US\$)</b>			
Cereals	(119)	(493)	(3,211)
Fruit and vegetables	(2)	(17)	159
Meat	-	(1)	(11)
Dairy Products	(73)	(134)	(519)
Fish	(166)	(169)	(1,142)

Source: FAO Statistical Pocketbook 2015.

The first national agricultural policy of 1999 placed self-sufficiency in basic food supply and attainment of food security as its foremost objectives, and launched a series of food security initiatives to raise productivity in food production through technology transfers and large-scale irrigation programmes to support all-year food crop farming. Successive governments built on the efforts initiated in the policy and, in particular, food sufficiency received a remarkable boost in support in the policies of the administration that began in 2011. However, in spite of the efforts and achievements, the country grew more dependent on food imports owing to growing population and insufficient local production, thus intensifying the food security challenge (Table 3). Between 1990 and 2014, local production grew by 138 per cent while net food import grew by 1,510 per cent, net cereals import grew by 2,600 per cent,

<sup>12</sup> This case study summary was prepared by Chukwuka Onyekwena in June 2016.

and cereal import dependency rose from 6.4 per cent in 1990 to 21.7 per cent in 2014. Yield growth in crop production has been lacklustre and falls substantially below global trends. Thus, international commodity trade is central to the country's food security making external markets a salient component of food security. There is no specific policy or strategy for external sourcing of food to complement the reality. Instead, efforts continue to be centred on local production where self-sufficiency has been an elusive goal.

Nigeria's food reserve programme was launched in 1987 in response to the need for greater capacity to respond to food security challenges during natural disasters. The public food reserve architecture is a three-tier system that includes the strategic grain reserves operated by the federal government, which aims to hold 5 per cent of total reserves, the buffer stock programme operated at the state level to hold 10 per cent of public reserves, and on-farm storages at local government level expected to hold the remaining 85 per cent. However, this decentralized policy is neither backed by a coordinated strategy not supported by earmarked financial resources. The operation of food reserves also varies at different levels. While the federal storage programme is principally focused on response to internal disasters and food aid to friendly neighbouring countries facing food crises, the state buffer stock programmes are principally commercial programmes of buying and selling essential grains at times of low and high prices respectively. On-farm food storage programme operates as a hybrid of the federal and state programmes.

The federal strategic reserve silos are empty for the most part of their existence. There is no programme to systematically fund the accretion of reserves against contingencies. The operational mode of the strategic reserves deduced from the limited data available is that grains are purchased when the need arises. State buffer stocks are for the most part empty. When grains are reserved, they are kept in warehouses where conditions prevent holding the stocks for a long period of time. Anecdotal evidence suggests that on-farm storages are vast, but there is no systematic data available on this segment. Private reserves are operated as commercial activities in the large part, and are held by individuals (farmers, traders and middlemen, and merchants) and private companies (millers and manufacturing companies using grains as raw materials). It is estimated that grain merchants, traders and middlemen dominate private reserve holdings in the northern zones while private companies and marketers dominate in the southern zones.

The financial requirement of building up stock is quite large, and governments are unable to allocate the needed funds on food storage. It is estimated that the strategic grain reserve department would require 110 billion Nigerian naira (NGN) to stock all the strategic reserve silos in 2014. This cost is monumental when compared to budget allocation of NGN 37 billion to the entire agriculture sector for the year. In addition to stocking costs, silos require frequent aeration and temperature checks, which make use of electric power challenging due to frequent power outages. Owing to the enormous financial requirements of stocking, managing and maintaining the silos, the federal government has recently begun the process of concessioning all-but-four of the federal silos to private operators.

The findings suggest that public food reserves have not played a substantial role in food security in Nigeria, particularly in the moderation of grain prices. Although the infrastructure exists, the costs of using and managing reserves are enormous. There is a possibility that permanent supplies to poor households from public reserves exist at the subnational level, these are not widespread. Private food reserves are widespread but serve mostly private and commercial interests, and thus are unlikely suited to price moderation.

## CASE 8 Rice stocks, policies and food security in the Philippines<sup>13</sup>

The food security programme in the Philippines is focused on rice, the country's staple food. Authorities ensure that rice is available to the population at affordable and stable prices. They have strived to make the country fully rice self-sufficient, restricting imports to maintain a local price that gives farmers an income to stay in rice. To offset high prices, the programme has a rice consumption subsidy targeted for the poor. Seasonal rice price fluctuations are smoothed with intra-year rice reserves. Occasionally, they provide farm price supports in the event of a bumper rice harvest. Deficits in the rice sufficiency targets due to whatever reasons, most of which are related to extreme flooding, are met with rice imports by the government.

### 8.1 The National Food Authority

Judging from the age of the parastatal, the National Food Authority (NFA), which has run it, this programme is approaching half a century old. The NFA has both a regulatory and commercial functions, which places it with a conflict of interest. It is vested with a monopoly in rice imports, a non-tariff measure that is temporarily allowed by the WTO until 2017. The public corporation maintains the public rice stocks, injects rice into the market to influence the local price, procures rice paddy from farmers when needed, and makes rice available for the poverty-targeted rice consumption programme.

As the NFA is designed to buy high and sell low, it usually generates a cost for the government. At the turn of this millennium, the NFA had mainly sourced its buffer stock from rice imports, which are priced about 40 per cent lower than local prices. The margins for rice imports have thinned through the years, particularly because of rising logistics costs and spikes of rice price in the world market. In fact, the big push down to indebtedness was in 2008 when world rice prices hit the roof. The NFA imported more rice than the country needed at such high prices only to unload the stocks two years later at a huge discount because of quality problems. Its corporate debt is now approaching 250 billion Philippine pesos (PHP), and is almost certain to increase further if the food security program is unchanged.

The factor that pushed the government to adopt this parastatal business model for food security has been the relative underdevelopment and lack of adequate competition in product, labour and credit markets in rural areas, or a lack of logistics infrastructure and lack of access of private sector to foreign exchange due to exchange rate restrictions. But these are problems of three or four decades ago as pointed out by Rashid et al. (2008). In those times, private traders had been observed in such markets to reduce the net earnings of rice farmers, particularly if the latter needed to sell their output during harvest when prices were low, or had pledged their output to creditors in exchange for credit. This turned out to be the quandary of the green revolution. Its success only raised the prospect of its lack of sustainability, when farm prices fell because of higher yields. To sustain higher productivity, the Philippine government had to support farm prices in order to make rice farming using higher yielding varieties attractive to farmers. That is not even a primary activity of the NFA now. There is also the concern that private traders would only charge non-competitive rice prices to consumers compromising food security. But that is so if the government restricts rice imports to just the NFA.

A second factor includes the administrative convenience of channelling public funds into the industry. Thirdly, the government had enabled the NFA to regulate the industry they themselves are among the players, putting up discriminatory policies and spending public resources to subsidize production or consumption to the disadvantage of the private commercial players.

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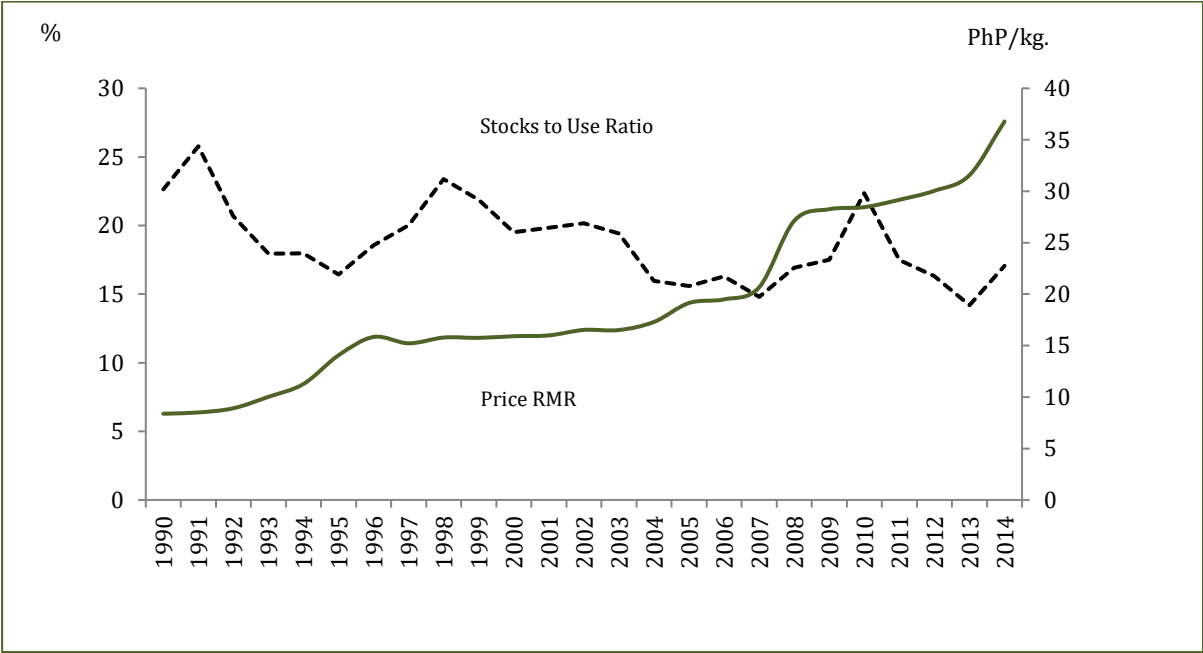
<sup>13</sup> This case study summary was prepared by Ramon L. Clarete in June 2016.

The NFA’s charter has assigned multiple related tasks to the agency, and conflicts of interest situations (Col) arise from the arrangement. The sharp deterioration of the NFA’s net worth and sharp increase of its corporate debt indicate the costs of the moral hazard problem in the role of the NFA. In 2008 alone, the NFA incurred PHP 36 billion, and only to lose that investment two years later. The Col situation is likely exploited given asymmetric information, high monitoring cost, and poor alignment of the personal interests of agents running the NFA with the public interest. The arrangement is there to exploit economies of scope. However, **the Col situations coupled with high performance monitoring costs of the agent makes the case against the arrangement strong.**

**8.2 Rice games that NFA and private traders play**

**STU ratios and prices**

The policy objective in food security is to keep rice available at the price seen to be reasonable by the population. Extreme price spikes as what happened in 2008 in the world market or in 1995 in the Philippines indicate failure. Rice stocks-to-use (STU) ratio is an important indicator of rice prices. A low STU ratio makes markets vulnerable to excessive price volatility even with only moderate supply or demand shocks, if such are accompanied with inaccurate information on the extent of the shock (Wright 2009). World annual rice STU ratios plummeted in the early 2000s, and just before the rice crisis in 2007 to 2008 were at their lowest level, 18 per cent (Figure 6). In 1995, the Philippines had an extreme spike of rice prices.<sup>14</sup> Before that happened, the STU ratios in the Philippines fell during the first half of the 1990s. Even though the 2008 rice crisis was global, the Philippine rice STU ratio had likewise been falling in the first half of the 2000s. There was another episode of declining STU ratio in the first half of this decade and, surely enough, rice prices in the Philippines went up. After the price spike, the STU ratios tend to rise.



Note: RMR = Regular milled rice.  
 Source: Philippine Statistics Authority.

**Figure 6** Philippine stocks-to-use ratio, 1990 – 2014.

<sup>14</sup> Not only were prices high, the supply was low as well. The poor had to queue at NFA warehouses or distribution outlets to get rice.

## Who holds the stocks

Three institutions hold rice stocks in the Philippines and they have varying objectives in doing so: households, private rice traders, and the NFA. Households hold because they are less confident of rice markets or transactions cost is high in buying rice from them. Private traders maintain reserves because they can earn profits from storing at a time when the country has a rice surplus and selling them during lean period, which is in the third quarter of the year. The NFA is mandated to hold stocks to keep prices at affordable levels and stable. The interaction of the three is an important determinant of local rice formation.

Households hold nearly half of the country's average monthly rice stocks in a year from 1980 to 2015. The public sector came second, with a share of 28.47 per cent, and last is the private trading sector, with 22.79 per cent. These are some of the variations. In the 1980s, the decennial average share of the mean monthly stocks households hold was 54.07 per cent of the total. The share came down to 40.50 per cent in the period from 2010 to 2015, which may reflect the drawdown of rice stocks in the first half of the 1990s just before the 1995, and in the years in 2000s just before the 2008 rice crisis.

So households contribute to the decline of STU ratios just before the price crisis. This may be explained by the following: i) households have greater confidence in markets, reducing their speculative stocks; ii) their demands for rice increase, perhaps due to higher per capita incomes; or iii) there is less rice that they can buy because of reduced supply.

The interesting game to watch is between the private traders and the NFA as both have varying objectives. The former wants rice prices high, and the latter low. If this is during harvest, the former wants rice paddy prices low, while the NFA wants them high. Their strategies are the injections of rice in the market, or the in the case of rice paddy the quantity they purchase.

Let's take one case, the 1995 rice price crisis. So STU ratios declined in the first half of the 1990s. Private commercial stocks increased from a share of 17.61 per cent in the 1980s to 27.72 per cent in the 1990s. The NFA stocks on the other hand fell: from 28.33 to 24.57 per cent. If one can see stocks as ammunition to attain one's objective, the private traders did rake it in 1995. Rice prices went up. The severity of that was accentuated with a major mistake of the NFA and the Department of Agriculture. They thought the country's rice harvest was higher than what turned out, and they learned of their mistake when there was no more time for the NFA to import rice.

Then there was the 2008 rice crisis. This time the public reserves were high, in fact too high. And accordingly, local rice prices were stable and affordable. The lesson here is that who holds more of the stocks is likely to attain its policy objective.

But there is one point that needs appreciation. These games between the NFA and the private traders are not going to happen if rice trade is liberalized. **In effect, the government is shooting itself in the foot by making its work of securing food security harder by restricting rice imports.**

### 8.3 Leakages in Rice Consumption Subsidies

Jah and Mehta (2009) provided interesting insights into the operations of the NFA rice subsidy programme. First, only about 16 per cent of the population had availed of the programme, and they attributed this performance to high participation costs. Secondly, only about 25 per cent of the poor have availed of the NFA rice subsidies, while nearly half of those who were able to purchase NFA at its official prices are non-poor. The programme leakage is higher in urban than in rural areas. Thirdly, for every dollar that NFA provides as rice consumption subsidy, it spent 2.21 dollars assuming there is no leakage of benefits of the programme in 2008 (Table 4). While Jah and Mehta (2009) cushioned this finding as consistent with what is observed in other countries (citing UN-ESCAP 2000), the

concern is that programmes such as that by the NFA has been very costly for the Philippines. Jha and Mehta estimated that the operational cost of the NFA rice subsidy programme (that is, price stabilization and targeted rice distribution programmes) is 2.5 per cent of the Philippines gross domestic product (GDP).

**Table 4** Philippine price subsidy: cost-benefit calculations

Measure	Unit	2006	2007	2008
Effective NFA programme cost	billion pesos	16.4	18.6	68.6
Maintenance and other operating expenses	billion pesos	6.4	1.6	4.2
Less: Net Profit (loss) from sales	billion pesos	-10.0	-17.0	-64.4
Consumer price subsidy = retail price of rice – NFA rice retail price	pesos per kilo	5.6	6.5	12.4
Imputed volume of NFA sales	million metric tons	1.6	1.9	2.5
Total consumer subsidy	billion pesos	8.7	12.4	31.0
Cost-benefit ratio = NFA cost/consumer subsidy		1.89	1.50	2.21
Cost-benefit ratio, assuming 50% leakage		3.77	3.01	4.42

Note: Data used for NFA sales covers other products than rice; however, because the NFA sales are mainly made of rice, it provides a close approximation of the rice subsidy cost.

Source: Jha and Mehta (2009).

Using survey data, the World Bank (2001) in its review of the “Filipino Report Card on Pro-Poor Services” had similarly observed these results. Only 15 per cent of the respondents reported they had bought NFA rice. The rice bought tended to both of low cost and low quality. Proportionally, more poor people availed of this rice compared to upper income classes. However, their absolute number was almost the same as the non-poor who also reported they purchased NFA rice. These findings ought to be important pieces of advice to the government of President Duterte in the Philippines. Reportedly since this is not adopted yet, the government will give a sack of rice to all the poor in the Philippines on a regular basis, at least four million of them. This is a gargantuan task, which will just make this otherwise well-intentioned programme vulnerable to leakages. **The country is better off giving money to the poor through its conditional cash transfer programme, and letting the poor decide where they buy the rice.**

## CASE 9 The role of food reserves in enhancing food security: The experience of Senegal<sup>15</sup>

Senegal belongs to the Sahel zone and, as such, is prone to recurrent climatic challenges, structural deficits in food production and price volatility. The country's food situation has deteriorated steadily since the 1970s and this trend has been hard to reverse due to urbanisation, high population growth that affects cereal consumption in a context of insufficient increase in cereal production. The result is serious food dependence, permanent food insecurity, and frequent food crises for the most vulnerable groups. Despite efforts made over the years to ensure food self-sufficiency, Senegal remains a food-deficit country. The coverage rate of its cereal needs through domestic production has varied between 30 and 65 per cent over the past 10 years.

Due to this persistent cereal deficit, the constitution of food stocks has always been translated through various policies initiated by the Senegalese authorities albeit with different goals and ways. Prior to the liberalisation policies of the late 1980s, the marketing of locally produced and imported cereals followed strong state regulations, involving mostly public and parastatal organisations. The government also required the parastatal agency for price stabilisation (*Caisse de péréquation et de stabilisation des prix*, or CPSP) to dispose at any time a rice buffer stock that amounts at least to two months of national consumption. Likewise, because cereal production fluctuates considerably and causes significant fluctuations in grain prices, the government put forward the food security commissariat (*Commissariat à la sécurité alimentaire*, or CSA) to stabilize prices of these cereal products (millet, maize, paddy rice). CSA interventions for price stabilization and producer access to markets were not very effective. Reducing price variability in the local cereal subsector has been an elusive catch. As a result, the government decided to end the experience in 1988 and to refrain from price stabilisation policies of millet and maize.

The high costs of managing this food security system and the policy environment of structural adjustment of the 1980s and 1990s encouraged Senegalese authorities to end the use of food reserves despite the context of food insecurity and recurrent shocks. In fact, significant changes occurred in the late 1990s with the creation of the National Food Security Council (*Conseil national à la sécurité alimentaire*, or CNSA) in 1998 and the development of a food security strategy in 1999. This marks a turning point because the strategy indicates clearly that the maintenance of food security stocks is not necessary insofar as Senegal is a coastal country and can deal in a relatively short time to stock up. The process of liberalisation of the rice sector, which began in 1995, culminated with a devolution of the monopoly on imports and distribution of broken rice to the private sector. Likewise, and as a support to the process, a rice market management and monitoring unit (*Cellule de gestion et de surveillance des marchés du riz*) was created along with a market regulatory agency (*Agence de régulation des marchés*, or ARM). Furthermore, by Ministerial order, a market information system for rice was established. This institutional environment has contributed to preventing the establishment and maintenance of a food reserve, considered too expensive by the government of Senegal.

With the change of political regime in 2000, policymakers decided the replenishment of the food security stocks for use in case of food crises (during the lean season) and/or unexpected shocks. In reality there is no stock on site but a budgetary provision called replenishment of food security stock (a budget line). In principle, the CSA uses the funds provided following specific procedures. Procurements are made by tender procedure following which two suppliers are retained for two years. Goods are bought and direct redistribution is made immediately and with fast rotation. So there is no palpable physical stock. Although the CSA has 71 stores spread all over the country with a total capacity of 87,340 tons, these are not used for long to medium term storage. When needed, the CSA

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<sup>15</sup> This case study summary was prepared by Ibrahima Hathie in July 2016.

had the capacity and the knowledge to handle the necessary volumes. The distribution is made to people who cannot make ends meet during the lean season and to religious leaders who organize religious ceremonies. The funds allocated to this budget line are generally limited. The distribution rules of the available goods are unclear, and political interferences are numerous. A recent audit noted the lack of a manual of procedures. Religious ceremonies use most of the provisions – there are about 735 religious events during which the CSA is requested to provide rice support.

Supply is made with rice. The government encourages the use of locally produced rice, but suppliers usually complain about logistical constraints due to dispersed production and high costs for its aggregation. According to the CSA, suppliers have tried to stock up at the Senegal River valley (the main rice basket) in 2015 but they encountered several difficulties: rice availability (that is, problems to gather large volumes in a short time span), quality from small-scale processors, and high prices offered by modern processing plants that cannot match the prices offered by suppliers in their responses to the tender (based on import prices). Due to the procurement procedures, a restricted tender cannot be made on local rice only.

According to a high-level official, food crisis is not budgeted. Because of the lack of food security stocks, when a shock occurs, government officials tend to take two complementary actions: they resort to development partners; and they also print guaranteed letters that allow suppliers to commit and get resources from a bank. In 2013, for instance, the government emitted a special guarantee of FCAF 5 billion of which 2.6 billion were spent. In 2015, the government was able to fund its intervention through the African Risk Capacity (ARC) funds. ARC funding allowed covering much of the operations with FCAF 5.6 billion for food security and 3.2 billion for safeguarding livestock (cattle feed).

The global food price crisis of 2007/08 highlighted the vulnerability of Senegal over the volatility of the international price of rice. By September 2007, facing soaring prices including energy, the government decided to suspend customs duties of 10 per cent applied to rice. Rice imports have been exempt from value-added tax for several years. The suspension of duties boosted imports, which reached exceptional levels in 2007 well above the national needs without the desired (expected) effect on lower consumer prices.

From April 2008, confronted by the severity of the problem, the government took several measures including: i) limiting margins of the various market intermediaries; ii) supporting the purchasing power of end consumers by a grant of FCAF 5.1 billion between May and July 2008; iii) establishing reference stores to improve access to basic products at moderate prices; and iv) launching the rice self-sufficiency programme. This measure was very expensive and its implementation has led to supply rationing.

From July 2008, coping with the budgetary difficulties and the limited impact of the measures taken so far, the government stopped subsidies and took drastic control measures. Authorities put in place the following measures: i) a toll-free number by the Internal Trade Department, prompting consumers to report traders who participate in the rationing of supply and upward price speculations; ii) an operational security plan of the territory against illegal trade practices (re-exports, arbitrations through outgoing products to neighbouring countries); and iii) a control committee against food retention with a focus on a control of distribution channels by state services. At the same time, the government supported few importers to conduct special operations to supply the local market in rice.

Alongside these unilateral administrative measures, the government negotiated with importers who accepted to incur part of the price increase from the international market, with a limited transmission to domestic prices. Authorities promised to pay the shortfall once the situation has stabilised and the fiscal situation would be less tense. This agreement lasted only a few months due to the persistence



of the crisis and the heavy financial burden for importers. The breakdown of the deal resulted in a greater transmission of the international price changes on the domestic market prices.

Senegal's current food security strategy recognises the importance of the reconstruction of emergency food stocks even though the modalities for constituting these FR are still not clearly specified. The principle of having a mixed strategy involving, on the one hand, a small food reserve and, on the other hand, the availability of financial resources that could be mobilised when needed, seems widely shared. However, the practical arrangements are not yet specified. Of prime importance is the need for predictability of financial resources and food to deal with emergencies.

## CASE 10 The role of strategic food reserves in enhancing food security in developing countries: The case of Zambia<sup>16</sup>

Zambia's experience in attempting to stabilise food prices through managing strategic reserves, pricing, and marketing and trade policy instruments has achieved mixed results, greatly influenced by the political economy in the country.

### 10.1 Lessons learnt

There is no question that Zambia requires a well-managed strategic grain reserve to stabilise staple food prices for the benefit of both consumers and producers. However, throughout the case study, it was apparent that there are no clear established modalities on how purchases or releases on the market are triggered by the agency responsible for managing the stocks. Instead, there is a desire by some policymakers for the government to be the biggest market player with no clear mandate. The failure to have clearly established price stabilisation policy causes panic and knee-jerk policies with few winners and many losers. Below are some key lessons learnt that came out of this case study:

- Maize remains an important staple food crop for poor households. Short-term price spikes arising from poor implementation of government policy have severe consumption and food security consequences among the poor households, who government aims to protect in the first instance.
- Staple food price stabilising policies tend to be implemented in ad-hoc, stop-and-go, and unpredictable ways that generate uncertainty for participants in the maize marketing system and create unintended consequences for the performance of food markets. Government officials involved in these policy measures do not realise these policies as ad-hoc; after all, they respond to perceived needs to influence the market to protect consumers and/or farmers.
- Increase market participation of the Food Reserve Agency (FRA) has resulted into raising maize prices above the market. However, this market intervention has been regressive as it disproportionately benefits the relatively better-off households while having negative effects on extremely poor households who spend close to half their food budget expenditures on staples.
- Unpredictable implementation of government interventions in maize market has led to reduce private sector participation. This has reinforced government's perception that markets do not function effectively, hence the call for continued and even more proactive government involvement in maize marketing.
- Informal grain markets tend to become very thin in the hunger season (November through March) after the majority of smallholders' surplus production has been bought up and fed into formal marketing channels. Once in the hands of formal sector marketing agents, grain rarely gets back into informal channels.
- Government consumer subsidy through selling subsidised maize to millers is very ineffective and does not lower retail mealie meal prices.

### 10.2 Policy Recommendations

Zambia has great potential of becoming a regional breadbasket but to achieve this status, there is need to address some fundamental policy challenges facing the staple food market. Several policy actions offer potential win-win options for balancing the food price dilemma. These policy options and recommendations are discussed below.

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<sup>16</sup> This case study summary was prepared by Anthony Chapoto in June 2016.

## **Fostering Private Sector Market Development**

As an initial step towards having an effective stabilisation policy, the government should review the country's strategic grain reserve requirement and procurement modalities, and put in place clear trigger mechanisms for FRA grain purchases and releases. In particular, to be sustainable, the government should provide clarity on the role and operational modalities of the FRA in the maize market in order to stimulating more private sector involvement in the sector.

To allay the concerns of the private sector about FRA's involvement into the future, the government should revert to the original FRA mandate as set in the 1996 FRA act of maintaining strategic grain reserves for the country and confining the agency's procurement activities in outlying areas of the country where the private sector finds it difficult to operate. The infrastructure to procure and import grain has improved over the years; there is need for the FRA to explore cheaper alternatives compared to physically holding all strategic reserves for at least eight months.

## **Substitution Among Food Staples**

Consumption diversification provides a key to helping vulnerable households' deal with food price shocks. Nevertheless, the agriculture policy in Zambia remains maize centric ignoring the fact that poor households would be served best if production and consumption of a wide range of foods is promoted. Although, maize remains a popular staple among the poor and vulnerable households, they also consume a wide range of food staples including sorghum, millet, cassava and sweet potatoes. These crops are drought tolerant and could be deliberately promoted as substitutes for maize. Unfortunately, these foods have often not featured in the discussions of food security. Dorosh et al. (2007) reported that neglecting the substitution effects of these substitutes leads to government and food aid agencies to overstate emergency food requirements.

## **Hastening the Operation of Zambia Commodity Exchange**

Zambia has made tremendous steps towards having a private sector-led commodity exchange by passing the Credits Act of 2010 and putting in place a statutory instrument empowering the Zambian Commodity Exchange (ZAMACE) to oversee the setting-up of the warehouse receipt system. With ZAMACE linked to the Johannesburg Stock Exchange/South Africa Futures Exchange (JSE/SAFEX), the market opportunities for Zambia's grain commodities is huge. However, in order to sustain a local commodity exchange, there is a need to have big traded volumes. Given that FRA is one of the biggest market players, the government could make a deliberate decision to help capitalise ZAMACE by purchasing strategic grain reserve requirements through the exchange and have the grains secured in certified private silos/warehouses. The government could be issued with warehouse receipts specifying quantity, quality and location, and these receipts could be traded on the exchange if need be. This could be a sure way of ensuring high volumes required to make the ZAMACE sustainable. Also, the cost of running the current strategic reserve system could be reduced; savings could be used to upgrade the silo infrastructure in the country or for other social welfare programmes. The government could then give long-term lease agreement to the highest bidders as long as these structures are used as certified grain storage for the benefits of farmers and traders.

## **Making Maize Available in Informal market**

In deficit years, the government should reconsider its strategy of releasing large quantities of subsidised maize through large-scale millers alone. It would be prudent to release some of these stocks to the smaller local traders in provincial and district markets, small-scale millers and hammer mills and even small direct sales to consumers. The option of disposing grain to the informal markets would relieve some of the food price pressure on low-income consumers. The private sector would be responsible for the buying, transportation and storage activities at a fraction of the current costs incurred by FRA. The savings could be redirected to other unfunded public investments.

### **Moderating Price Volatility Through Trade**

Last but not least, fostering a sustainable open border policy offers Zambia a financially inexpensive means of reducing the domestic price volatility of staple foods. Assuming that private traders have no restrictions to import or export maize when market conditions permit, then the import parity price would become the upper price bound, while export parity sets a floor below which prices will not fall. If this is allowed to work without frequent government interventions, people will begin to appreciate the important role that trade can play in stabilizing staple food prices. Ad-hoc export or import bans in a small market, such as Zambia, results in significant price volatility. Eliminating uncertainties over government interventions – especially FRA trade volumes, and import and export regulations – would attract more investment into the maize sector value chain, including production, transportation, storage and processing. If the process is transparently managed, it will bring about price stability, which would benefit both consumers and producers at very low cost to the treasury.

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