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Can the ECOWAS Regional Reserve Project improve the management of food crises in West Africa?

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About this working paper

This working paper is one of the products of a study conducted by DAI at the request of the European Commission as part of the advisory service ASiST managed by the unit in charge of rural development, food security and nutrition (C1) within the Directorate General for International Cooperation and Development (DEVCO).

The study has aimed at clarifying the potential role of food reserves in enhancing food and nutrition security in developing countries, and at making 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 Organisation (WTO) disciplines.

The study was conducted 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 other working papers, a compilation of case study summaries, and 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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List of Abbreviations and Acronyms

Cadre Harmonisé Bonifié (CHB)
Common External Tariff (CET)
Economic Community of Western African States (ECOWAS)
European Union (EU)
Least Developed Country (LDC)
Metric tonne (Mt)
Permanent Interstate Committee for Drought Control in the Sahel (CILSS)
Regional Reserve (RR)
Stocks Nationaux de Sécurité (SNS)
West African Economic and Monetary Union (WAEMU)
World Food Programme (WFP)

1. Introduction

1.1 What is the Regional Reserve Project?

The Regional Reserve Project is a project developed by the Economic Community of Western African States (ECOWAS) with the aim of improving the management of food crises in the region. The Regional Reserve Project encompasses three components:

1. Building a Regional Food Security Reserve;
2. Increasing the level of national public stocks; and
3. Improving of the cooperation between national public stocks.

The Regional Reserve will be made of grains (millets-sorghum, maize, rice, enriched cereals) and "gari" (milled cassava) and used to back national tools of ECOWAS Member States when they are facing a food crisis. The Regional Reserve Project is not implemented yet, but the framework is ready and the institutions are in place. The first purchases of grain are currently on-going.

Figure 1: ECOWAS countries

Source: Wikipedia

1.2 The Regional Reserve Project in historical perspective

The idea to create a regional food reserve was born following the 2008 crisis. However, its deep roots probably reach back to 2005, when all Sahel countries faced a major crisis due to the bad harvest of millet and sorghum (drought and locust attack). At that time, public stocks had a very bad reputation: since the liberalisation of grain marketing at the end of the 1980s, rules have been established to restrict their size and control their use. The *Stocks Nationaux de Sécurité* (SNS) were co-managed with the donors (double signature): only targeted transfers were allowed (not interventions to stabilise

prices), only in emergencies (qualified as such by Early Warning Systems), and only to food insecure households.

However, something unexpected occurred after the 2005 crisis: a revival of public stocks. The three Sahel countries (Burkina Faso, Mali, Niger) decided to build a second public stock directly managed by the government. Mali also created more than 700 decentralised public stocks managed by the 700 municipalities of the country. Some elements of the Regional Reserve Project rationale emerged at that time: the wish for more public stocks, the wish for more independence vis-à-vis the international community, and the subsidiarity principle.

Then came the 2008 crisis. This time, the crisis came from international markets in the form of a sharp increase in the price of imported rice. Moreover, shortages occurred on international markets resulting in importers of the different West African countries facing difficulties finding rice to buy. This resulted in a strong lack of confidence in international markets. This is probably the main source of the idea that some kinds of reserves are necessary to manage import delays or delays in mobilising international aid.

Another consequence of the 2008 crisis is that many West African countries implemented export bans with the aim of mitigating price increases on their domestic market. These measures were not effective (they were circumnavigated most of the time, see Staatz et al.), and they demonstrated the lack of solidarity between West African countries. This is probably the source of the proposal to mutualise part of the public stocks. As discussed below, this idea was concretised through two different initiatives: the networking of national public stocks (RESOGEST) and the building of a regional reserve.[1]

1.3 The Regional Reserve Project's policy background and the doctrine of the 'three lines of defence'

The Regional Reserve Project is an additional component to the previous policies aiming to manage food crises: regional and national trade policies, and national and local storage policies. The RR project encompasses not only creating a new reserve (at the regional level) but also increasing the level of national public stocks.

Regional and national trade policies

Since January 2015, ECOWAS has acted as a customs union. Before this date, a customs union already existed in West Africa (the West African Economic and Monetary Union - WAEMU), but only the French-speaking countries of the region were involved. Since 2015, the ECOWAS common external tariff (CET) has replaced the WAEMU CET and has also applied to Nigeria, Ghana, and the other English-speaking countries.

What is of crucial importance from a food security perspective is the level of the tariff applied to rice imports. The fixation of ECOWAS rice CET gave raise to lively debates between the countries that used

[1] However, there is a paradox here because in 2008, as all countries were hurt at the same time by the international markets crisis, mutualised means would not have helped very much.

to heavily tax rice imports to boost local production (especially Nigeria) and countries that used to apply a low tariff to protect consumers (WAEMU CET was fixed at 10%). Finally, ECOWAS CET for rice was also fixed at 10%. These taxes are received by national governments. ECOWAS also receives the proceeds of additional taxes (they account for 2.5% of the value of rice imports).

However, in practice, taxes on rice imports are much higher. Each country applies a VAT on rice and, as these taxes are only paid on imported rice, they play the same role as a tariff on rice imports. The difference is that this tariff is fixed by national governments, whereas the CET is fixed at the ECOWAS level. In practice, for rice, the VAT rate is usually between 15% and 35%, depending on the country.

National and local storage policies

Local stocks

Local stocks or "cereal banks" are collective stocks managed at the local level (villages or groups of villages) by communities. Therefore, strictly speaking, these stocks are not public stocks except in Mali where they are managed by municipalities (each of the 700 municipalities of the country has its own "cereal bank"). These local stocks seek to improve food security in the community. They exist mainly in the three Sahel countries (Burkina Faso, Mali, Niger). A rough estimation is that in each of these three countries around 1,000 cereal banks are operating, each of them managing around 15 metric tonnes (Mt) of grains. In the other countries of the region, cereal banks also exist but their number is rather small.

The narrative of cereal banks is that they contribute to stabilising prices and reducing traders' excessive margins and speculation. However, in practice, they manage rather small quantities and their selling price is usually close to the market price (otherwise they would not cover their costs, their working capital would vanish, and they would be likely to collapse). Therefore, if they are not able to stabilise prices or to provide sales at subsidized prices, what is the role of cereal banks?

It seems that they provide two kinds of added value. The first one is "psychological": whatever experts think about the ability of such small cereal banks to provide a response to food crises, when a cereal bank is around people feel more secure. This feeling of security does not only provide psychological well-being. It is also likely to influence behaviours: when people feel more secure, they are less likely to panic when prices rise. The second value added by cereal banks is enabling poor households to purchase small quantities. Usually, in rural areas, grain transactions are made by bags (contrary to towns where retailers offer small quantities). Therefore, as most cereal banks (not all) sell small quantities, they give an improved access to food to households who would face difficulties finding the money to buy a bag.[2]

National public stocks

In the region, only Sahel countries (Burkina Faso, Mali and Niger) and Nigeria have significant public stocks. Some coastal countries do not have any public stocks (Côte d'Ivoire, Guinée Bissau, Senegal), while others have a very small one (10,000 to 15,000t in Benin and Togo). Public stocks in Sahel countries are clearly higher, although their level is quite low compared to consumption needs. For instance, the public stock level of Mali in March 2011 accounted for less than 1% of national

[2] I am grateful to Roger Blein (Bureau Issala) for drawing my attention on this second value added by cereal banks.

consumption (around 3 days of consumption). Since 2005, each Sahel country has two physical stocks: the *Stock National de Sécurité* (SNS) created at the end of the 1980s and co-managed with the donors, and an 'intervention stock' created after the 2005 crisis and managed by the country government alone. The SNS can be used only following an early warning system alert and the agreement of both the government and the donors group (double signature). It is used exclusively for providing food transfers (not for price stabilisation).

The size of the SNS is structurally below its target level (35,000 Mt for Burkina Faso and Mali; 100,000 Mt for Niger). The intervention stock can be used by the government for stabilizing prices or providing transfers, although due to the low quantity stored, any attempt to act on prices is unlikely to be effective. Finally, Nigeria probably has the biggest stock of the region, but its level is unknown (as such Nigeria is for West Africa what China is for the World market).[3]

Table 1: Public storage capacities and national public stocks in ECOWAS countries

COUNTRIES	Public storage capacities	Level of public stocks (March 2011)		
		Total	SNS*	SIE
BENIN	18,080	n.a.		
BURKINA FASO	98,100	38,000	28,000 [35,000]	10,000
CABO VERDE	46,390			
CÔTE D'IVOIRE	69,796	0		
GAMBIA	372,500			
GHANA	80,218			
GUINEE	116,000			
GUINEE BISSAU	12,280	0		
LIBERIA	17,400			
MALI	136,150	37,000	17,000 [35,000]	20,000
NIGER	154,700	62,000	32,000 [100,000]	30,000
NIGERIA	1,346,000	n.a.		
SENEGAL	87,340	0		
SIERRA LEONE	28,300			
TOGO	92,500	n.a.		
TOTAL	2,675,754	137,000	77,000	60,000

Sources: CSAO (2012) for public storage facilities, UEMOA (2011) for the levels of public stocsk in UEMOA countries.

*The figure in brackets indicates the target level of SNS.

Although the level of national stocks is low, public storage capacities are quite important (part is rented to traders). This may render less difficult any strategy of increasing national public stocks (as we will see, this strategy is part of the Regional Reserve Project) and offer opportunities for the future Regional Reserve.

[3] As we will see, the feasibility study for the reserve assumes that the size of this stock is around 150,000 Mt, although some experts thinks that it may be much higher (between 300,000 and 400,000 Mt).

Following the 2005 crisis, a network of the national public stock agencies of the region has been created by the Permanent Interstate Committee for Drought Control in the Sahel (CILSS): the RESOGEST. Its objectives are:[4]

1. Developing technical support between the public stock agencies (those in the three Sahel countries have much more experience and capacities in this area); and
2. Promoting loans of grain between public stock agencies to mutualise the risk (the decision has been made that 5% of the reserve of each SNS should be available for public stocks of other countries of the region, but the conditions to access this 5% still need to be clarified).

The doctrine of the three lines of defence

The Regional Reserve Project is backed by a doctrine based on the principle of subsidiarity. This doctrine is usually referred to as the "three lines of defence". The principle of subsidiarity means that in case of crisis, local stocks should be used first, and then be resupplied by national stocks, themselves backed by regional stocks.

The Regional Reserve Project not only seeks to add a third level of stocks (at the regional level), but also to increase significantly the level of national public stocks, to improve the interaction between national public stocks (by strengthening the RESOGEST), and to improve the articulation between the different levels of stocks (local, national and regional).[5]

The doctrine of the three lines of defence only relates to storage policies: it does not really encompass the articulation with trade policies (addressed below).

1.4 Scope and methodology of the study

As the Regional Reserve Project is new (the first grain purchases to build the Regional Reserve are still on-going), it is difficult to draw lessons from its experience. However, two reasons justify reflecting on the Regional Reserve Project. First, it is a very innovative tool both in its modalities (the Regional Reserve is a regional tool at the service of national policies) and in its objective (apart from its food security objective, the Regional Reserve Project has several political objectives such as increasing regional food sovereignty and the solidarity between ECOWAS Member States). Second, to some extent, the Regional Reserve project may be a source of inspiration for other regions (the ECOWAS Regional Reserve Project has been presented as a pilot during the G20 2011 negotiations on managing agricultural price instability).

[4] The problem is that the public stock agencies are not the ones who decide on the use of the stock they manage (this decision is made by National Committees for food security).

[5] For instance, procurement of national public stocks can generate interesting sales opportunities for cereal banks (in surplus regions). However, sales or free distribution implemented by national public stock may be very damaging for local cereal banks (in deficit areas) by generating a decrease in local prices that can prevent cereal banks from selling at remunerative prices. A solution to this problem would be to develop contracts between national public stocks and local cereal banks (which would require stimulating the development of networks of cereal banks, otherwise the transaction costs would be too high). For instance, when implementing sales at fair prices (usually around 40% below market prices), national public stocks could rely on cereal banks either by purchasing their grains (at the current market price) or by providing them grains at subsidised prices, allowing them to sell below market prices. The Burkina Faso report (of this study) provides more details on the ways to articulate local stocks and national public stocks.

The Regional Reserve Project is not operational for now but the infrastructure, rules, and institutions are already in place, so it is possible to reflect on the Regional Reserve Project framework. More precisely, two approaches are possible:

1. Evaluating the Regional Reserve building process (infrastructure set-up, institutional design, rules and procedures, constitution of the physical and financial reserves, etc.) and more generally the implementation process of the Regional Reserve Project. Many difficulties arose in this process and the development of the Regional Reserve has been delayed by three years. A specific study has been commissioned to analyse the sources of these difficulties and propose solutions to overcome them.

2. Discussing the relevance of the Regional Reserve Project for improving the management of food crises in West-Africa. Developing this second approach is precisely the aim of the present case study.

This case study will therefore discuss the coherence of the Regional Reserve Project, including the adequacy of its infrastructure, rules, and funding strategy for its objectives (section 2), before discussing its adequacy to address the main characteristics of food crises in West Africa (section 3). More specifically, this case study will identify the main types of food crises faced by the region recently and try to imagine what may have been the effect of the Regional Reserve Project in improving the management of these crises. “Improving” is defined by reference to three criteria related to the objectives of the Regional Reserve Project: reducing food insecurity, improving the food sovereignty of the countries and the region, and increasing the solidarity between the countries of the region. on the conclusion addresses the potential benefits and challenges of the Regional Reserve Project.

2. Internal Coherence of the Regional Reserve Project

This section presents the Regional Reserve Project and discuss its internal coherence (adequacy of its infrastructure, rules, and financing to meet its objectives). The objectives themselves will not be discussed in detail (they express the sovereignty of West-African States), but their relevance regarding previous management of food crises in West Africa will be discussed in the next section. This section begins by presenting the policy background of the Regional Reserve project.

2.1 Objectives of the Regional Reserve Project

The general objective of the Regional Reserve Project is “to effectively respond to food crises alongside State governments and stakeholders whilst contributing to the implementation of ECOWAP/CAADP with a regional food security and sovereignty perspective” (ECOWAS 2012, p. 34). Its specific objectives are expressed as follows (ECOWAS 2012):

“SO1: The Regional Food Security Reserve complements the work carried out by the Member States and provides quick and diversified food and nutritional aid, based on the specific needs of the various communities hit by cyclical shocks, through regional safety tools that combine food and financial resources;

SO2: The Regional Food Security Reserve expresses regional solidarity with regard to Member States and populations affected by cyclical food crises, though transparent, equitable and predictable mechanisms. It enhances local, national and regional capacities in crisis management and facilitates international solidarity to streamline its support by working together with local, national and regional stakeholders as part of an approach based on subsidiarity.

SO3: The Regional Food Security Reserve contributes to food sovereignty and to the region's political, economic and commercial integration, by developing synergies with programmes that target growth in agricultural production, market facilitation and regulation, promotion of social safety net, and risk prevention and management."

The words used clearly show that, as far as *food security* is concerned, the Regional Reserve Project is characterised by:

1. Its focus on managing food crises, not treating chronic malnutrition ("cyclical shocks", "cyclical food crises"); and
2. Its choice of providing transfers, not stabilizing prices, as a mean to manage food crises ("regional safety tools that combine food and financial resources").

These two choices (excluding price stabilization; excluding treatment of chronic malnutrition) were difficult - lively debates occurred until an agreement was found.[6] In the usual typology of food security public stocks, the Regional Reserve would therefore be classified as an 'emergency reserve' (see table 2 below).

Table 2: Typology of food security public stocks

Objective / Timeframe	Stabilize prices	Provide transfers to poor households
Interventions in periods of crisis only	*Stabilization PS*	*Emergency reserves* **ECOWAS Regional Reserve**
Permanent interventions		*Safety net PS*

Source: The typology of public stocks is adapted from OECD (2014)

A careful reading of the specific objectives quoted above shows that the Regional Reserve Project aims to improve the management of food crisis both *vis-à-vis* international aid and *vis-à-vis* national policies (in both cases to complement rather than substitute for them). Moreover, the targeted improvement not only relates to *food security objectives*, but also to *political objectives*: strengthening regional food sovereignty and solidarity among Member States, while respecting a subsidiarity principle based on four scales (local, national, regional, international). The objectives of the Regional Reserve Project are summarized in table 3 below.

[6] The objective of creating a second regional reserve whose aim would be stabilising grain prices is mentioned in ECOWAS storage policy documents, but for now nothing has been done in that direction. The objective of addressing chronic malnutrition is not really addressed by national institutions (except possibly in Ghana), but in some cases by external organisations (in Mali a World bank-funded project, in Niger international organisations and NGOs).

Table 3: Objectives of the Regional Reserve Project

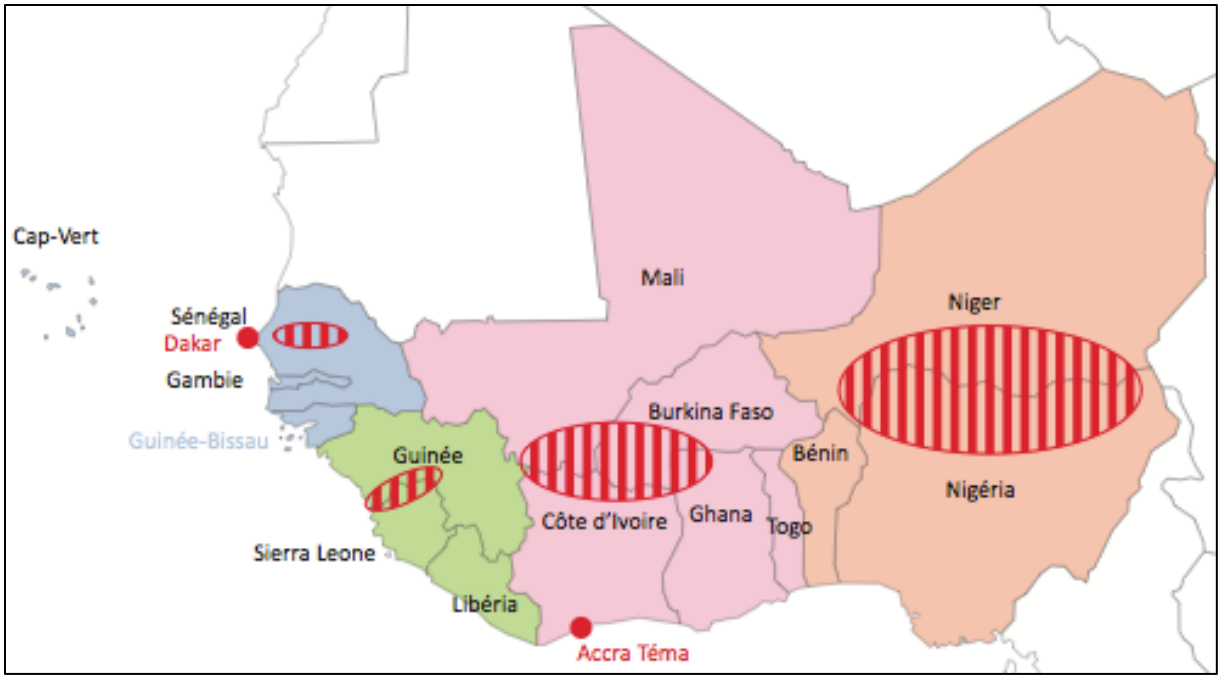
	Political objectives	Food security objectives
Vis-à-vis international aid	**Food sovereignty of ECOWAS member States**	**Improving FS by complementing international aid**
Vis-à-vis national policies	**Solidarity between ECOWAS member States**	**Improving FS by fostering and complementing national policies**

2.2 Infrastructure

Storage facilities

The Regional Reserve Project proposes to use existing storage facilities held by national public stock agencies. The location of warehouses was of course a very sensitive subject. The principles applied to warehouse location were "covering all ECOWAS Members" but at the same time "prioritising fast access to aid for vulnerable Sahel populations, due to the increasing frequency of major crises in this part of the region". The location of the physical stocks was also based on their proximity to major production areas and "the availability of storage facilities as well as the existence of competent institutions with proven experience in managing a food security reserve" (ECOWAS 2012, p. 49). These institutions are the national public stock agencies: NFRA (Nigeria), OPVN (Niger), SONAGESS (Burkina Faso), OPAM (Mali), NAFCO (Ghana) and CSA (Senegal). Four storage sites were selected: "Northern Nigeria / Niger (Eastern subregion); south Mali, Burkina Faso, northern Ghana (Central subregion) Senegal (Atlantic West subregion); Guinea / Liberia / Sierra Leone (Gulf Atlantic subregion), see figure 2 below. Two sites have access to the ports of Tema and Dakar.

Figure 2: Location of Regional Reserve storage sites



Source: ECOWAS (2012)

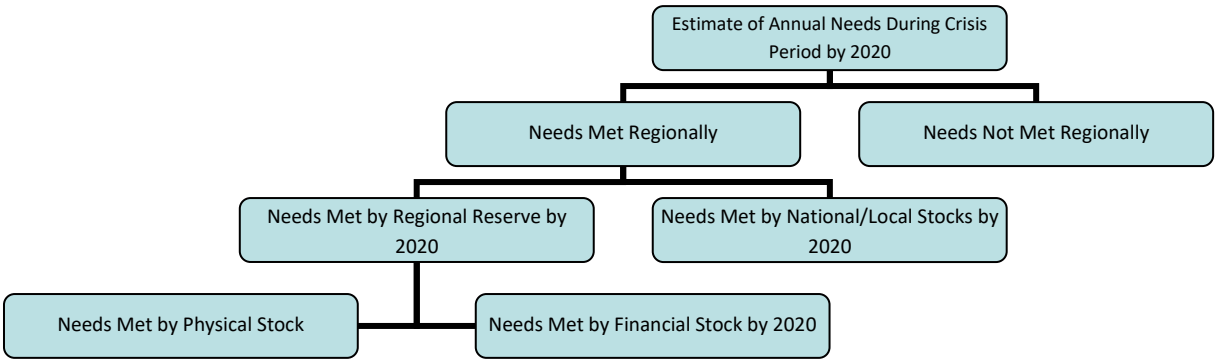
The quantities to be stored at the different sites are correlated with expected needs. The Eastern and Central subregions represent 96% of the physical Regional Reserve, "taking into consideration the magnitude of the needs of landlocked Sahelian countries." (ECOWAS, 2012).

Stocks

The composition of the physical component of the reserve is based on "the major food systems in the region, which correspond to the major production areas, together with the suitability of the produce for storage". Finally, the ECOWAS Commission recommended "starting with a fairly limited range of foodstuffs: cereals (millet, sorghum, maize, rice) and tubers (gari). The proportions of each cereal and the place of gari will vary according to the storage site. The introduction of nutritional products (enriched flour) is recommended from the first stage" (ECOWAS 2012).

The size of the Regional Reserve (and the required increase in the size of national public stocks) has been calibrated by using the method presented in figure 3 below.

Figure 3: Determining the size of the Regional Reserve



Source: ECOWAS (2012)

The analysis was based on "estimates of annual needs during crisis" provided by a retrospective analysis of the food needs of the populations affected by a crisis from 2000-2012. Only the shock that created the most need in each country over the past twelve years has been used, and the figures were corrected to consider demographic growth (based on UN projected population data for 2020). This approach is consistent with the focus of the Regional Reserve on managing crises (not dealing with chronic malnutrition).

The second step was determining the share of the needs that should be "met regionally". This share has been determined by the necessity to manage "the delays in mobilising international aid (financial resources and aid in kind)". These delays have been estimated to be from 1.5 to 2 months for coastal countries and from 3 to 4 months for landlocked countries (ECOWAS, 2012). This led to the decision that the region should be able to cover needs corresponding to 1.5 months for coastal countries and 3 months for landlocked countries[7].

The third step was allocation of the needs that should be met regionally between the Regional Reserve and national public stocks. In the name of the principle of subsidiarity, the decision was made that "the

[7] Taking the upper bound of the ranges (2 months and 4 months) would have led to a reserve close to 600,000 Mt (instead of 400,000) *cf.* ECOWAS 2012, graph 2 p. 42.

Regional Reserve will meet 33% of the needs that should be met regionally, the remaining 67% being directly backed up by national stocks."

This procedure enabled estimation of the required size of the Regional Reserve (411,554 Mt) and national public stocks (841,083 Mt). Given the current size of national public stocks (estimated to 227,000 Mt[8]), the required increase in national public stocks is estimated to be 614,083 Mt (see table A.1 in the annex for more details).

The last step was defining the weight of the physical and financial components of the Regional Reserve. "In order to reduce the inherent constraints and costs of the physical storage of food" and because "experience in this area shows that nowadays financial stock can be converted into foodstuffs *almost* immediately" the Member States decided that "one third of the Regional Reserve remains in the form of a physical stock, with the other two thirds consisting of financial stock", with "some flexibility in the one-third/two-third distribution". This method gave a Regional Reserve for the equivalent of 411,000 Mt by 2020, portioned as follows: physical stock = 140,000 Mt and financial stock = equivalent to 271,000 Mt.

The plan is to build the Regional Reserve progressively, and to increase national stocks for eight years beginning in 2013 (see table 4 below). However, the process has been delayed: the increase in national public stocks did not occur, the financial reserve does not exist, and the first purchases for the physical reserve only began in mid-2016.

Table 4: Eight-year plan for building the Regional Reserve and increasing national public stocks (Mt)

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8
Regional Reserve	**0**	**176,380**	**176,380**	**176,380**	**176,380**	**293,967**	**293,967**	**293,967**	**411,554**
Physical Reserve	0	60,000	60,000	60,000	60,000	100,000	100,000	100,000	140,000
Financial Reserve	0	116,380	116,380	116,380	116,380	193,967	193,967	193,967	271,554
National Stocks	**227,000**	**360,464**	**360,464**	**360,464**	**360,464**	**600,774**	**600,774**	**600,774**	**841,083**

Source: ECOWAS (2012)

The composition of the physical component of the reserve will initially be: millet 25%, sorghum 24%, maize 26%, gari (milled cassava) 14%, rice 7%, and enriched flour 5% (RAAF/PASANAO, 2005). The composition of the Regional Reserve by storage location is given in table A.2 in the annex.

2.3 Rules and decision-making procedures

Rules for procuring grains

The general principle is prioritising stock supplies using local products. This supports several specific objectives of ECOWAS regarding food sovereignty and the wish to reduce dependence on imports

[8] According to ECOWAS (2012): data extracted from UEMOA (2011): 77,000 Mt, to which Nigeria's stock is added: 150,000 Mt.

(ECOWAS 2012, p. 55). However, cost may be an additional argument as the price of rice (the main imported grain) is about 50% higher than the price of locally-produced millet, sorghum, and maize. Moreover, "considering the size of the reserve (60,000 Mt initially, 140,000 by 2020), its supply is largely within the scope of the regional production capacity and market". As procuring grains on the local market may generate upward pressures on prices, "the reserve will purchase from the main production areas with surpluses during the post-harvest period".

Two procedures will be used: direct purchases to producers' organisations for specific volumes, and public bids open to producers' organisations, traders, and processors, "establishing a regularly updated list of agreed suppliers". Producers' organisations, traders, and processors will be accredited by the bodies in charge of making product purchases and managing the stocks on behalf of the Regional Reserve according to "specific criteria of capacity and professionalism". Public bids will indicate needs by "specifying product types, characteristics, qualities, specification of lots, purchase methods, time and place of collection (particularly production areas with surpluses or clusters of processing units), delivery locations with an indication of the guaranteed minimum price at the start of the year, as well as the payment terms for suppliers."

Rules for using the Regional Reserve

Each ECOWAS Member State can request use of the Regional Reserve for free (in the name of regional solidarity) up a certain amount, providing that the Member State is facing a food crisis. This amount (now called the country 'quota') is calculated following the methodology used to calibrate the size of the Regional Reserve. The annual needs of the country in case of crisis was estimated (in 2012) by taking the percentage of the population affected by the crisis experienced by this country that created the most need since 2000, multiplying this percentage to the estimated population for 2020, and applying the World Food Programme (WFP) norm (15 kg per person per month). It then assumes that three months of these annual needs should be met regionally for landlocked countries and 1.5 months for coastal countries (the estimated delays in mobilising international aid).

As discussed above, the decision was made that 33% of regional needs should be met by the Regional Reserve and 67% by national public stocks. However, 33% is only an average as the "principle of solidarity […] calls for the Regional Reserve to provide more support to those countries most exposed to risks of shocks that affect consumption, and particularly those states which lack the sufficient financial or physical resources to reduce the risks or mitigate the impact of these shocks." A typology of countries was therefore elaborated depending on whether they are coastal or landlocked and Least Developed Countries (LDCs) or non-LDCs. For landlocked LDCs (Burkina Faso, Mali, Niger), 40% of the needs are covered by the country quota, whereas for countries that are landlocked or LDCs (but not both) this percentage is 20%, and only 10% for coastal non-LDCs (Côte d'Ivoire, Ghana, Nigeria) (ECOWAS 2012, table 5 p. 40).

The resulting country quotas are provided in table 5 below.

Table 5: Country quotas

	Country quotas (tons)	Country quotas (% of the RR size)
Benin	2074	0,5%
Burkina Faso	71766	17,4%
Cape Verde	324	0,1%
Côte d'Ivoire	2205	0,5%
Gambia	3632	0,9%
Ghana	2729	0,7%
Guinea	2298	0,6%
Guinea-Bissau	650	0,2%
Liberia	3022	0,7%
Mali	85023	20,7%
Niger	211829	51,5%
Nigeria	18348	4,5%
Senegal	5039	1,2%
Sierra Leone	1292	0,3%
Togo	1322	0,3%
ECOWAS	411554	100,0%

Source: author's calculation based on ECOWAS (2012). See table A1 in the annex for the detailed calculation.

Countries can get their quota from the Regional Reserve only if they are facing a food crisis. When the Regional Reserve agency receives a query from (one or several) governments of ECOWAS Member States, its assessment and decision are informed by vulnerability analysis, ideally conducted within the framework of the *Cadre Harmonisé Bonifié* (CHB). The CHB framework is the methodology developed by the CILSS and adopted by the region for monitoring food insecurity Theoretically, it allows the food security levels of different countries to be compared). However, this kind of food security assessment is not available for all countries - some of them do not have an early warning system. Therefore, the Regional Reserve Project considers that "upgrading of information systems and the widespread application of CHB is required as soon as possible" (ECOWAS, 2012). Then, the mobilisation of the reserve is triggered by a decision of the Management Committee of the Regional Reserve.

If resources are available in the Regional Reserve, countries can request more than their quotas but in this case, they have to pay. The Regional Reserve first satisfies the demand expressed by the countries within their quotas before considering sales or reimbursable loans to governments, international humanitarian organisations, NGOs or producers' organisations (ECOWAS 2012, p. 31).

The food received by governments should be used for sales at fair prices or targeted free distribution. The financial resources received should be used to finance food vouchers or cash transfers but also to trigger the use of national public stocks (in West Africa, national public stocks can be used only if there is a fund to replenish the stock).

Institutional framework: the reserve's governance bodies

After analysing different scenarios, the decision has been made to establish a specific body dedicated to the management of the reserve but inserted into ECOWAP (ECOWAP is ECOWAS agricultural policy).

2.4 Funding strategy

Cost of the Regional Reserve project

The costs for the constitution of the Regional Reserve (initial allocations of physical and financial capital) and its maintenance (technical management of the physical and financial reserves) are shown in table 6 below. More detailed data are provided in table A.3 in the annex. The cost of building and governing the reserve is estimated to be US$ 263 million over eight years, meaning an average of US$ 33 million/year. These costs vary widely from year to year because of the phased increase of the physical and financial capital." (ECOWAS 2012)[9].

The cost of increasing the level of national public stocks from their current level (estimated at 227,000 Mt) to 841,000 Mt has been estimated to be around US$ 3 million over eight years.[10]

Table 6: Cost of the Regional Reserve Project (in US$ 1,000)

Year	1	2	3	4	5	6	7	8	Total
Constitution of the RR	92	4	2	4	63	6	3	69	243
Physical Reserve	31	5	4	5	24	9	6	31	115
Financial Reserve	61	-2	-2	-2	39	-3	-3	38	129
Maintenance of the RR	3	2	2	2	2	3	3	2	20
Cost of regional solidarity interventions of RR (75% mobilised each year)	67	67	67	67	110	110	110	152	747
Cost of regional solidarity interventions of RR (100% mobilised each year)	89	89	89	89	146	146	146	203	996
Increase of national PS	0	453	453	453	410	410	410	368	2,959
Total Cost (if 75% mobilised each year)	161	526	524	526	586	529	526	591	3,970
Total Cost (if 100% mobilised each year)	183	548	547	548	622	565	562	642	4,219

Source: adapted from ECOWAS (2012), p. 95 and 100.

The cost associated with Regional Reserve interventions (reconstitution of the physical and financial capital after they have been mobilised to help resolve food crises) at Regional Reserve maturity (from

[9] See ECOWAS (2012), pp. 86-91 for more details on the way these costs have been estimated.

[10] See ECOWAS (2012), pp. 98-100 for more details on the way these costs have been estimated.

the eighth year), is estimated at US$ 152 million per year (if the Regional Reserve mobilised only 75% of its financial and physical reserves) and to US$ 202.7 million dollars per year (if it mobilised 100%)[11].

This means that over the eight year initial period of building the Regional Reserve and increasing national public stocks, the total cost is likely to be between US$ 3.97 and 4.21 billion. Then, the cost of the Regional Reserve Project (interventions and maintenance) will be between US$ 154 and 205 million/year depending if 75% or 100% of the Regional Reserve are mobilised every year in the name of regional solidarity (i.e. without any matching contribution from the recipient country or another institution).

Funding of the Regional Reserves Project

The proposed financing structure to cover the constitution and maintenance cost of the Regional Reserve is shown on table 7 below. Two-thirds of this cost will be covered by regional resources and 1/3 by the Technical and Financial Partners. The region contribution is supposed to be made by countries (in the form grains) and Regional Economic Communities (ECOWAS and WAEMU). However, until now only the Technical and Financial Partners provided their contribution (the on-going purchases of the first tonnes of grain are funded by the European Union (EU)). The EU committed itself to provide 60 million euros for the Regional Reserve (within the 11th European Development Fund). In a current EU project (56 million euros), 38 million euros are provided to support the Regional Reserve, among which 20 million euros are devoted to grain purchases.[12] With a price of 400 euro / Mt (delivered in public warehouses), these 20 million euros are equivalent to 50,000 Mt of grain.

Table 7: Proposed financing structure for the constitution and maintenance cost of the Regional Reserve

Thousands$	Year1	Year2	Year3	Year4	Year5	Year6	Year7	Year8	Total Years1 to8
Coasts set-up, maintenance and governance of the total reserve	94 807,00	56 168,00	44 429,00	56 168,00	65 930,00	83 713,00	57 742,00	71 299,00	263 257,00
State contributions (grains)	150 000,00				120 000,00			150 000,00	120 000,00
ECOWAS/WAEMU Contributions	200 000,00	150 000,00	150 000,00	150 000,00	150 000,00	150 000,00	150 000,00	150 000,00	1 250 000,00
Technical and Financial Partners (TFPs) contributions	120 000,00	120 000,00	120 000,00	120 000,00	120 000,00	120 000,00	120 000,00	120 000,00	960 000,00
Annual balance (resources-usage)	-47 807,00	208 832,00	225 571,00	208 832,00	-26 930,00	186 287,00	212 258,00	-29 299,00	-263 257,00
Contributions to funding									
a. % Région + Countries	74%	56%	56%	56%	69%	56%	56%	71%	63%
b. % TFPs	26%	44%	44%	44%	31%	44%	44%	29%	37%

Source: ECOWAS (2012), p. 98.

The financing structure proposed to cover the cost of Regional Reserve interventions and the increase in national public stocks is given by table 8 below. The majority of the funding should stem from the region (almost ¾ of the cost). To do this, ECOWAS should create "a predictable, secure and supportive financial mechanism". The proposal mechanism is a new tax on imports. This tax would be called the "Zero Hunger tax" and its rate would be 0.5% of the value of all imports (except possibly food imports).

[11] See ECOWAS (2012), pp. 91-95 for more details on the way these costs have been estimated.

[12] In addition to the 38 million euros devoted to supporting the Regional Reserve, 18 million euros have been provided for improving information systems, especially early warning systems that produce data on country food insecurity using the Cadre Harmonisé Bonifié (CHB). This improvement of early warning systems is necessary to compare the food security level of different countries and thereby make a fair decision if several countries compete to use the Regional Reserve.

It would be collected in the same way as the CET. However, for now, the Zero Hunger tax has not been implemented (nor alternative measures such as taxing flight tickets or phone communications).

Table 8: Proposed financing structure to cover the costs of Regional Reserve interventions and the increase in national public stocks

Years	1	2	3	4	5	6	7	8	8-years total
Cost of intervention by the total reserve (75% mobilized each year) (thousands of dollars)	66 515,00	66 515,00	66 515,00	66 515,00	109 658,00	109 658,00	109 658,00	152 004,00	747 038,00
Contribution by "Zero Hunger" (0,5%)	-	390 000,00	390 000,00	390 000,00	390 000,00	390 000,00	390 000,00	390 000,00	2 730 000,00
Total regional resources (thousands of dollars)	-	390 000,00	390 000,00	390 000,00	390 000,00	390 000,00	390 000,00	390 000,00	2 730 000,00
Contribution by G20 partners and et to other partners (limited to one-third of regional resources in 3 years 2 to 3) thousands of $)	66 515,00	130 000,00	130 000,00	130 000,00	130 000,00	130 000,00	130 000,00	130 000,00	976 515,00
Total resources (thousands of $)	66 515,00	520 000,00	520 000,00	520 000,00	520 000,00	520 000,00	520 000,00	520 000,00	3 706 515,00
Allocation to national food reserve strategies (national and local stocks) (thousands of dollars)	-	453 485,00	453 485,00	453 485,00	410 342,00	410 342,00	410 342,00	367 996,00	2 959 477,00
Percentage of resources allocated:									
a. to the Régional Reserve (%)	100%	13%	13%	13%	21%	21%	21%	29%	20%
b. to the national food reserve strategy (%)	0%	87%	87%	87%	79%	79%	79%	71%	80%

Source: ECOWAS (2012), p. 100

2.5 Internal coherence of the Regional Reserve Project

We have seen that the objectives of the Regional Reserve Project are:

1. Improving the management of food crises in West Africa;
2. Promoting the food sovereignty of the region and Member States; and
3. Increasing solidarity between Member States.

This section considers whether the proposed infrastructure, rules and procedures, and funding mechanisms are coherent with each objective, taking into account the existing tools and policy background.

<u>Improving the management of food crises in West Africa</u>

Based on the assumption that the delays in mobilising international aid are a major problem in managing food crisis in West Africa (the next section confirms that this assumption is justified given the experience of past food crises), the Regional Reserve project aims to build the means for the region to manage food crises for three months for Sahel landlocked countries and 1.5 months for coastal countries. Considering the current low level of national public stocks, the Member States planned to create a regional reserve and to increase national public stocks.

The Regional Reserve will be made mainly by the staples most consumed by the poor (millet, sorghum, maize and gari), and the storage sites will be located near the main spots of food crises. The indicator chosen to allocate the Regional Reserve (based on the *Cadre Harmonisé Bonifié*) seems relevant as it allows food insecurity in different countries to be compared. The content of the Regional Reserve project seems therefore to be coherent with its objective of improving the management of food crises,

providing that the delays in mobilising international aid are an important part of the problem (as demonstrated in the next section) and that the means provided in the form of increased national public stocks and rights to use the Regional Reserve are correctly used by national governments.

The main concerns are therefore not on coherence but on implementation: to date the Regional Reserve is not in place, national public stocks have not been increased, and the *Cadre Harmonisé Bonifié* is not used by all the countries of the region.

Promoting the food sovereignty of the region and Member States

At first glance, it seems that the contribution of the Regional Reserves project to improving the sovereignty of the region is rather limited: its ambition is not to substitute for international aid but only to manage the crises during the delays in mobilising international aid. Moreover, in the proposed financing structure, the Technical and Financial Partners play an important role, although the main part of the funding is supposed to stem from the regional resources. As the next section explains, things are in fact more complex.

On the other side, the Regional Reserve project fully respects the sovereignty of the Member States (following the subsidiarity principle): during the next eight years, the majority of the funds are supposed to be used for increasing national public stocks. Moreover, the Regional Reserve will not be used for interventions decided at the regional level: its aim is only to increase the means of national governments when their country is affected by a food crisis. The Regional Reserve Project will also provide secondary benefits to food sovereignty by promoting i) the use of local staples when managing food crises (millet, sorghum, maize, milled cassava also called *gari*), thereby respecting consumer habits and preferences and ii) procurement on the local market (including direct purchases from producer organisations).

Increasing the solidarity between Member States

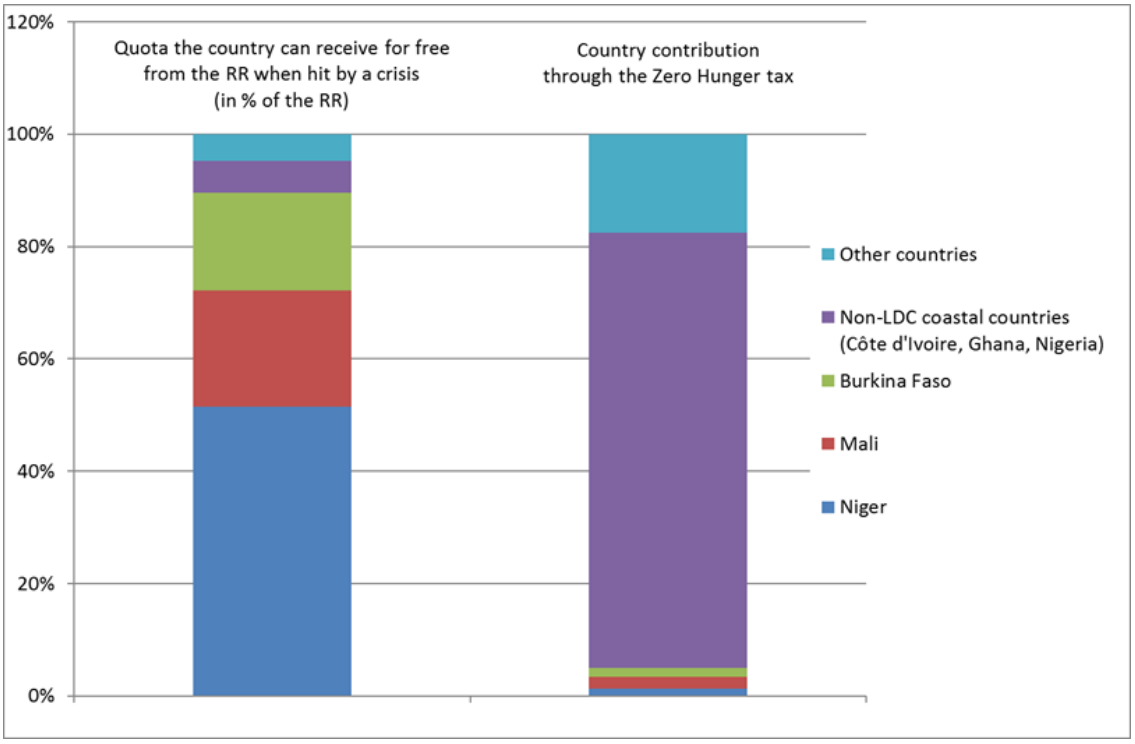
The Regional Reserve is based on the solidarity of the countries of the region **with the countries hit by food crises**. This form of solidarity is implemented through the 'mutualisation' of the Regional Reserve (each country contributes; only those in crisis benefit: the right to use the reserve is triggered by country food insecurity indicators based on the *Cadre Harmonisé Bonifié*). But the Regional Reserve Project also encompasses two other forms of solidarity.

The first is solidarity **with the countries most vulnerable to food crises**, as both the planned increase in national public stocks (funded by regional solidarity) and the quantity each country can get from the reserve for free (in the name of regional solidarity) both depend on its vulnerability to food crises. As presented above, the vulnerability has been estimated based on i) the percentage of population hit during the main shock recorded since 2000 and ii) the delay in mobilising international food aid (1.5 months for coastal countries and three months for landlocked countries).

The second form of solidarity is with **poor and landlocked countries,** as these countries have a higher percentage of their needs covered (40% for LDC and landlocked countries, 20% for LDC or landlocked countries, 10% for coastal non-LDC countries). Moreover, as the major part of the cost of the Regional Reserve Project (use of the Regional Reserve and increase in national public stocks) is supposed to be funded through the Zero Hunger tax on country extra-ECOWAS total imports, non-LDC coastal

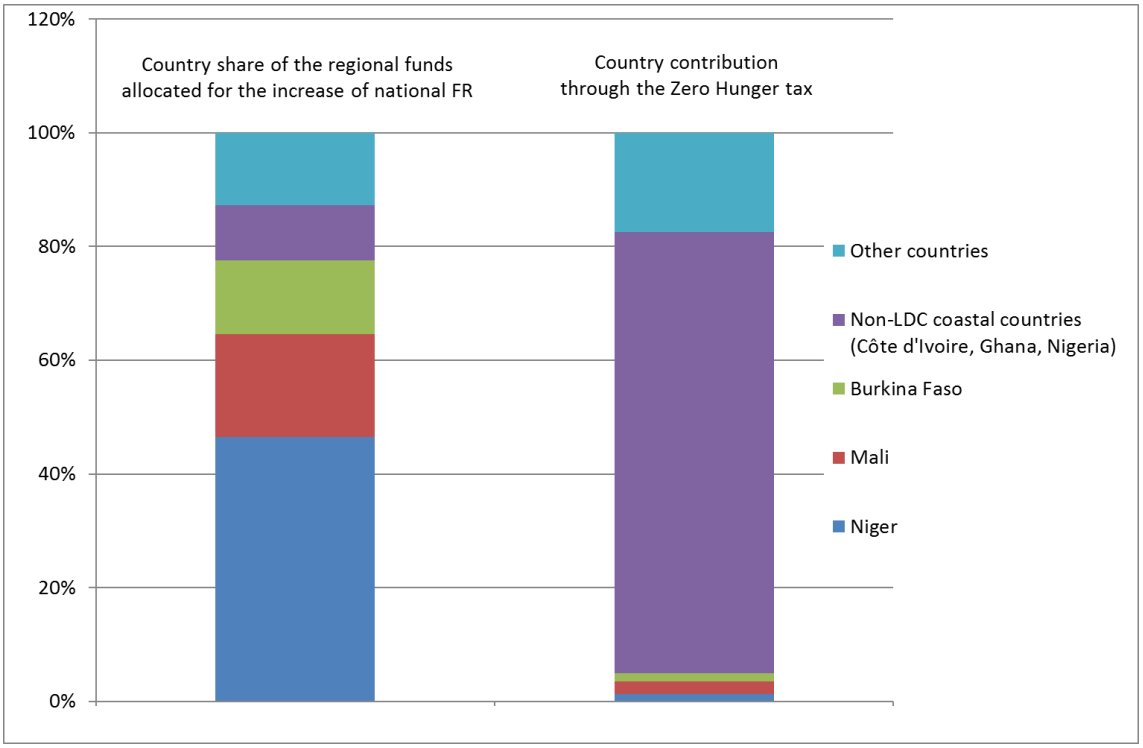
countries (Côte d'Ivoire, Ghana and Nigeria) will be the main contributors. These forms of solidarity focus support on Sahel countries (and among them on Niger), as these countries are the most often hit by food crisis, the most vulnerable to food crises, and are all landlocked and LDC countries. The magnitude of the joint effect of these forms of solidarity is visualised in figures 4 and 5 below.

Figure 4: Solidarity regarding the right to use the Regional Reserve in the name of regional solidarity



Source: author's calculation based on ECOWAS (2012), see table A.1 in annex for details

Figure 5: Solidarity regarding regional funding to increase national public stocks



Source: author's calculation based on ECOWAS (2012), see table A.1 in annex for details

Of course, internal coherence is not all. The next section considers whether the Regional Reserve Project provides an adequate response to the dynamics of food crises in West Africa.

3. Adequacy of the Regional Reserve Project to the Dynamics of Food Crises in West Africa

This section goes beyond internal coherence by questioning whether the Regional Reserves Project is adequate, given the specific characteristics of food crises in West Africa. It begins by analysing the drivers and mechanisms of food crisis in West Africa, thereby identifying the three main crisis scenarios that may occur (and have occurred) in West Africa. It then considers an example for each crisis scenario (a recent crisis) and imagines what might have been the contribution of the Regional Reserve project to improving food sovereignty, solidarity, and food security.

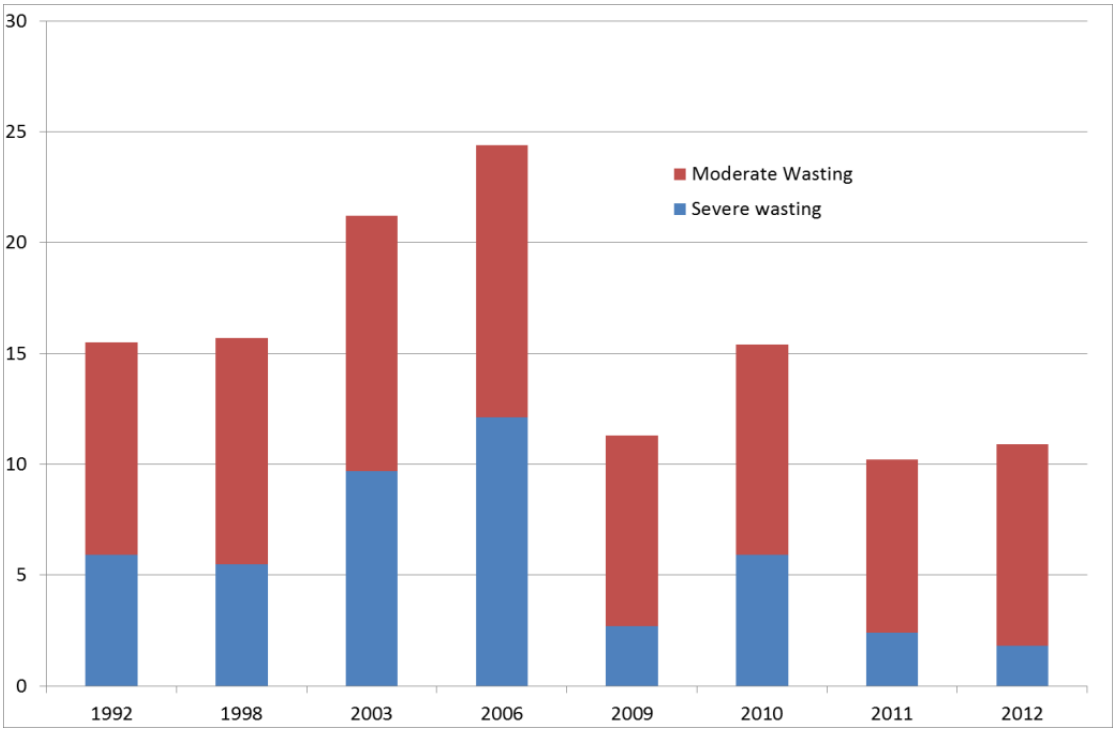
This analysis is based on the potential contribution of the Regional Reserve Project at its full maturity level, i.e. with i) increased national public stocks (840,000 Mt instead of 227,000 Mt) and ii) a Regional Reserve made of a physical stock of 140,000 Mt and a financial stock equivalent to 271,000 Mt. Acknowledging the fact that the Regional Reserve Project may be only partially implemented because of financing problems, this section considers alternative scenarios where i) the Regional Reserve is built without any increase in the level of national public stocks and ii) the Regional Reserve is undersized.

3.1 The economics of food crises in West Africa

Food crises and malnutrition

Malnutrition is a chronic problem in West Africa, especially in Sahel countries whose malnutrition rates are among the highest in the world (see table A.4 in annex). These nutritional problems (measured by insufficient weight for height (wasting) or insufficient height for age (stunting) are not only related to food consumption issues but also to health problems (e.g. diarrhoeas, malaria). In addition to chronic malnutrition, when West African countries (especially Sahel countries) face food crises, malnutrition rates increase sharply (see figure 6 below for the example of Burkina Faso).

Figure 6: Dynamics of wasting in Burkina Faso



Source: UNICEF-WHO-World Bank

As can be seen on this graph, in Burkina Faso, the prevalence of children under five wasting is between 10% and 15% in normal years. When a crisis occurs (as was the case in the Sahel in 2002 and 2005), this rate jumps above 20% the following year (it almost reached 25% after the 2005 crisis). The prevalence of severe wasting jumps as well with crises: its level in normal time is between 2% and 6%, but in periods of crisis it can jump above 10%. It is likely that children falling into severe wasting during crises were suffering from moderate wasting in normal times. For the 2005 crisis, this means that the crisis resulted in shifting 10% of children from normal weight to height to moderate wasting, and in shifting 7% of children from moderate to severe wasting.

Food crises are therefore very damaging for food security. Moreover, their frequency is high: since 2000, five food crises have been registered in Sahel countries: 2002-2003, 2005, 2008, 2010 (for Niger only) and 2012. The choice of the Regional Reserves Project to focus on managing food crises is therefore fully justified. To understand the potential contribution of this project to better managing food crises, we have to understand the drivers and mechanisms of food crisis in West Africa.

The mechanisms of food crises

The two drivers of food crisis

Food crises occur when access to food is sharply reduced for a significant share of the population. This reduction in access to food may occasionally stem from a lack of food availability in a specific area but, most of the time, it comes from a lack of economic access to food (Sen 1981). This lack of economic access to food may be provoked by a *collapse in household livelihoods* and/or a *sharp increase in the price of foods, especially staples.* Staples are the products that provide the cheapest calories (usually grains, roots, or tubers). In West Africa, the main staples consumed are millet, sorghum, maize, rice,

cassava, and yams: they provide the major part of the caloric intake and account for a high share of household expenditures (see table 9 below).

Table 9: In Mali, grain provides most of the calories in the diet and accounts for a significant share of household expenditures (for all social classes)

	Proportion of grain in dietary calories	Proportion of grain in household food expenditures	Proportion of grain in household total expenditures
Average for rural households	86.0%	51.1%	34.9%
Average for the poorest 20% of rural households	88.6%	57.6%	44.3%
Average for the richest 20% of rural households	82.0%	44.1%	26.5%
Average for urban households	73.1%	31.9%	18.4%
Average for the poorest 20% of urban households	78.6%	38.5%	27.3%
Average for the richest 20% of urban households	68.0%	27.4%	13.6%

Source: Bocoum (2011)

When the prices of these staples increase, households may react by reducing their consumption of staples (with the risk of calorie deficiencies) but also, in order to maintain their calorie consumption level, by reducing their consumption of other foods (but with the risk of provoking micronutrient deficiencies) or their health expenditures (which may affect their nutritional status).

Household livelihoods may collapse for many different reasons. Shocks affecting a high number of households at the same time may stem from natural hazards (earthquakes, droughts, floods, cyclones, etc.), macroeconomic shocks or political events (civil wars, social troubles etc.). In West Africa, the main shocks affecting household livelihoods are clearly related to droughts (which hit mainly Sahel countries) although other types of shocks also played a role such as locust attacks, Ebola outbreak, exchange rate movements (like the devaluation by 50% of the FCFA in 1994) or political troubles (civil war in Côte d'Ivoire, jihadists movements in Mali and northern Nigeria).[13]

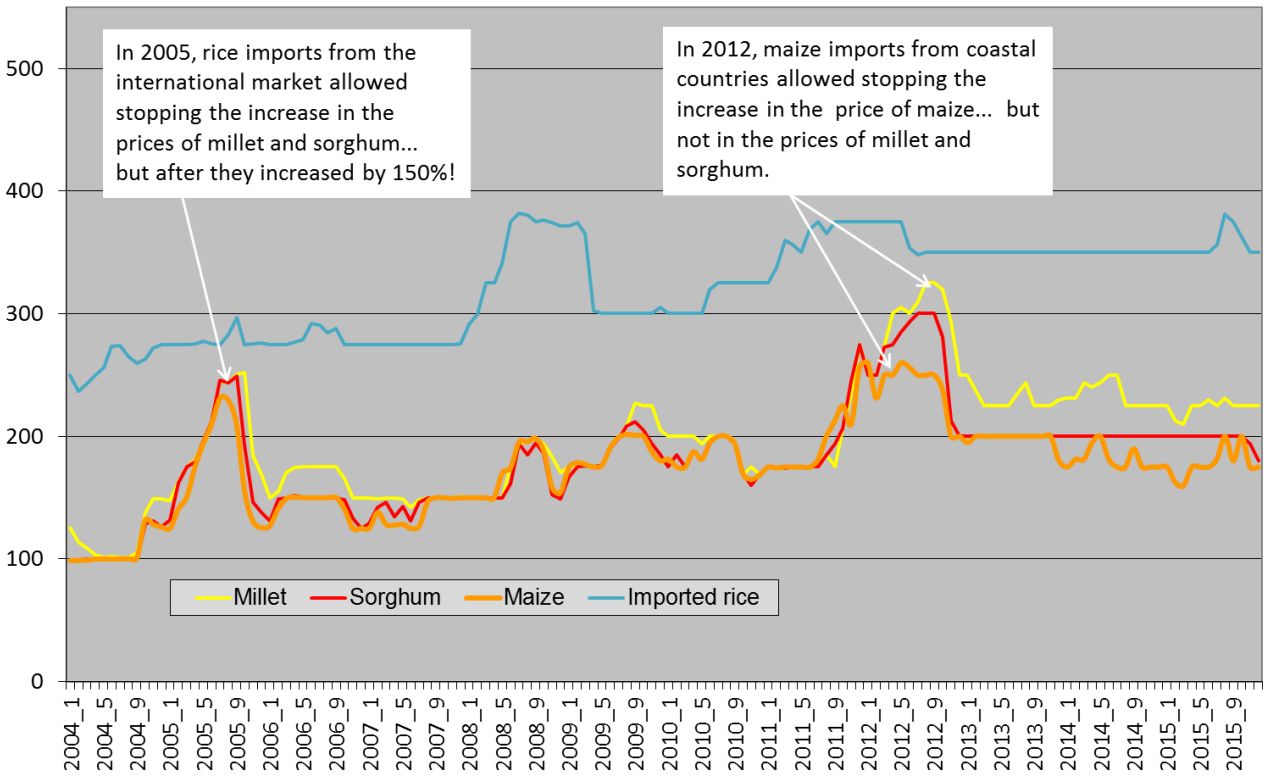
Droughts usually lead to reduced livelihoods for farmers (surplus farmer have less to sell; deficit farmers have more to buy) but also of pastoralists. Many animals die or lose weight because of the lack of water and pasture. The price of animals usually goes down because i) they become thinner and ii) pastoralists sell more animals (as it is currently complicated and expensive to feed them), thereby increasing the animal supply on the market. From farmers and pastoralists (the first categories hit), the food crisis may spread to their employees (e.g. agricultural workers) and clients.

[13] The current food crisis in Borno State (in the north-east of Nigeria) is related to the "conflict between Boko Haram and the Nigerian Armed Forces" and the "very high staple food price due to the declining value of the Nigerian Naira" (FEWSNET, 2016).

When *staple prices* surge, other categories are hit by the crisis (e.g. urban consumers), as all grain sellers are affected. Staple prices may surge within a country because of i) bad harvests in the country or the region, ii) spikes in international prices and/or iii) decrease in the country exchange rate (that increases the cost of imports). In all cases, the effect is not automatic: the reduction in availability of staples provoked by bad harvests may be compensated by trade or stocks and the increase in import price may be more or less transmitted within the country. In West Africa, the main sources of sharp increases in the prices of staples are i) droughts (and to some extent locust attacks) which affect the harvests of the main grains produced in the Sahel region (millet, sorghum) and ii) spikes in the international price of rice (as occurred in 2008).

When the harvest of millet and sorghum is bad in a given country, the resulting deficit may be compensated by the *regional trade of millet and sorghum.* This is exactly what occurred in Niger in 2010: the deficit was compensated by massive imports from northern Nigeria, allowing grain prices to remain stable in Niger. However, most of the time, droughts affect all Sahel countries at the same time (as happened in 2005 and 2012). In this case, there are no surpluses to compensate the deficits, and the price of millet, sorghum and maize increase significantly in Sahel countries. To some extent, the *regional trade of maize can contribute to regulating grain prices in the Sahel*: in contrast to millet and sorghum that are only produced in Sahel countries and in the northern regions of coastal countries, maize is also produced in coastal areas that are much less exposed to droughts. However, as observed during the 2012 crisis, maize imports from coastal countries are likely to stop only the increase in maize price, without stabilising the price of millet and sorghum (see figure 7 below).

Figure 7: Dynamics of grain prices in Bamako, Mali



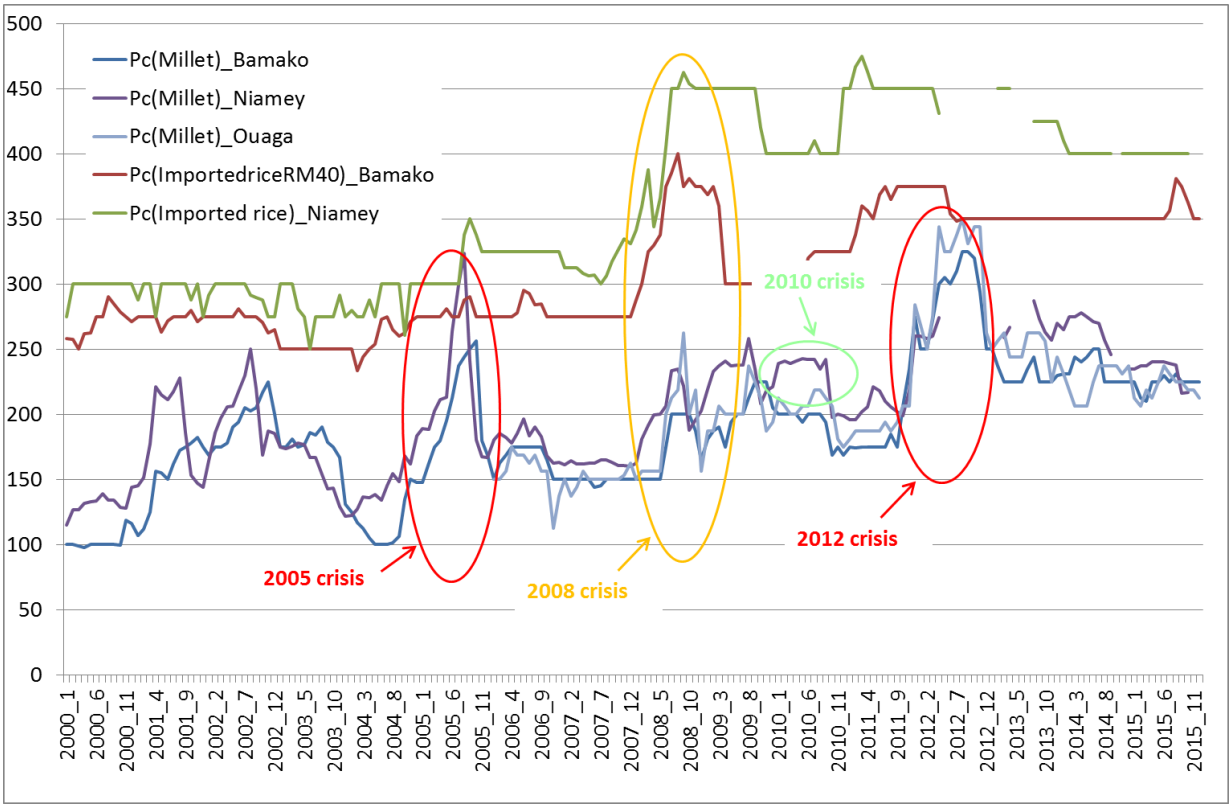
Source: OMA

Another regulating mechanism is provided by international trade (rice imports). As can be seen on figure 7 above, in 2005, the increase in the price of millet and sorghum stopped when it almost reached the price of imported rice. The price of imported rice therefore plays the role of a ceiling for the price of coarse grains (millet, sorghum and maize). However, as rice is usually much more expensive than coarse grains, rice imports do not keep the prices of millet and sorghum at reasonable levels (in 2005, the prices of millet and sorghum increased by 150%). Therefore, regional and international trade do not provide effective means to mitigate increases in the price of millet and sorghum in Sahel countries, except when bad harvests occurred in a single country.

Private stocks would be another regulating mechanism. However, the level is usually low in the region (traders and farmers do have seasonal stocks but are reluctant to store for the next year, as it is a highly risky activity). The last regulating mechanism rests on public stocks but, as we have seen, their level is extremely low (usually less than three days of consumption).

When the price of rice surges on international markets, the price of imported rice increases in the region. That is what occurred in 2008: the transmission has been partial and delayed (David-Benz et al. 2010), partly thanks to import tax removals (Galtier et al. 2009), but at the end of the day the price of imported rice increased by 33% (the international price converted in FCFA increased by 100%). Possibly more important for food security issues, this increase in the price of imported rice generated an increase in demand for coarse grains that pulled up their prices (see figure 8 below). As all the countries of the region have been affected at the same time by this increase in demand for coarse grains, regional trade has been unable to mitigate the increase in their prices. The resulting dynamics of grain prices in Sahel countries is shown on figure 8 below.

Figure 8: Dynamics of grain prices in Bamako (Mali), Niamey (Niger) and Ouagadougou (Burkina Faso)



Sources: OMA for Bamako and GIEWS for Niamey and Ouagadougou

It therefore appears that when a scarcity of millet and sorghum occurs (provoked by a bad harvest at the regional scale or by an increase in the demand resulting from a sharp increase in the price of rice), the regional trade is not able to contain the surge in millet and sorghum prices. This gives some arguments in favour of public stocks made of millet and sorghum located in Sahel countries or in the northern regions of coastal countries.

Consequences of collapses in livelihoods and increased staple prices

Both phenomena result in reducing access to food for some categories of the population: farmers and pastoralists if the reduction in livelihoods is provoked by a drought and all grain buyers when grain prices increase. When the two phenomena play together, deficit grain farmers and pastoralists are hit twice as their livelihoods are reduced and the cost of the staples they need is higher: deficit farmers must buy more grain at a higher price, and pastoralists have less means to buy more expensive grains. The situation can be even worse as the two dynamics (reduction in livelihoods and increase in grain price) may interact and reinforce each other: when the price of grain goes up, pastoralists have to sell more animals to get the same quantity of grain, thereby increasing the animal supply even more, pushing down animal prices even more, and finally reducing their livelihoods even more. Reciprocally, when households become poorer, their demand for the cheapest sources of calories (grains) may increase, thereby pushing up the price of grains even more.

Household coping strategies

When facing a collapse in their livelihoods or a sharp increase in the price of staples, households develop coping strategies by developing new activities to increase their income (work as agricultural workers for richer farmers; migration to less affected regions or countries, or to the cities, etc.), selling assets (with the risk of reducing their resilience to future crises) or adjusting their consumption pattern (with many potential consequences on nutrition if the quantity of calories or nutrients consumed is reduced or if the health of household members is affected). Strategies based on migration or selling assets are less effective when the food crisis also affects neighbouring countries, as in this case it is more difficult to find job opportunities and the price of assets (such as animals) is likely to fall more.

Typology of food crises in West Africa

As discussed above, the main shocks that provoke food crises in West Africa are droughts in the Sahel area and spikes in the international price of rice. Droughts usually affect the livelihoods of farmers and pastoralist and may generate a surge in grain prices in Sahel countries (especially when the drought affects the entire Sahel area, as in this case regional trade is ineffective in mitigating grain price increases). Finally, spikes in the international price of rice affect all countries of West Africa and do not only result in increased prices for imported rice: because of consumer's substitutions, the prices of coarse grains (millet, sorghum, and maize) are likely to increase as well (as occurred in 2008).

Acknowledging these facts, we identified three food crisis scenarios for West Africa. In the first crisis scenario (CS1), the crisis stems from bad harvests of millet, sorghum, and maize in a single (Sahel) country. Thanks to regional trade, grain prices are likely to remain stable. The crisis is therefore driven by the collapse in farmer and pastoralist livelihoods. This is the scenario of the 2010 crisis in Niger.

In the second crisis scenario (CS2), the crisis stems from bad harvests of millet, sorghum, and maize in the major part of their production area (Sahel countries and the northern regions of coastal countries).

Coarse grain prices increase sharply, especially for millet and sorghum, as the increase in the price of maize may be mitigated by maize imports from coastal regions. The crisis is therefore driven both by a strong reduction in farmer and pastoralist livelihoods and by an increase in grain prices. This is the most frequent scenario in the region: the last examples are the 2005 and 2012 Sahel crises.

In the last crisis scenario (CS3), the crisis stems from a rice price spike on the international market. It affects all West African countries. In this case, household livelihoods are not affected but the price of all grains increases (both rice and coarse grains). This is the scenario of the 2008 crisis. The effect of these different types of crisis on grain prices are illustrated in figure 8 above. Their main characteristics are summarised in table 10 below.

Table 10: Characteristics of the three main crisis scenarios

Characteristics of the crisis	Crisis scenario 1	Crisis scenario 2	Crisis scenario 3
Shock that provoked the crisis	Bad harvests of millet and sorghum in a single (Sahel) country	Bad harvests of millet and sorghum in the entire Sahel area	Sharp increase in the international price of rice
Drivers	Collapse in farmer and pastoralist livelihoods	Collapse in farmer and pastoralist livelihoods + increase in grain prices	Increase in grain prices
Extension	One (Sahel) country	Sahel countries + northern regions of coastal countries	Sahel countries + coastal countries
Recent examples	Niger 2010 crisis	2005 and 2012 Sahel crises	2008 crisis

To determine the contribution of the Regional Reserve Project to improving the management of these different types of crises the sections below consider an example for each crisis scenario and imagine what may have changed if the Regional Reserve Project had already been implemented when the crisis occurred. This is a speculative thought experiment, but it can be useful to draw lessons on what can be expected from the Regional Reserve project. This section therefore considers successively the cases of the Niger 2010 crisis, the Niger 2005 crisis and the 2008 crisis in West Africa.

3.2 Potential of the Regional Reserve to manage a type 1 crisis (bad harvest in a single country)

This section will analyse the potential role of the Regional Reserve for managing a type 1 crisis. The analysis will be based on the Niger 2010 crisis: first presenting the story of the crisis before imagining what may have changed if the Regional Reserve Project had already been implemented.

The story of Niger 2010 crisis

The crisis was provoked by a drought that led to both a very bad grain harvest in Niger and a lack of pasture and water for animals. It has been estimated that “more than 40% of villages had lost more

than half of the main rainfed harvest" (Wiggins et al. 2012, p. 11) and that the deficit in pasture was equivalent to 67% of needs (Michiels et al. 2011a).

However, as the harvest was good in neighbouring countries, the grain deficit was compensated through massive imports: from February (therefore very early in the marketing year) "between half and two-thirds of food available on markets, particularly in the west of Niger, was imported" (p. 12). These imports may have been responsible for grain price stability (albeit at a rather high level, see figure 8 above). The main effects of the crisis were a strong reduction in the livelihoods of farmers (decrease in harvests) and pastoralists (increased animal morbidity and mortality, increased fodder prices and sharp reduction in the value of animals). Household coping strategies were mainly based on worker migration (more and sooner than usual), moving animals south (one month earlier than usual) and adjusting food consumption (eating leaves, ant-food, etc.).

The policy response was massive (more than 200 billion FCFA according to Michiels et al. 2011b) and diversified (Michiels et al. 2012). It was based on food transfers (free distributions, sales at a subsidized price, food for work), cash transfers (including cash for work), input transfers (seeds, inputs for animals), and measures for the nutritional recovery of young children and women. In monetary terms, the main component of the policy response wasrelated to nutritional measures: more than 580,000 children and about 60,000 women were treated in recovery centres, whereas blanket feeding was distributed to 678,000 children (nutritional measures accounted for more than 60% of the 200 billion FCFA used to manage the crisis). Regarding the other components (transfers), the amount of food transferred (grains and beans) was estimated at 260,000 Mt, whereas the amount of other transfers (cash and inputs) was around 25 billion of FCFA (equivalent to 100,000 Mt of millet at the then prevailing market price).

The great majority of the aid was channelled through UN agencies: the national scheme rapidly became short of means, and international aid was managed by UN organisations and NGOs, as required by their procedures.[14]

The general feeling of experts is that the policy response was adequate both in its magnitude and in its modalities (diversity of actions implemented, acknowledging the fact the crisis was multi-dimensional), but delayed. In spite of early warnings (it was obvious from October 2009 that the grain harvest was very bad in Niger and in December 2009, FEWS estimated that "about 20% of the population were likely to be severely food insecure and an additional 40% moderately food insecure in 2010"), emergency interventions were low until early March 2010 (when they were scaled up) and then still too limited until May 2010 when they were scaled up again.

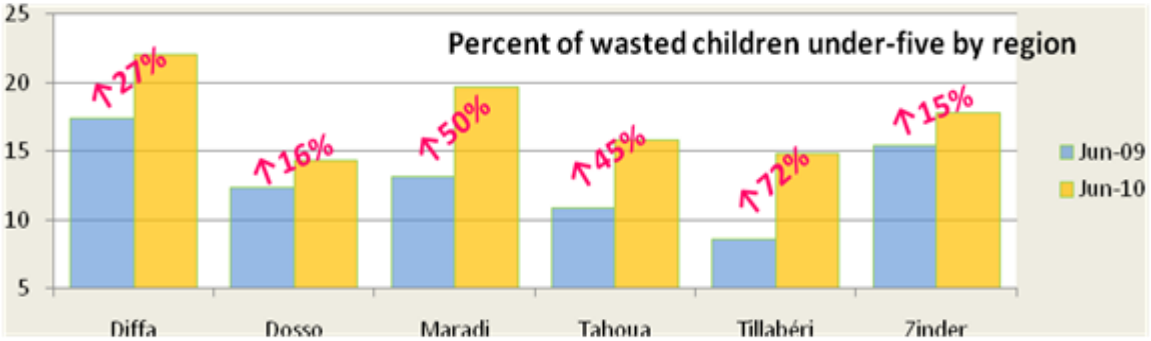
The reasons for this delay are related to the political context: President Tandja (who at that time was in conflict with donors, following the constitutional change that allowed him to stay in power) was reluctant to recognize the magnitude of the crisis. It is only after the military coup of 18 February 2010, that the new government appealed (on 10 March 2010) for "massive support to the enormous efforts Niger is making to cope with famine". But the reasons for the delay in the policy response are also

[14] It seems that the coordination of interventions between the government and external partners has been better than in 2005.

linked to the donors, whose attention was diverted by the January 2010 earthquake in Haiti and floods in Pakistan.[15]

This delay resulted in a sharp increase in the percentage of wasted children in all regions of Niger (see figure 9 below), therefore requiring massive nutritional recovery programmes.

Figure 9: Children under five wasting increased sharply during the Niger 2010 crisis



Source: Wiggins et al. (2012), p. 13

What may have been the effect of the Regional Reserve Project?

If the Regional Reserve Project had already been implemented, what may have changed in the way the Niger 2010 crisis was managed? The main problems were i) the response delays and ii) Niger's lack of food sovereignty when massive international aid has been provided through UN organisations and international NGOs.

Had the Regional Reserve Project already been implemented, the Niger government would have had in hand a much bigger public stock.[16] It would not have had access to the Regional Reserve anyway: following the change in the Niger constitution, Niger was temporarily excluded from ECOWAS bodies. It is only in February or March 2010 (after the coup d'état) that the Niger government would have been able to request use of the Regional Reserve.

It seems quite realistic to assume that, with more means to manage it, the government would have been more willing to recognise sooner the intensity of the crisis: as discussed above, President Tandja was in conflict with donors at that time and therefore reluctant to recognise a crisis that could only be managed by international aid. If the Niger government recognised sooner the reality of the crisis, it may have shortened the delay in mobilising international aid ("some international agencies were wary of contradicting the old government too strongly, fearing lack of cooperation, or even expulsion – for which there were precedents", Wiggins et al. 2012, p. 15). Therefore, having more stocks would not only have provided more means for the government to manage the crisis during the delays in mobilising food aid (which is the explicit objective of the Regional Reserve Project): it may also have reduced this delay.

[15] "Some agencies were reported as transferring Francophone staff from West Africa following the January earthquake in Haiti." (Wiggins et al. 2012, p. 15).

[16] The required level for Niger public stocks in 2020 is more than 317,000 (see table A.1). In 2010, when the crisis occurred, the theoretical level of public stocks was 80,000 Mt for the physical stock (SNS) and the equivalent of 30,000 Mt for the financial stock (FSA), whereas their actual levels were respectively 21,000 Mt and the equivalent of 11,000 Mt (Michiels et al. 2011b, pp. 45-46).

Acting sooner may have modified the nature of interventions as it may have reduced the needs for programmes focused the nutritional recovery of children (these programmes accounted for more than 60% of the total cost of managing the crisis), thereby saving means to implement actions focused on increasing households livelihoods and resilience and improving medium-term food security.

3.3 Potential of the Regional Reserve to manage a type 2 crisis (bad harvest in entire Sahel area)

In West Africa, this type of crisis is the most frequent and probably the one which has the most damaging effect in terms of food security. Those who designed the Regional Reserve Project probably had this scenario in mind. The most recent crises of this type are the 2005 and 2012 crises that hit all Sahel countries and the northern regions of coastal countries. To analyse the potential effect of the Regional Reserve Project on this type of crisis, we will take the example of the Niger 2005 crisis, which helpfully is directly comparable with the Niger 2010 crisis.[17]

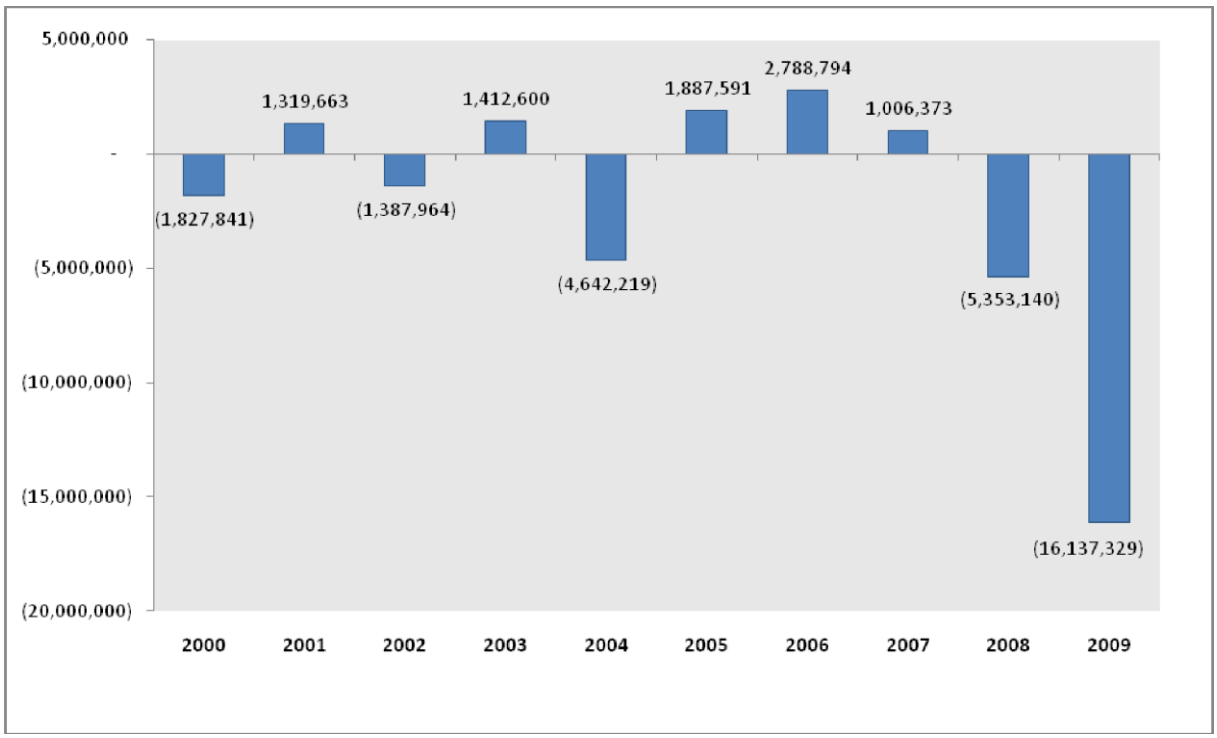
The story of the Niger 2005 crisis

The 2005 crisis was also provoked by a drought. Although the magnitude of the shock was lower than in 2010 (grain production fell by 12%, compared to 31% in 2010,[18] and the pasture deficit was much lower – see figure 10 below), the consequences on food security were probably worse. The main reason for this is the regional dimension of the crisis. Usually grain deficits in Niger (which are chronic but increases in years of bad harvest) are compensated by massive imports from northern Nigeria. However, in 2005, the grain harvest was also very bad in Nigeria: grain prices were higher in northern Nigeria than in Niger, leading to a reversal of the usual direction of trade. In addition, Mali and Burkina Faso closed their border with Niger. As a result, contrary to 2010 and although the grain deficit in Niger was much lower, a boom in grain prices occurred in 2005 (see figure 8 above).

[17] Another advantage is that this crisis has been analysed very carefully: see for instance Egg et al. (2006); Michiels et al. (2007) and Olivier de Sardan J.-P. (2007).

[18] Wiggins et al. (2012), p. 4 and Michiels et al. (2011b) p. 30

Figure 10: Dynamics of the pasture balance in Niger (in Mt of equivalent dry matter)



Source: Ministère du développement agricole (cited by Michiels et al. 2011b, p. 31)

The sharp increase in grain prices resulted in more people being affected by the crisis (such as urban consumers) and in deficit farmers and pastoralist being affected both by the reduction in their livelihoods and by the increase in the cost of grains. As in 2010, affected actors developed coping strategies (migration of workers, moving animals south, eating leaves or ant-food, reducing household non-food expenditure, etc.) that proved insufficient to avoid a surge in malnutrition rates.[19]

As in 2010 (and even to a greater extent), the policy response was delayed in 2005 in part for the same reasons. The main difference with 2010 is that in 2005 the early warning system was deficient: although it was correctly estimated in October 2004 that the production deficit will be around 500,000 to 600,000 Mt (compared to the normal deficit of 200,000 to 300,000 Mt), the common belief was that, as usual, this deficit would be compensated by grain imports from Northern Nigeria.

In addition, prior to the December 2004 elections, the government was reluctant to appeal for significant international aid. The Niger government's initial emergency plan was therefore limited both in its size (67,000 Mt of grain) and its modalities (sales at a subsidised price instead of free distribution). Given the small size of the Stock National de Sécurité (23,000 Mt), the Niger government requested (unsuccessfully) 78,100 Mt from the WFP. The WFP did not answer positively partly because it shared the view that there would not be major problems (its own interventions were very low-scaled: from February to August 2005 the WFP planned to transfer 6,562 Mt of grain) but also because its attention was diverted by the tsunami in South-East Asia.

[19] Worker migration and remittances were less effective strategies than in 2010 because northern Nigeria was also hit in 2005.

Interventions were also delayed by the lack of grain: from the planned 67,000 Mt of subsidised sales, only 25,000 Mt were sold. Perceptions of the intensity of the crisis began to change with the increase in grain prices (accelerating from February and even more from July 2005) and even more in May 2005 with data (disseminated by MSF) showing extremely high malnutrition rates. On 28 May 2005 the Prime Minister appealed for massive international aid. However, the response of both the Niger government and the WFP was delayed by the lack of grain. Obtaining grain on international market proved to be a long and difficult process: the 11,000 Mt of sorghum purchased from India by the Niger government in June 2005 was supposed to arrive in the port of Cotonou (Benin) at the end of July, but at that time the Niger government did not have the means to finance its transport to Niger. At the same time the WFP was still missing grain. It is only in August and September 2005 that 81,500 Mt of grain were distributed.

Given the evolution of grain prices, in-kind transfers would clearly have been the best option. However, implementing these transfers proved difficult because of the lack of grains. At the beginning of the agricultural year, the level of Stock National de Sécurité (SNS) was 23,000 Mt, well below its target level of 50,000 Mt. It also proved to be extremely difficult for the Niger authorities and the WFP to get grains on the national or regional market due to the lack of grain availability, lack of financial resources to pay almost twice the usual price, and export bans implemented by neighbouring countries. In June 2005, Niger's public stocks (SNS) were exhausted due to the failure of its suppliers (private traders) to deliver the 30,000 Mt expected. At the same time, the WFP was also expecting the delayed delivery of grain ordered to the Nigeria public stock agency. The WFP therefore had to convert its food for work programmes into cash for work programmes. Finally, the Niger government ordered sorghum to India (initially 11,000, then an additional 12,500 Mt) but, as already mentioned, it proved to be long and difficult.

Another characteristic of the 2005 crisis management is its destructuring effect on national institutions. The shift to generalised free distribution of food that occurred in July 2005 marginalised Niger institutions in charge of managing food crises. To some extent this is a 'mechanical' effect of the shift to free distribution according to donors' procedures, as they must channel this kind of aid through the WFP or NGOs. However, some funds that were initially targeted to Niger bodies were reoriented to the WFP to be used for free distribution. In addition, few or no formal collaboration developed between humanitarian organisations and Niger bodies in charge of food security (for instance, OCHA put in place an information system without collaborating with the Niger Early Warning System, see Egg et al. (2006) pp. 68-69).

What may have been the effect of the Regional Reserve Project?

Contrary to the 2010 crisis, in 2005, the diagnosis of the crisis (early warning) was deficient: the deficit was correctly estimated but the effect of the (regional) crisis on regional trade (reversal of trade flows between Niger and Nigeria) was not anticipated. The regional diagnostic promoted by the Regional Reserve Project (based on the CHB) would probably have encouraged 'regional thinking' and better anticipated the magnitude of the crisis in Niger.

As in 2010, by putting more means in the hands of national governments, the Regional Reserve Project may have incentivised the Niger government to recognise much earlier the magnitude of the crisis (as discussed above, prior to the December 2005 elections, the government was reluctant to appeal for

significant international aid). The Regional Reserve Project would therefore have been likely to reduce the response delay (not only the implementation of interventions but also the decision). As in 2010, this may have improved management of the crisis before the arrival of international aid (donors were diverted by the tsunami in Southeast Asia). Above of all, even more than in 2010, it would have reduced the delay in mobilising international aid: in 2005, international aid was mobilised by MSF and other NGOs against the opposition of the Niger government. At that time, the Niger government was still reluctant to shift interventions toward free distribution of food because it implied less means for the Niger government and more means for the WFP.

The Regional Reserve Project may also have improved the response by allowing more millet and sorghum to be distributed. In 2005 (contrary to 2010), the availability of millet and sorghum on the regional market was significantly reduced. Therefore, food distributions came from grains imported on the international market (like rice), or were replaced by cash transfers. Cash transfers may have exacerbated the surge in millet and sorghum prices. Rice distributions are much less relevant in this context than distributions of millet and sorghum as they:

1. Take more time (due to import timelines);
2. Are more expensive;
3. Do not fit with household preferences and habits (especially in Niger, although this is less true for Mali and Burkina Faso); and
4. Above all, are less likely to decrease prices of millet and sorghum (which are the grains most consumed by the poor).

Implementing a large distribution of millet and sorghum would have required having stocks, which the Regional Reserve Project would have provided through both the Regional Reserve and the planned increase in national public stocks. The need for more physical public stocks was recognised by the Niger government after the crisis: it decided to increase the level of the SNS from 50,000 to 80,000 Mt.

As in 2010, acting sooner (and in this case by acting both on livelihoods and grain prices), may have reduced the need for costly nutritional recovery programmes, thereby saving money for action less targeted on emergency and more on increasing livelihoods and resilience.

The 2005 crisis also showed the need for a regionally-scaled response. Otherwise, the food distributions in one country do not push down the domestic grain prices because they stimulate exports to neighbouring countries. This kind of 'spill-over effect' may lead some countries to implement exports bans (as did Mali and Burkina Faso during the 2005 crisis). The regional approach developed by the Regional Reserve Project is likely to reduce this problem by increasing the response capacity of all countries (by increasing of national public stocks and establishing the Regional Reserve), thereby stimulating simultaneous interventions in type 2 crises. Moreover, the existence of regional solidarity through concrete policies (increases in national public stocks funded by the region and the presence of the Regional Reserve) is likely to discourage export bans.

3.4 Potential of the Regional Reserve to manage a type 3 crisis (sharp increase in international prices affecting all West African countries)

The story of the 2008 crisis

The 2008 crisis was provoked by the sharp increase in the international price of rice that occurred in 2008. Contrary to the Niger 2005 and 2010 crises, it was managed mainly internally (by the governments) with very little international aid. All ECOWAS countries implemented quite the same policies (Soulé et al. 2008): import tax removal, export bans, use of public stocks (for the countries that had public stocks), and development of input subsidies programmes to stimulate national grain production (GOANA in Senegal, 'Initiative Riz' in Mali, 'Initiative 3N' in Niger, etc.).

Some of these measures were not legal and, more importantly, were not in line with regional solidarity. To mitigate the increase in the price of imported rice, almost all West African countries not only removed the VAT on rice but also the tariff on rice imports which, for WAEMU countries, was not legal (the level of the CET should theoretically be decided at the WAEMU level).[20] More problematic, many countries banned grain exports to reduce "leakages" through neighbouring countries. These measures were not legal for WAEMU countries.

To what extent were these measures effective in containing the increase in grain prices? This question has been particularly studied for the case of Mali. *Export bans* have often been circumvented as governments in the region are at a loss to control their borders (due to smuggling, corruption, etc.). Therefore, grain exports have not stopped, but transaction costs have increased, exacerbating the increase in grain prices in West Africa (Diarra and Dembélé 2008; Staatz et al. 2008). *Public stock sales or free distribution* involved quantities that were too small to have a significant effect on price (Galtier et al. 2009). *Input subsidy programmes*, by their nature, only can have a delayed effect. The extent to which *import tax removals* were passed on by importers in their selling price is still controversial, even when measures are taken for this purpose (contracts between the government and rice importers by which they commit themselves on a maximum selling price, monitoring systems, etc.). The main reason for this scepticism is that the rice import sector is highly concentrated, with only two or three big importers in each country. However, on some occasions, when properly managed, import tax removals led to reductions in the price of imported rice (Galtier et al. 2009). Whether due to the policies implemented or other reasons, the increase in the price of imported rice was around 33% in WAEMU countries, whereas the international price converted in FCFA increased by 100%. The price of coarse grain (millet, sorghum, maize) usually increased in the same proportion because of consumers' substitutions.

Another issue related to import tax removal is countries' ability to remove taxes on rice imports for a long time as these taxes account for a significant share of their budget (Soulé et al., 2008).

What may have been the effect of the Regional Reserve Project?

The Regional Reserve is not suited to deal with the direct effect of this type of crisis, as rice only accounts for 5% of the staples stored in the physical reserve of the Regional Reserve. Moreover, the

[20] At that time, the customs union was limited to WUEMU countries. It was enlarged to all ECOWAS countries in January 2015.

price of rice in ECOWAS countries is strongly determined by the import price cost and is therefore difficult to influence using public stocks.

However, as discussed above, in 2008 the increase in the price of imported rice increased the price of local staples (millet, sorghum, maize, gari, etc.). This price increase was further increased by export bans. By providing governments the means to implement in-kind transfers of these staples, the Regional Reserve may have usefully contributed to mitigating the increase in the price of local staples (and in discouraging export bans).

3.5 Conclusion on the adequacy of the Regional Reserve Project to the dynamics of food crises in West Africa

The review of past experiences of West-African countries in managing food crises highlights the relevance of the Regional Reserve Project:

1. *The focus on food crises* seems to be justified: food crises are frequent in West Africa, particularly in Sahel countries (during the last two decades, a food crisis occurred on average every three years) and very damaging for food security (although high levels of chronic malnutrition do also exist).

2. *The focus on managing the delays in mobilising international aid* seems relevant as well: during the Niger 2005 and 2010 crises, the international community's attention was diverted by other crises (the 2005 tsunami in Southeast Asia; the 2010 earthquake in Haiti) and interventions were significantly delayed (less in 2010 than in 2005), leading to huge nutrition problems, especially for young children. Being able to act sooner is likely to reduce malnutrition problems, thereby reducing the need for costly nutritional recovery programmes (such as those implemented in Niger in 2005 and 2010).

3. *The focus on food sovereignty* (depending less on international aid) also makes sense: the emergency aid provided by international organisations and NGOs during the Niger 2005 crisis was very effective but proved very destructuring for national institutions. This made the government reluctant to recognise food crises (as illustrated by the Niger 2005 and 2010 crises), thereby increasing the delays in both national and international responses.[21] The approach to food sovereignty developed in the Regional Reserve Project is also realistic as it acknowledges the fact that the region alone is not able to manage the food crises that occur in West Africa (at least the most severe ones).

4. *The focus on solidarity* between ECOWAS states also makes sense: some countries banned exports during the 2005 and 2008 crises, contributing to these crises. Moreover, focusing regional solidarity on Sahel countries (especially Niger) also seems to be relevant as these countries (Burkina Faso, Mali, Niger) are much more affected than the others by malnutrition and food crises.

[21] For the same reason, it appears that the choice of the Regional Reserve Project to support national governments by providing them additional means (increase in national public stocks, right to use the Regional Reserve) instead of promoting interventions decided at ECOWAS level (principle of subsidiarity) is therefore relevant.

5. *The focus on stocks* by increasing national public stocks, establishing the Regional Reserve, and increasing cooperation between national public stocks through RESOGEST) also seems to be relevant: in 2005 and in 2008 more physical stocks of local staples would have enabled more in-kind transfers, thereby mitigating the increase in staple prices. The composition of the physical component of the Regional Reserve seems adequate as it is mainly made of local staples (especially millet and sorghum, and to some extent maize and gari, see section 2.2).

6. *The regional approach*: the Niger 2005 crisis demonstrated the need to 'think regional'. Neglecting the fact that northern Nigeria was also affected by the crisis (and therefore less able to compensate for Niger's deficit) led to an underestimation of the gravity of the situation in Niger. The Regional Reserve Project, by using the *Cadre Harmonisé Bonifié*, has the potential to generate spontaneous 'regional thinking'. By increasing the means of ECOWAS country governments (increased national public stocks, right to use the Regional Reserve), the Regional Reserve Project is also likely to stimulate many simultaneous national responses when several countries are affected by a crisis, thereby helping to produce 'regional responses' to 'regional crises'.

4. Conclusion

The Regional Reserve Project lies between national policies and external aid (to complement them, not substitute for them). It is therefore worth questioning its potential value added *vis-à-vis* international aid and national policies, both in terms of its political objectives (enhancing country food sovereignty, developing the solidarity between ECOWAS Member countries) and in terms of food security.

4.1 Potential value added by the Regional Reserve project *vis-à-vis* international aid

Potential effects on food sovereignty

This objective is grounded in past negative experiences, such as the management of the 2005 Niger crisis by UN organisations and international NGOs which, although very effective in saving lives, had a very destructuring effect on the Niger national scheme to manage food crises (and more broadly on national institutions).

The Regional Reserve Project has realistic (and therefore limited) ambitions in this area, as it only seeks to increase the means in the hands of Member State governments to empower them to manage food crises while international aid is mobilised. Moreover, the Regional Reserve Project itself will be partly funded by donors, although the majority of its resources should stem from the region.

The subsidiarity principle not only applies to the international community, but also to ECOWAS bodies: the Regional Reserve Project fully respects Member States' sovereignty as it aims to increase national public stocks and provide government with a right to use the Regional Reserve up to a certain level (country quota) and under the condition that the country is experiencing a food crisis (the diagnostic being based on the CHB).

Potential benefits

Its main potential benefits are the following:

1. Governments are likely to be more involved in managing food crises before the arrival of international aid, thereby increasing their abilities in this area (this is the explicit objective of the Regional Reserve Project).

2. Governments are more likely to co-manage international aid, especially when there is a scarcity of local staples and when the government holds (physical) stocks. The 2005 crisis showed that WFP and other partners were interested in cooperating with the Niger government to get grains to distribute (although at that time the conflicting relationships between the Niger government and donors, especially the WFP, impeded this potential cooperation).

3. The share of local staples in the aid provided is likely to be higher thanks to the Regional Reserve Project: the Regional Reserve is mainly made of local staples (millet accounts for 25%, sorghum for 24%, maize for 26%, and gari for 14%) and the donors prefer to use stocks of local staples when available to reduce delays and costs : local staples are less expensive than rice and other grains imported from the international market. Aid provided through local staples is also likely to fit better with consumers' preferences and habits.

4. Local procurements by the Regional Reserve support local production, particularly as the Regional Reserve rules specify that local purchases should be preferred when possible, and that part of the procurement should be made directly with producer organisations.

Challenges

However, all these potential benefits require the involvement of ECOWAS and Member States in the funding of the Regional Reserve Project. To date, the only contributor is the European Union: the Member States did not deliver the agreed quantity of staples to build the Regional Reserve; the regional economic communities (ECOWAS and WAEMU) did not provided the agreed funds for the building of the Regional Reserve; and the Zero Hunger tax as not been created, which compromises the planned increase in national public stocks and the ability of Member States to use the Regional Reserve.

Potential effect on food security

By empowering the governments of ECOWAS countries to complement better international aid when a crisis occurs, the Regional Reserve Project is likely to reduce response delays and to improve response quality.

Reducing the (national and international) response delays

The Regional Reserve Project seeks to improve food security by providing governments with the means to manage food crises while international aid is mobilised. This approach seems relevant considering the delays in mobilising food aid during past crises (especially the Niger 2005 and 2010 crises). The resources provided by the Regional Reserve Project (increased national public stocks, creation of the

Regional Reserve) are adequate to implement interventions very quickly, contrary to international aid or policies based on imports. Theoretically, these resources are sized to allow all ECOWAS countries to manage the delays in mobilising food aid (in the situation where all countries would be hit at the same time).

During the Niger 2005 and 2010 crises, the delays mobilising international aid were not only due to the fact that the international community was occupied by other events in other parts of the World (the tsunamis in Southeast Asia in 2005, the earthquake in Haiti and floods in Pakistan in 2010): the fact that governments were reluctant to recognise these crises also played a very important role. Governments were reluctant to recognise these crises because they did not have the means to manage them and because they knew they would not be involved in the management of international aid.

It therefore seems reasonable to assume that with a major role to play both before and after the arrival of international aid (see the previous section on food sovereignty), the government would be more willing to recognise food crises. *This is likely to reduce the delays in mobilising international aid* as shown by the experience of Niger during the 2005 and 2010 crises where the government's failure to recognise the crisis resulted in longer international aid delays.

This is also likely to reduce the delays in *implementing* international aid. During the 2005 crisis, interventions based on international aid were delayed because of the lack of availability of grains on the regional market.

Providing a more adequate response

The Regional Reserve Project is also likely to facilitate a more adequate response. By enabling action sooner when a crisis occurs, the Regional Reserve Project is likely to reduce the need for costly nutritional recovery programmes (which accounted for more than 60% of the budget for managing the Niger 2010 crisis). This may provide resources for other types of action less focused on emergency and more on medium-term food security (increasing household livelihoods and resilience, public services, etc.).

By building physical stocks mainly made of local staples (increasing national public stocks and the physical component of the Regional Reserve), the Regional Reserve Project facilitates greater use of local staples in interventions (whether managed by the government, WFP, or NGOs). This is likely to contribute to food security by:

1. Mitigating increases in the price of the grains most consumed by the poor;
2. Reducing delays;
3. Reducing costs, as local staples are less expensive than imported grains (usually providing 70% more with the same budget); and
4. Better meeting consumer habits and preferences (which is part of the definition of food sovereignty, but also of food security).

Challenges

There is a risk that the international community may be less involved. In 2005 and 2010, the international community was mobilised by evidence of a strong increase in malnutrition rates among

young children. If the Regional Reserve Project, by enabling a faster and better response, leads to reduced malnutrition rates, it may *increase* international aid delays and *reduce* its magnitude. This problem could be resolved by mobilising the international community by using the early and comprehensive indicators of food insecurity based on the CHB, instead of malnutrition rates. This implies generalising the (proper) use of the CHB by all ECOWAS countries.

4.2 Potential value added by the Regional Reserve project *vis-à-vis* national policies

Potential effect on solidarity between ECOWAS Member States

Solidarity

The Regional Reserve Project encompasses three forms of solidarity:

1. *Solidarity with countries hit by food crises* through the 'mutualisation' of the Regional Reserve: all countries contribute, but only countries in crisis benefit from the right to use the reserve for free (it is triggered by country food insecurity indicators based on the CHB). The existence of the Regional Reserve is also likely to incentivise countries to renounce export bans (as occurred in 2005 and 2008), all the more that, since January 2015, exports bans are illegal between ECOWAS countries.

2. *Solidarity with countries vulnerable to food crises* through i) the increase in national public stocks (funded by regional solidarity) and ii) the size of each country's right to use the reserve in the name of regional solidarity (its quota), as both depend on: the percentage of the population hit during the main shock recorded since 2000 and the delay in mobilising international food aid (1.5 months for coastal countries and three months for landlocked countries).

3. *Solidarity with poor and landlocked countries***,** as these countries have a higher percentage of their needs covered (40% for LDC and landlocked countries, 20% for LDC or landlocked countries, 10% for coastal non-LDC countries), and as the funding through the Zero Hunger tax on country extra-ECOWAS total imports will result in non-LDC coastal countries (Côte d'Ivoire, Ghana and Nigeria) being the main contributors (77.5%) and Sahel countries the lowest contributors (5%) (see figures 4 and 5 above).

The last two forms of solidarity will result in Sahel countries benefiting from 89.6% of the rights to use the reserve (the quotas) and 77.5% of the increase in national public stocks funded by the region, while contributing only 5% of the costs (through the Zero Hunger tax). In addition, as Sahel countries are more often hit by food crises, the fact that the Regional Reserve can be used only by countries in crisis (first form of solidarity) means that Sahel countries will use their (higher) quotas more often. For example, Niger alone will receive 51.5% of the quotas and 46.5% of the increase in national public stocks funded by the reserve.[22]

[22] Other forms of solidarity may emerge from cooperation between national public stocks (the RESOGEST seeks to stimulate this kind of cooperation behaviour).

Tensions and challenges

Tensions may emerge between countries over use of the Regional Reserve, especially when a food crisis affects many countries at the same time, as in crisis scenarios two and three[23]. However, the rules of the Regional Reserve have been designed to minimise these tensions. First, in theory, the size of the Regional Reserve is enough to provide its quota to each country, meaning that even if all ECOWAS countries are hit at the same time, they do not have to compete to access the free support of the Regional Reserve. However, they may compete for monetary or grain loans from the Regional Reserve.

Second, the right to use the Regional Reserve is triggered by CHB indicators which in theory enable comparison of the state of food insecurity in different countries. However, tensions may still emerge, especially if the Regional Reserve Project is not fully implemented (due to insufficient increases in national public stocks and/or an undersized Regional Reserve). In this case, the resources will not be enough to allow country governments to manage the crisis before the arrival of international aid. Moreover, in the short run, difficulties may arise from the lack of reliable CHB data (some countries do not use it or do not use it properly, with only part of the required information being gathered). To avoid these difficulties, it is necessary to i) create the Zero Hunger tax to guarantee the full implementation of the Regional Reserve Project; and ii) generalise the (proper) use of the CHB within all ECOWAS countries.

Tensions may also occur regarding the funding of the Regional Reserve Project. Because of the high level of solidarity in the Regional Reserve Project, countries that are required to contribute a lot and are likely to receive little may be reluctant to contribute to its funding. As solidarity is likely to play almost always on the same side (from rich coastal countries to Sahel countries), the term 'mutualisation' is rather misleading and it raises the question of the interest of rich coastal countries in supporting the Regional Reserve Project. However, this interest may be found in coastal countries' experience that, in periods of food crisis in the Sahel, they are affected by massive migration to the south of people and livestock, which generates tensions and conflict.[24] Another potential reason is related to the political crises provoked by jihadists' movements at the border between Sahel countries and coastal countries (Boko Haram, Mujao, AQMI, etc.). But this solidarity may also be driven by the feeling of peoples in the region that they have a common destiny with their neighbours,[25] providing support to policy-makers when they seek solidarity.

Potential effect on food security

Increasing the means of national governments

An obvious value-add of the Regional Reserve Project is that it increases the stocks in the hands of national governments, allowing them to do more to manage food crises. The stocks of national governments are limited by their high cost and the lack of budget to fund them. The Regional Reserve Project provides answers to these issues through:

[23] And even more when coastal countries are hit (as in crisis scenario three), as in this case they may be unwilling to accept that, although they contribute more, they will receive less.

[24] Other spillover effects may occur, such as grain price crises in the Sahel pulling up grain prices (especially maize prices) in coastal countries.

[25] They often have a common history, culture and languages. During the last Ebola crisis, some countries of the region were proud to open their borders to neighbouring (affected) countries.

1. *Mutualisation*: as countries are usually not hurt at the same time, pooling their means is supposed to be an effective way to manage crises. The Regional Reserve (410,000 Mt) is partly built on this idea and the RESOGEST as well. However, it is likely that the countries who will benefit from the reserve will often be the same: Sahel countries (and among them Niger).[26]

2. *Solidarity*: both the increase in the level of national public stocks (+650,000 Mt) and the free use of the Regional Reserve will be covered by regional solidarity. This solidarity will mainly favour the most affected countries (Niger, then the other Sahel countries).

Promoting 'regional thinking' in early warnings and diagnosis

Early warnings are usually based on national indicators. However, the Niger 2005 crisis showed that misunderstanding the situation and the dynamics of the regional market led to strongly underestimating the Niger crisis. The Regional Reserve, by using the CHB to compare the situation of various countries, will promote 'regional thinking' and is therefore likely to improve the diagnosis and early warning of food crises.

Promoting a 'regional response' to 'regional crises'

When a crisis is regional and causes a large-scale increase in staple prices, in-kind transfers from a public stock in a given country will exert limited downward pressure on staple prices in its domestic market. This is because, if the domestic price goes down, this is likely to increase exports to neighbouring countries. The solution to this problem is simultaneous intervention of national public stocks. Although the Regional Reserve Project does not contemplate any kind of mechanism to coordinate the interventions of national public stocks,[27] it may contribute indirectly to the simultaneous use of stock intervention by increasing the means of all ECOWAS country governments.

These different potential benefits of the Regional Reserve Project (and the related challenges) are summarized in table 11 below.

Table 11: Potential benefits and challenges of the Regional Reserve project (by objective)

	Political objectives	Food security objectives
Vis-à-vis international aid	**Food sovereignty of ECOWAS Member States** Potential benefits 1. Governments more involved in managing food crises before the arrival of international aid (thereby increasing their abilities). 2. More government co-management of international aid (especially when there is a scarcity of local staples and when the government holds stocks).	**Improving food security by complementing international aid** Potential benefits ***Reducing the (national and international) response delays:*** 1. National response possible while mobilising international aid. 2. Governments more likely to recognize the magnitude of the crisis if they have some means to manage it, thereby reducing the delays in mobilising international aid.

[26] Countries may be hit not only by climatic shocks (that affect mainly Sahel countries) but also, for instance, by shocks on international markets or political crises. For instance, in 2016, grain prices were high in Nigeria because of the low level of the Naira, which itself stems from low oil prices on international markets.

[27] The RESOGEST is unlikely to play this role: it is a network of public stock agencies, but these agencies do not design public stock interventions, they only implement them.

	3. Higher share of local staples in the aid provided (which fits better with consumers' preferences and habits). 4. Local procurements of the Regional Reserve to support local production. Challenges The potential benefits will not be reached if Members States and Regional Economic Communities (ECOWAS and WAEMU) do not contribute to the building of the Regional Reserve and if the Zero Hunger tax is not created (which would compromise the use of the reserve and the increase in national public stocks). For now, the only contributor that has complied with its commitments is the EU.	3. The availability of physical stocks (increased national public stocks + Regional Reserve) may reduce delays implementing international aid (especially when there is a scarcity of grains on the regional market, as in 2005 and 2012). ***Providing a more adequate response:*** 1. Acting sooner may reduce the need for costly nutritional recovery programmes (more than 60% of the budget for managing the Niger 2010 crisis), thereby saving means for more medium-term action focused on household livelihoods and resilience. 2. The availability of physical stocks may facilitate greater use of local staples in (national and international) interventions, which may reduce the cost and delays of interventions and mitigate the increase in the price of these staples (which are the most consumed by the poor). Challenges Risk of the international community being less involved (as their involvement has often been triggered by malnutrition rates).
Vis-à-vis national policies	**Solidarity between ECOWAS Member States** Potential benefits *Solidarity with countries hit by food crises:* 1. The right to use the Regional Reserve is triggered by food security indicators (based on the CHB). 2. The existence of the Regional Reserve is likely to incentivise countries to renounce export bans. *Solidarity with countries vulnerable to food crises,* as countries strongly affected by past crises and landlocked countries: 1. Will have a higher quota (right to use the Regional Reserve for free); and 2. Will receive greater support to increase the level of their public stocks. *Solidarity with landlocked and poor countries*, which will: 1. Have a higher quota as a higher percentage of their need is covered; and 2. Contribute very little as country contribution will be based on country value of extra ECOWAS imports (Zero Hunger tax). The resulting effect is Sahel countries will receive 89.6% of the quotas and 77.5% of the increase in national public stocks funded by regional solidarity. Challenges 1. Tension may occur between countries for the use of the Regional Reserve. They can be limited	**Improving food security by complementing national policies** Potential benefits ***Increasing the means of national governments*** through: 1. Mutualisation: a common tool (the Regional Reserve) and cooperation between public stock agencies (RESOGEST). 2. Solidarity: the increase in the level of national public stocks (+650,000 Mt) and the free use of the Regional Reserve. **Promoting 'regional thinking' in early warning and diagnosis:** use of the CHB to compare the situation of various countries will lead to consideration of the regional dimension of the crisis, thereby improving diagnosis and early warning of food crises (misunderstanding the situation and dynamics of the regional market led to strongly underestimating the Niger 2005 crisis). **Promoting a 'regional response' to 'regional crises':** by increasing the means of all ECOWAS country governments, the Regional Reserve Project may lead to the simultaneous use of national public stocks intervention, thereby much more effectively mitigating staple price surges. Challenges These potential benefits will be lost if the Regional Reserve Project is not implemented or only partially implemented (national public stocks and Regional Reserve undersized).

	by fully implementing the Regional Reserve Project (building a 400,000 Mt Regional Reserve + increasing national public stocks by 650,000 Mt) and (properly) implementing CHB among all ECOWAS countries. 2. Tensions may occur over funding, as the countries required to contribute more and receive less may be reluctant to contribute.	

4.3 Perspectives

The next step is clearly implementing the Regional Reserve Project, which requires that:

1. Members States and Regional Economic Communities (ECOWAS and WAEMU) deliver their contribution to the building of the Regional Reserve; and
2. The Zero Hunger tax is created, which is a necessary condition to increase national public stocks and fund the use of the Regional Reserve.

If this is not the case, the coherence of the Regional Reserve Project would be lost, as well as its potential benefits for food sovereignty, solidarity between ECOWAS countries, and food security. A partial implementation of the Regional Reserve Project would not enable significant improvement of food sovereignty and food security, and is likely to exacerbate the tensions between countries wishing to access the Regional Reserve.

Another issue is related to the use of the CHB to estimate the level of country food insecurity. Although the CHB is the official tool of the region, it is not used by all ECOWAS countries. It is important to generalise and improve its use not only to allocate the Regional Reserve, but also to improve the diagnosis and early warning of food crises.

A further development of the Regional Reserve Project may be rendering the rice CET flexible. In 2008 many WAEMU countries unilaterally removed the rice CET to mitigate the increase in the cost of imports. Rendering the CET flexible would allow it to increase or decrease (even becoming negative if needed) depending on international prices or ECOWAS countries' food security situation. This is an idea (not even a project for now) which circulated in West Africa. A study on this topic has been commissioned by ECOWAS. As the 2008 experience showed that countries face difficulties removing import taxes in the long term (because of their weight in country budgetary resources), a solution may be to compensate the country loss in budgetary resources with the Zero Hunger tax. In periods of high grain prices it would make sense to remove taxes on grains and replace them with taxes on less important and less sensitive goods.

It also possible to imagine that, in the future, the Regional Reserve may be used not only for managing crises but also to help poor households recover their livelihoods when impoverished by a crisis. It is now well-known that there is a continuum between food crises and chronic malnutrition, especially in countries where food crises are very frequent (such as Sahel countries). After a crisis, households that had to delve into their savings and sell assets to cope with the crisis often do not have time to recover before the next crisis arrives. Therefore, from one crisis to the next they lose their capital and their

resilience. By improving the management of food crises, the Regional Reserve Project may reduce this problem. If allowed to intervene in post-crisis periods, its contribution can be even higher.

The Regional Reserve Project framework may be a source of inspiration for other regions of the world: the Southern African Development Community has already showed interest in the idea, and another regional reserve project is on-going in Asia (ASEAN+3 rice reserve). The Regional Reserve project may even produce interesting lessons on how to manage price instability on the international market: in 2008, many countries implemented export bans on rice (and to some extent on wheat), thereby exacerbating the surge in international prices (Headey 2011). Export bans were implemented at the same time by many West African countries (for local staples) and were one of the main drivers for building the Regional Reserve Project (to overcome the observed 'lack of solidarity'). Therefore, if successful, the Regional Reserve Project may well be a source of inspiration for international policies.[28]

[28] The idea to build reserves at the global level to prevent export bans has been studied in different reports after the 2008 crisis (Wright 2010; OECD 2011). After being sceptical in his OECD report, Gilbert became more open to the idea (Gilbert, 2012).

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Annexes

Table A.1: Calibration of the Regional Reserve and the required increase in national public stocks

	Population in 2020 (000s)	Population Affected following Most Serious Crisis (%)	Annual Estimated Needs by 2020 (Tons)*	% of the needs that should be met regionaly	Needs that should be met regionaly	% of the needs met regionaly covered by the RR	Needs covered by the RR	Needs covered by national PS	Current level of national PS (SNS)	Required increase in national PS
Benin	11523	4%	82966	12,5%	10371	20%	2074	8297		8297
Burkina Faso	22150	18%	717660	25%	179415	40%	71766	107649	28000	79649
Cape Verde	544	7%	6482	25%	1621	20%	324	1296		1296
Côte d'Ivoire	24503	4%	176422	12,5%	22053	10%	2205	19847		19847
Gambia	2 242	36%	145282	12,5%	18160	20%	3632	14528		14528
Ghana	30325	4%	218340	12,5%	27293	10%	2729	24563		24563
Guinea	12765	4%	91908	12,5%	11489	20%	2298	9191		9191
Guinea-Bissau	1863	8%	25989	12,5%	3249	20%	650	2599		2599
Liberia	5166	13%	120884	12,5%	15111	20%	3022	12088		12088
Mali	20537	23%	850232	25%	212558	40%	85023	127535	17000	110535
Niger	22071	53%	2118286	25%	529572	40%	211829	317743	32000	285743
Nigeria	203869	4%	1467857	12,5%	183482	10%	18348	165134	150000	15134
Senegal	15998	7%	201575	12,5%	25197	20%	5039	20158		20158
Sierra Leone	7178	4%	51682	12,5%	6460	20%	1292	5168		5168
Togo	7343	4%	52870	12,5%	6609	20%	1322	5287		5287
ECOWAS	388,077		6328433		1252637		411554	841083	227000	614083

(*) Estimate based on the WFP norm: 15kg per person per month

Source: this calculus is based on ECOWAS (2012): table 3 p. 38 for annual needs; note 18 p. 39 for the list of coastal countries and landlocked countries (which determines the % of the needs that should be met regionally: 1.5 or 3 months); note 19 p. 40 for the lists of LDCs/non LDCs (that jointly with the coastal/landlocked criterion determines the % of the needs met regionally that should be covered by the Regional Reserve).

Table A.2: Minimum proportion of different products in the Regional Reserve (by storage site)

Products	RR Storage sites Eastern *56%*	Central *40%*	West Atlantic *2.30%*	Gulf Atlantic *1.60%*	Total *100.00%*
Maize	15%	30%	10%	25%	21.03%
Millet-sorghum	50%	30%	40%		40.92%
Rice		10%	20%	50%	5.26%
Gari	10%	10%			9.60%
Enriched cereals	5%	5%			4.80%

Source: adapted from ECOWAS (2012)

Table A.3: Detailed costs of the Regional Reserve (constitution + maintenance)

	Unit	Market Price	Transport costs	Acquisition Cost	Trader Margin	Unit Price in warehouse	Proportion of reserve (%)	2013	2014	2015	2016	2017	2018	2019	2020	Total
Size of the reverve (thousands of tons) - Scenario 2																
Regional reserve								176	176	176	176	294	294	294	412	
Financial reserve								116	116	116	116	194	194	194	272	
Physical reserve								60	60	60	60	100	100	100	140	
Costs of the Physical reserve (thousands of dollars)																
Stocking costs								27 452				18 301			18 301	64 054
Millet	tons	288	50	338	24	361	25%	5 419				3 613			3 613	12 645
Sorghum	tons	260	50	310	22	332	24%	4 780				3 187			3 187	11 154
Maize	tons	278	50	328	23	351	26%	5 473				3 648			3 648	12 770
Rice	tons	632	50	682	48	730	7%	3 065				2 043			2 043	7 151
Gari	tons	366	50	416	29	445	14%	3 739				2 493			2 493	8 724
Enriched flour	tons	1500	50	1550	109	1659	5%	4 976				3 317			3 317	11 610
Cost of warehouse rental	tons					12		733	733	733	733	1 221	1 221	1 221	1 709	8 303
Cost of maintenance of stock (security, fumigation, etc.)	tons					29		1 735	1 735	1 735	1 735	2 892	2 892	2 892	4 048	19 664
Cost of management by the national operator						2%		549	549	549	549	915	915	915	1 281	6 222
Annual losses						2%		549	549	549	549	915	915	915	1 281	6 222
Costs of stock rotation																
Cost of stock depreciation	tons					10%			915		915		1 525		2 135	5 490
Costs of replenishment of stocks (intra annual price variation)	tons					9%			824		824		1 373		1 922	4 941
Total (I)								**31 017**	**5 304**	**3 566**	**5 304**	**24 244**	**8 841**	**5 943**	**30 678**	**114 897**
Costs of financial reserve (thousands of dollars)																
Costs of conversion into physical stock								53 247				35 498			35 498	124 243
Provison for price risk						15%		7 987				5 325			5 325	18 636
interests						3%		-	1 597	- 1 597	- 1 597	- 1 597	- 2 662	- 2 662	- 2 662	- 14 377
Total (II)								**61 234**	**- 1 597**	**- 1 597**	**- 1 597**	**39 225**	**- 2 662**	**- 2 662**	**38 160**	**128 503**
Costs of reserve governance and external institutional strenghtening																
Investments								90	0	0	0	0	70	0	0	160
Payroll								1282	1282	1282	1282	1282	1282	1282	1282	10 256
Operation								144	144	144	144	144	144	144	144	1 150
activities								661	661	661	661	661	661	661	661	5 292
- of which external institutional strenghtening								160	160	160	160	160	160	160	160	1 280
Control, certification and audit								104	104	104	104	104	104	104	104	835
Unforeseen expenses 5%								114	110	110	110	110	113	110	110	885
Total (III)								**2 556**	**2 461**	**2 461**	**2 461**	**2 461**	**2 535**	**2 461**	**2 461**	**19 857**
Grand Total (I+II+III) - Thousands of dollars								**94 807**	**6 168**	**4 429**	**6 168**	**65 930**	**8 713**	**5 742**	**71 299**	**263 257**

Source: RAAF / PASANAO (2015)

Table A.4: Anthropometric nutritional indicators (for selected countries)

Country	Year	Severe wasting of children < 5 (in %)	Wasting of children < 5 (in %)	Stunting of children < 5 (in %)
Sub-Saharan Africa countries				
BENIN	2014	**0.9**	**4.5**	**34**
BURKINA FASO	2012	**1.8**	**10.9**	**32.9**
BURUNDI	2010	**1.4**	**6.1**	**57.5**
CHAD	2010	**5.9**	**15.7**	**38.7**
COTE D'IVOIRE	2012	**1.8**	**7.6**	**29.6**
EQUATORIAL GUINEA	2010	**1.7**	**3.1**	**26.2**
ETHIOPIA	2014	**2.5**	**8.7**	**40.4**
GHANA	2014	**0.7**	**4.7**	**18.8**
GUINEA	2012	**4.1**	**9.9**	**31.3**
KENYA	2014	**0.9**	**4**	**26**
LIBERIA	2013	**2**	**5.6**	**32.1**
MALAWI	2014	**1.1**	**3.8**	**42.4**
MALI	2006	**6**	**15.3**	**38.5**
MOZAMBIQUE	2011	**2.3**	**6.1**	**43.1**
NIGER (THE)	2012	**6.9**	**18.7**	**43**
NIGERIA	2014	**2**	**7.9**	**32.9**
RWANDA	2015	**0.6**	**2.2**	**37.9**
SENEGAL	2014	**0.7**	**5.8**	**19.4**
SIERRA LEONE	2013	**4.3**	**9.4**	**37.9**
TANZANIA (THE)	2014	**0.9**	**3.8**	**34.7**
TOGO	2014	**1.5**	**6.7**	**27.5**
UGANDA	2012	**0.3**	**4.3**	**34.2**
ZAMBIA	2013	**2.5**	**6.3**	**40**
North Africa and Middle East countries				
ALGERIA	2012	**1.4**	**4.1**	**11.7**
LEBANON	2004	**2.9**	**6.6**	**16.5**
MOROCCO	2011	**1**	**2.3**	**14.9**
TUNISIA	2012	**1.7**	**2.8**	**10.1**
Asian countries (except Middle East)				
BANGLADESH	2014	**3.1**	**14.3**	**36.1**
CAMBODIA	2014	**2.3**	**9.6**	**32.4**
CHINA	2010	**0.7**	**2.3**	**9.4**
INDIA	2014	**4.6**	**15.1**	**38.7**
INDONESIA	2013	**6.7**	**13.5**	**36.4**
PAKISTAN	2012	**3.3**	**10.5**	**45**
PHILIPPINES (THE)	2013		**7.9**	**30.3**
SRI LANKA	2012	**3**	**21.4**	**14.7**
THAILAND	2012	**2.2**	**6.7**	**16.3**
VIET NAM	2013		**5.7**	**19.4**
Countries from Latin America and the Caribbean				
BOLIVIA	2012	**0.5**	**1.6**	**18.1**
COLOMBIA	2010	**0.2**	**0.9**	**12.7**
DOMINICAN REPUBLIC	2013	**0.8**	**2.4**	**7.1**

ECUADOR	2012	**0.7**	**2.3**	**25.2**
EL SALVADOR	2014	**0.4**	**2**	**14**
GUATEMALA	2009	**0.2**	**1.1**	**48**
HAITI	2012	**1.3**	**5.2**	**21.9**
HONDURAS	2012	**0.3**	**1.4**	**22.7**
MEXICO	2012	**0.4**	**1.6**	**13.6**
NICARAGUA	2006	**0.5**	**1.5**	**23**
PERU	2013	**0.1**	**0.4**	**17.5**
VENEZUELA	2009		**4.1**	**13.4**
OECD Countries				
GERMANY	2005	**0.1**	**1**	**1.3**
JAPAN	2010	**0.2**	**2.3**	**7.1**
UNITED STATES OF AMERICA	2012	**0**	**0.5**	**2.1**

Source: UNICEF-WHO-World Bank

For each country, the data provided correspond to the most recent data available in the UNICEF-WHO-World Bank database.

Severe Wasting: Percentage of children aged 0–59 months who are below minus three standard deviations from median weight-for-height of the WHO Child Growth Standards.

Wasting – Moderate and severe: Percentage of children aged 0–59 months who are below minus two standard deviations from median weight-for-height of the WHO Child Growth Standards.

Stunting – Moderate and severe: Percentage of children aged 0–59 months who are below minus two standard deviations from median height-for-age of the WHO Child Growth Standards.

Table A.5: Policies implemented by ECOWAS countries to manage the 2008 crisis

Etats et institutions d'Intégration régionale	Mesures prises	
	Mesures visant à atténuer les effets de la flambée des prix	**Mesures visant à relancer la production**
Bénin	Suspension des droits de douanes et de la TVA, collecte locale de produits vivriers, vente de stock tampon, distribution de produits alimentaires à des indigents, mise en place de boutiques témoins, subvention des carburants et de l'énergie, homologation et contrôle des prix ;	Elaboration d'un plan d'urgence, création d'une centrale d'achat des engrais, subvention des intrants, allocation de fonds de campagne, mise à disposition de matériels agricoles, aménagements sommaires de périmètres , promesse de collecte du riz et de maïs produits en urgence, mise en place d'un fonds de roulement
Burkina Faso	Suspension des droits de douanes et de la TVA, relèvement des salaires, subvention des carburants, vente de céréales à prix social, institution d'un système d'homologation et de contrôle des prix, instruction verbale d'interdiction des exportations de céréales, relèvement des tranches sociales d'eau à 8 m3 et d'électricité à 75 kwh,	Elaboration d'un plan d'urgence, subvention des intrants, distribution de semence et d'engrais.
Cap-Vert	Suspension des droits de douanes sur les produits de première nécessité, création d'une commission technique mixte de suivi de la crise, augmentation de la pension de solidarité aux groupes vulnérables, augmentation des capacités de stockage, sensibiliser les PTF sur la nécessité de renforcer leur assistance alimentaire,	Etudier la possibilité d'augmenter la production locale de céréales
Côte-d'Ivoire	Réduction de moitié de la TVA sur lait, huile de palme, tomate en conserve, sucre et ciment. Suspension de la taxe sur le développement de la culture du riz. Suspension de la TVA sur les intrants du ciment. Suspension des droits de douanes sur le lait, l'huile de palme, la tomate en conserve, le sucre, la farine de blé, le poisson, le riz et le ciment,	Mise en place d'un programme d'urgence de production du riz, subvention et distribution d'intrants,
Gambie	Suspension des droits de douanes et de la TVA sur le riz et le sucre,	Encouragement de la population à produire du riz, fourniture d'engrais et de semence,
Ghana	Suspension des droits de douanes et des taxes intérieurs sur un certain nombre de produits, constitution de stocks décentralisés de produits vivriers (maïs et riz) subvention de la production d'énergie électrique,	Initiation d'un programme d'urgence de production du riz et du maïs, subvention et distribution des intrants agricoles.
Guinée Bissau	Suspension de l'IGV sur le riz, le sucre et la farine de blé, distribution gratuite de riz, de farine de mil, d'huile alimentaire et de sucre, mise en circulation des transports publics urbains pour les fonctionnaires publics,	Mise à disposition de petits producteurs de petits matériels, d'intrants (engrais et semences) pour la production du riz,
Guinée	Suspension des taxes à l'importation, interdiction des exportations des produits vivriers, distribution gratuite de vivres (maïs et riz), intention de constitution d'un stock de sécurité de 25 000 tonnes de céréales, relèvement des bourses des étudiants, augmentation des primes de transport des fonctionnaires de l'ordre de 6 à 9 mille francs guinéens pour 20 jours ouvrés par mois, mise en circulation de bus pour le transport urbain et inter urbain	Programme d'urgence de relance de la production du riz, fourniture d'engrais et de semences, facilitation de l'accès aux crédits pour les producteurs,
Mali	Exonération des importations du riz de toutes les taxes y compris les prélèvements communautaires, interdiction d'exportation des céréales, vente à prix modéré de riz dans les magasins témoins lors du Ramadan ; mise en place de Banques de Céréales Villageoises, vivres contre formation, revalorisation des salaires et autres traitements,	Mise en place d'un ambitieux programme de production du riz, subvention des intrants (engrais et semences), fourniture de matériels agricoles (moto pompes),
Mauritanie	Suspension des droits de douanes, facilitation des importations de produits vivriers, subvention du pain, approvisionnement des centres de récupération et d'éducation nutritionnelles, distribution de vivres contre travail, augmentation de la capacité du stock national de sécurité en blé, accueil des mendiants, renforcement des stocks villageois de sécurité, augmentation des salaires des fonctionnaires, fixation du prix du blé	Fournitures d'engrais, de semences, de médicaments vétérinaires et des aliments de bétail,
Niger	Suspension des droits de douanes, et des prélèvements communautaires, cash for work, vente à prix modéré du riz et du sucre en période de ramadan, distribution gratuite ciblée, réhabilitation et protection nutritionnelle, restriction des exportations, contrôle des prix,	Distribution de semences, mise en place du programme spécial du Président de la République,
Nigeria	Suspension des droits de douanes et de la TVA sur le riz, constitution de stock de sécurité au niveau fédéral et des Etats fédéraux, importation en urgence de 150 000 tonnes de riz, interdiction d'exportation de céréales par les Etats fédéraux du Nord ;	Mise en place d'un programme de relance de la production des vivres, et surtout du riz,
Libéria	Suspension des taxes à l'importation, assistance alimentaire, food for work,	Mise en place d'un programme de renforcement de la production
Sierra Leone	Suspension des droits de douanes,	Dotation de tracteurs, fournitures d'intrants agricoles aux producteurs (semences, engrais et insecticides)
Sénégal	Suspension des taxes (droits de douanes et TVA) sur le riz importé, subvention des importations de riz, distribution gratuite de vivres aux indigents en milieu rural, distribution d'aliments de bétail, vente à prix modéré du riz dans les magasins de référence (easy boutiques), interdiction des exportations de riz importé, maintien de la subvention du gaz butane,	Lancement de la « Grande Offensive pour l'Agricole pour la Nourriture et l'Abondance », subvention des intrants, fourniture d'engrais et de semence aux communautés rurales ;
Togo	Subvention du prix des carburants et du gaz domestique, distribution de vivres, renforcement du stock de sécurité, gel du prix de nombreux produits, subvention de la production de l'énergie électrique,	Programme d'urgence de relance de la production agricole, fourniture d'intrants aux producteurs,
UEMOA	Aides budgétaires aux huit pays membres de l'Union.	Elaboration d'un programme d'urgence de relance de la production agricole, ouverture d'une ligne de crédit pour financer les programmes agricoles auprès de la BOAD,
CEDEAO	Concertation régionale (importateurs, banques régionales, Centre du Commerce International, CEDEAO) sur la possibilité de lancement d'une initiative régionale d'achat groupé du riz,	Adoption d'un programme d'urgence de production agricole ; dit : offensive Régionale pour la production alimentaire et contre la faim articulé autour de trois piliers, i) accroissement rapide et durable de la production, ii) structuration des filières et régulation des marchés, iii) garantie de la sécurité alimentaire et nutritionnelle. Ouverture d'une ligne de crédit à la BIDC pour financer les projets nationaux de relance de la production.

Source: Soulé et al. (2008)